# ALTERNATIVES & THE SYMMETRY PROBLEM



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Consider the following sentence:

(1) Seth ate some of the cookies.

In most contexts, (1) carries the following conversational implicature:

(2) Seth did not eat all of the cookies.

Henceforth, and just for the sake of convenience, I will speak of *sentences*—rather than *utterances* of sentences—carrying implicatures.

In order to derive the implicature, we relied on the fact that

(3) Seth ate all of the cookies.

is something she could have said but didn't.

Let us introduce the following definition:

(4) A sentence $\psi$ is an ADMISSIBLE ALTERNATIVE to an utterance of $\varphi$ in a context $c$ iff
   a. the speaker could have uttered $\psi$, and
   b. utterances of $\varphi$ and of $\psi$, in $c$, would have been on a par with respect to RELEVANCE and MANNER.

We can now spell out the derivation of (2) as follows:

From now on, I will not make explicit the assumption that the speaker is obeying the cooperative principle.

(5) a. The speaker said (1).
   b. (3) is an admissible alternative to (1)
   c. The speaker has an opinion as to whether (3) is true.
   d. If the speaker believed that (3) is true, she would have violated QUANTITY.
   e. Therefore, the speaker believes that (3) is false.

Consider now:

(6) Seth ate some but not all of the cookies.

Suppose (6) is an admissible alternative to (1). Then we could run reason as in (5) to conclude that the speaker believes that (6) is false!

What we want is a theory on which (6) is not an admissible alternative to (1). More generally:

(8) THE SYMMETRY PROBLEM: to provide a well-motivated theory on which $\varphi \wedge \psi$ can be an admissible alternative to $\varphi$ even though $\varphi \wedge \neg\psi$ is not.

For the sake of contrast, consider:

(7) Seth ate three of the cookies.

Plausibly, (7) is an admissible alternative to (1). But we could block the derivation that the speaker believes that (7) is not true by denying that the speaker has an opinion as to whether (7) is true. This move is not available for the case of (6).

## CAN MANNER HELP?

Recall:

(9) MANNER: (i) avoid obscurity, (ii) avoid ambiguity, (iii) be brief (avoid unnecessary prolixity), (iv) be orderly.

In the previous handout I simply had 'be brief' under (iii). But the added 'avoid unnecessary prolixity' is in the original—Grice 1975, p. 27.

In order to claim that (6) and (1) are not on a par with respect to MANNER, we would have to claim that (6) is 'unnecessarily prolix' relative to (1).

Is it?

- One option would be to say that it is 'unnecessarily prolix' just because it is more 'complex' than (1). A simple measure of complexity here: length.
- Another option would be to say that it is 'unnecessarily prolix' because it is longer and no more informative than (1) *on the assumption that* (1) *carries* (2) *as an implicature*.

The second option seems like a non-starter. The rough idea: the reason (6) is ruled out as an admissible alternative is because the result of uttering (6) would be the same as that of uttering the less complex (1). But this presupposes that (1) does not have the negation of (6) as an implicature (otherwise, the result of uttering (6) would *not* be the same as that of uttering (1)).

The first option seems to go against the spirit of the Grice's formulation of the maxim. Further, it seems subject to some empirical difficulties:

Cf. Matsumoto 1995, p. 43f. See Block 2008, §4 for some suggestions friendly to the Gricean.

(10) *Context: we are talking about what our two graduating majors, Mary and Sue, are going to do after graduation.*

a. Mary is going to graduate school.
b. $\rightsquigarrow$ It is not the case that Mary and Sue is going to graduate school.
c. $\not\rightsquigarrow$ It is not the case that only Mary is going graduate school.

(11) a. Sue liked some of her classes and Mary liked more than two thirds of her classes.
b. $\rightsquigarrow$ It is not the case that Sue liked more than two thirds of her classes.

Cf. Matsumoto 1995, example (39).

At any rate, those working in the Gricean tradition have by and large adopted a different approach to this problem, one due to Horn 1972.

## HORN SCALES

Assume that some lexical items, which we will call *scalar items*, are conventionally associated with *Horn scales*: a collection of lexical items. For each scalar item $i$, the Horn scale of $i$ is composed of lexical items of the same type as $i$. We will let $S(i)$ denote the Horn scale of $i$.

In particular, assume that *some* and *all* are scalar items, and that they both have {*some*, *all* } as their scale. We can then define the notion of a *scalar*

Or perhaps: {*some*, *most*, (*many*,) *all*}.

