

Implicatures without propositions

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Abstract

Standard implementations of Grice's theory of conversational implicature assume that the derivation of an implicature always begins with a single proposition expressed by means of a sentence in a given context. Against this received view, I argue that, in at least three ways, implicatures are discourse-based rather than proposition-based. First, in some cases an implicature can only be derived from an ensemble of two or more utterances. Secondly, some implicatures can only be explained on the assumption that the hearer takes into account the discourse referents that were introduced by the speaker's utterance. Thirdly, I claim that presupposed material may give rise to conversational implicatures.

Introduction

Conversational implicatures, according to Grice, are pragmatic inferences licensed by what the speaker has "said", in a "favored sense" of the word *say* (Grice 1989: 25). Unfortunately, however, despite his valiant attempts at defining what that favored sense is, Grice's analysis fails to answer at least one crucial question, namely, how what is said depends on pragmatic factors. What is clear from the single paragraph he devotes to the topic is that what is said is more than conventional meaning alone (*ibid.*). Commenting on the example,

- (1) He is in the grip of a vice.

Grice remarks that, in order to determine what a speaker has said by uttering (1), it has to be established what the utterance time is, who is the referent

of the personal pronoun, and which meaning of *vice* (“sin” or “tool”) is intended. Hence, for Grice what is said is determined mainly by conventional meaning, but also in part by pragmatic factors.

Grice’s position seems to require a division of labour between “early” pragmatics, which may be called upon for nailing down what is said, and “late” pragmatics, which is dependent on what is said. The resulting demarcation issue has been discussed with much zest and thoroughness (see Recanati 2004 for an overview), but I have no intention of entering that debate, because I believe it has started on the wrong foot.

Despite all discord in post-Gricean pragmatics, there is a broad consensus on the prerequisites for the derivation of conversational implicatures. To begin with, we need a context and general pragmatic principles of some sort or other. I have no problems with this. The part I disagree with is the notion that the source of an implicature is always

- (i) a single proposition (i.e., a truth-value bearer)
- (ii) conveyed by a single utterance.

In this sense, the orthodox view is that implicatures are proposition-based. I believe that this is plain false, and will argue that we should adopt a discourse perspective instead: the calculation of implicatures is discourse-based rather than proposition-based.

The main argument of this paper, then, is that implicature is a discourse phenomenon, and I will argue for this by trying to show that implicatures are discourse-based in at least three different ways. First, some implicatures can only be derived on the basis of several utterances taken together. Secondly, some implicatures can only be explained on the assumption that the hearer takes into account, and reasons in terms of, the discourse referents that were introduced by the speaker’s utterance. Thirdly, I claim that implicatures may be licensed by presuppositions.

Quantity implicatures

In the following, I will concentrate my attention on conversational implicatures deriving from Grice’s first maxim of quantity:

- (Q₁) Make your contribution as informative as is required (for the current purposes of the exchange). (Grice 1989: 26)

Implicatures based on this maxim have received more attention than any others, which is one reason why I want to focus on them. Another is that

the Gricean analysis of quantity implicatures, as I will call them, is relatively straightforward.

Here is an