*alternative* to $\varphi$ as follows:

(12) Fix a sentence $\varphi$.

a. If $i$ is a scalar item having an occurrence in $\varphi$ and $\psi$ is the result of substituting *one* occurrence of $i$ by $j$, where $j \in S(i)$, then $\psi$ is a scalar alternative of $\varphi$.

b. If $\psi$ is a scalar alternative of $\varphi$ and $\chi$ is a scalar alternative of $\psi$, then $\chi$ is a scalar alternative of $\varphi$.

c. Nothing else is a scalar alternative of $\varphi$.

(13) a. *Example*: Some students came or all teachers left.

b. *Scalar alternatives*:

(i) All students came or all teachers left.

(ii) All students came or some teachers left.

(iii) Some students came or some teachers left.

(iv) Some students came and all teachers left.

(v) All students came and all teachers left.

(vi) All students came and some teachers left.

(vii) Some students came and some students left.

There is some disagreement as to the range of scalar items, and to the nature of their corresponding scale. But there it is widely accepted, among so-called neo-Griceans, that the following are Horn scales of their constituent lexical items:

For reasons we will not get into, Horn scales are often presented as ordered tuples. As Sauerland 2004 points out (p. 374) this is not necessary for our purposes.

(14) a. { *some*, *most*, *all*}

b. {*or*, *and*}

c. {*one*, *two*, *three*, …, *n*}

d. {*always*, *often*, *sometimes*}

e. {*necessarily*, *possibly*}

f. {*must*, *should*, *may*}

Among the constraints on what kinds of lexical items can form a Horn scale the most well-known is that the items most all have the same monotonicity property.

Thus, the collection of scalar alternatives of a given sentence can be quite large. For instance,

(15) In order to pass this class you may always do most of the homework or often do all of it.

will have ≈ 500 scalar alternatives!

We could now give a better definition of an admissible alternative, thus replacing (4) with:

(16) A sentence $\psi$ is an ADMISSIBLE ALTERNATIVE of $\varphi$ in a context $c$ iff

a. the speaker could have uttered $\psi$,

b. $\psi$ is a scalar alternative of $\varphi$, and

c. utterances of $\varphi$ and of $\psi$, in $c$, would have been on a par with

respect to RELEVANCE and MANNER.

But that would require that we eventually give a more precise account of RELEVANCE and MANNER. Instead, and for now, we will follow Sauerland 2004 and proceed with a two-part definition of the scalar implicatures of $\varphi$ in *c*. First, we need to define the notion of asymmetrical entailment:

(17) We say that $\varphi$ *asymmetrically entails* $\psi$ iff $\varphi$ entails $\psi$ but $\psi$ does not entail $\varphi$.

We then define the *primary implicatures* of $\varphi$ in *c*:

(18) A PRIMARY IMPLICATURE of $\varphi$ in *c* is a sentence of the form ⌜It is not the case that the speaker believes that $\psi$⌝, where:
   a. the speaker could have uttered $\psi$ in *c*,
   b. $\psi$ is a scalar alternative of $\varphi$, and
   c. $\psi$ asymmetrically entails $\varphi$.

It would be best to define the primary implicatures of $\varphi$ as sentences of the form ⌜It is not the case that (the speaker believes that $\psi$ and takes herself to have sufficient evidence for $\psi$⌝ or something along those lines. For obvious reasons, I will stick to the simpler formulation.

In true Gricean spirit, we could redefine the third clause of (18) in terms of a notion of asymmetrical *contextual* entailment. See Magri 2009, 2011 for some arguments against this suggestion.

For example, going back to (13a), since (13b-i) asymmetrically entails (13a), we predict using (18) that

(19) It is not the case that the speaker believes that all of the students came or all of the teachers left.

is a primary implicature of (13a). In contrast,

(20) It is not the case that the speaker believes that some of the students came or some of the teachers came.

is not predicted to be a primary implicature of (13a), since (13b-iii) does not asymmetrically entail (13a).

We still want to predict, at least in some cases, that the speaker believes that the relevant alternative is false (and not just that she does not believe that it is true). Sauerland's notion of a *secondary implicature* is meant to do the job (I will use $\mathsf{B}\varphi$ to abbreviate the claim that the speaker believes that $\varphi$ is true):

(21) A SECONDARY IMPLICATURE of $\varphi$ in *c* is a sentence of the form $\mathsf{B}\neg\psi$ such that:
   a. $\neg\mathsf{B}\psi$ is a primary implicature of $\varphi$ in *c*, and
   b. $\mathsf{B}\neg\psi$ is consistent with the set consisting of all the primary implicatures of $\varphi$ in *c* together with $\mathsf{B}\varphi$.

The idea behind the move from a primary to a secondary implicature seems to be something like this. There is a default presumption that the speaker has an opinion with respect to each of the scalar alternatives of an utterances. If that presumption is not defeated (say, by the primary implicatures of the utterances), then we can derive the secondary implicature, given that $\neg\mathsf{B}\psi, \mathsf{B}\psi \vee \neg\psi \vDash \mathsf{B}\neg\psi$.

The idea, essentially, is that we will strengthen as many of the primary implicatures as possible.

It helps to work our way through a simpler example.

(22) a. Every student did some of the homework.

b. *Primary implicatures*:
   (i) $\neg$B(Every student did all of the homework)
   (ii) $\neg$B(Every student did most of the homework)
c. *Secondary implicatures*:
   (i) B$\neg$(Every student did all of the homework)
   (ii) B$\neg$(Every student did most of the homework)

One limitation of a scale-based approach (cf. Katzir 2007) is that it fails to predict that 'Everyone who eats some but not all of the candy is an idiot.' implicates that not everyone who eats all of the candy is an idiot.

## THE DISJUNCTION PROBLEM

Consider:

(23) Zoe ate the muffin or some of the candy.

What are the scalar alternatives of (23)? Assuming that the Horn scale of *or* is {*or*, *and*}, we get:

(24) *Scalar alternatives of* (23):
   a. Zoe ate the muffin or all of the candy.
   b. Zoe ate the muffin and some of the candy.
   c. Zoe ate the muffin and all of the candy.

Since each of the alternatives asymmetrically entail (23), we get the following set of primary implicatures:

(25) *Primary implicatures of* (23):
   a. $\neg$B(Zoe ate the muffin or all of the candy).
   b. $\neg$B(Zoe ate the muffin and some of the candy).
   c. $\neg$B(Zoe ate the muffin and all of the candy).

As for the secondary implicatures, suppose that the speaker believes that Zoe did not eat the muffin and suppose that the speaker believes that Zoe ate some but not all of the candy. Then we can see that all of the sentences in (26), as well as all the sentences in (25), are true:

I am assuming a weak form of closure, so that $\mathsf{B}\varphi \vDash \mathsf{B}(\varphi \vee \psi)$.

(26) a. B(Zoe ate the muffin or some of the candy).
   b. B(Zoe did not eat the muffin and Zoe did not eat all of the candy).
   c. B(Zoe did not eat the muffin or Zoe did not eat some of the candy).
   d. B(Zoe did not eat the muffin or Zoe did not eat all of the candy).

But this generates a problem, for we now have:

(27) *Secondary implicatures of* (23):
   a. B$\neg$(Zoe ate the muffin or all of the candy).
   b. B$\neg$(Zoe ate the muffin and some of the candy).
   c. B$\neg$(Zoe ate the muffin and all of the candy).

But (27a) entails that the speaker believes that Zoe did not eat the muffin.

What we need is a way of including each of the disjuncts in (23) among its scalar alternatives. That would allow us to enlarge the set of primary implicatures by adding the so-called 'ignorance implicatures':

(28) *Desired additional primary implicatures of* (23):

a. $\neg\mathsf{B}$(Zoe ate the muffin).

b. $\neg\mathsf{B}$(Zoe ate some of the candy).

This way, we would block the derivation of (27a) as one of the secondary implicatures of (23). We would also be able to derive, as an additional secondary implicature of (23), the 'implicature of the second disjunct':

(29) $\mathsf{B}\neg$(Zoe ate all of the candy).

at least if we assume that 'is a scalar alternative of' is a transitive relation.

## A BETTER THEORY OF ALTERNATIVES?

Sauerland's idea: the scale of *or* is not $\{$*or*, *and*$\}$, but rather $\{$*or*, $\mathsf{L}$, $\mathsf{R}$, *and*$\}$, where

In a way, Sauerland's solution is forced upon him because he takes the relation 'is a scalar alternative of' to be symmetric. As we will see, there are principled ways of rejecting that.

(30) a. $\varphi\,\mathsf{L}\,\psi \equiv \varphi$

b. $\varphi\,\mathsf{R}\,\psi \equiv \psi$

There are at least two reasons to find this proposal wanting:

- Violates a plausible lexicalization constraint on Horn scales. Atlas and Levinson 1981.
- Requires a radical departure from the Gricean derivation of (primary) implicatures. (Cf. (4) and (16).) Spector 2007.

For now, let us black-box and assume we are given a function ALT that takes a pair consisting of a sentence $\varphi$ and a context $c$ and generates a set of alternatives $\textsc{alt}_c(\varphi)$. A plausible condition on ALT:

(31) If $\psi$ is a scalar alternative of $\varphi$ in $c$, then $\psi \in \textsc{alt}_c(\varphi)$.

Let us assume the following further constraints:

(32) For any $\varphi$, $\psi$, and context $c$: $\varphi, \psi \in \textsc{alt}_c(\varphi \vee \psi)$.

(33) For all sentences $\varphi, \psi, \chi$ and context $c$: $\chi \in \textsc{alt}_c(\psi)$ and $\psi \in \textsc{alt}_c(\varphi)$ entails $\chi \in \textsc{alt}_c(\varphi)$.

We can now replace our definition in (18) with

(34) A PRIMARY IMPLICATURE of $\varphi$ in $c$ is a sentence of the form $\neg\mathsf{B}\psi$, where:

a. the speaker could have uttered $\psi$ in $c$,

b. $\psi \in \text{ALT}_c(\varphi)$, and
c. $\psi$ asymmetrically entails $\varphi$.

This revised proposal predicts that (23) will have the ignorance implicatures in (28). Moreover, we can make additional predictions that are not available without (32):

(35) a. Seth had coffee or tea or milk.
b. $\rightsquigarrow$ B(Seth had exactly one of: coffee, tea, milk).

(36) a. Every student took the dance class or the juggling class.
b. $\rightsquigarrow \neg$(Every student took the dance class).
c. $\rightsquigarrow \neg$(Every student took the juggling class).

(37) a. You are required to take the dance class or the juggling class.
b. $\rightsquigarrow \neg$(You are required to take the dance class).
c. $\rightsquigarrow \neg$(You are required to take the juggling class).

There is, however, a problem that Sauerland's account cannot solve:

(38) a. Seth took the dancing class or the juggling class.
b. $\rightsquigarrow \neg$(Seth took the dancing class and the juggling class).

(39) a. Seth took the dancing class or the juggling class or both.
b. $\not\rightsquigarrow \neg$(Seth took the dancing class and the juggling class).

(40) *Alternatives of* (38a):
a. Seth took dancing and juggling.
b. Seth took dancing.
c. Seth took juggling.

(41) *Alternatives of* (39a):
a. Seth took dancing or juggling.
b. Seth took dancing and juggling.
c. Seth took dancing.
d. Seth took juggling.
e. Seth took (dancing or juggling) or (dancing or juggling).
f. Seth took (dancing or juggling) or (dancing and juggling).
g. Seth took (dancing or juggling) and (dancing or juggling).
h. Seth took (dancing or juggling) and (dancing and juggling).
i. Seth took (dancing and juggling) or (dancing or juggling).
j. Seth took (dancing and juggling) or (dancing and juggling).
k. Seth took (dancing and juggling) and (dancing or juggling).
l. Seth took (dancing and juggling) and (dancing and juggling).

Note that we could avoid this problem if we could include ¬(dancing and juggling) among the alternatives of (39a)—and not among those of (38a)—and include among the primary implicatures of $\varphi$the sentence ¬B¬(dancing and juggling). I first learned about this possibility from Irene Heim's in her Fall 2005 course *Pragmatics in Linguistic Theory*. It is essentially an attempt to combine Sauerland's account with the account in Gazdar 1979.

Since every sentence in (41) is equivalent to one in (40) (and vice versa), we predict that (38a) and (39a) have the same implicatures.

Another limitation of the present proposal:

(42) a. Every guest liked some of the dishes.
b. $\rightsquigarrow$ Not every guest liked all of the dishes.
c. $\rightsquigarrow$ Every guest liked some but not all of the dishes.

If (42c) is indeed an implicature of (42a), it is hard to see how to derive that using the present proposal. For while:

(43) Some guest liked all of the dishes.

is an alternative to (42a), it does not asymmetrically entail (42a) and thus it does not give rise to a primary implicature.

One possibility worth considering: revise the definition of a primary implicature once more.

(44) A PRIMARY IMPLICATURE of $\varphi$ in $c$ is a sentence of the form $\neg \mathsf{B}\psi$, where:
a. the speaker could have uttered $\psi$ in $c$,
b. $\psi \in \textsc{alt}_c(\varphi)$, and
c. $\psi$ is not entailed by $\varphi$.

Note that this new definition, together with a small adjustment to our definition of ALT, could also be used to solve the problem illustrated by (38a) and (39a).

The question, of course, is whether such a definition is well-motivated.

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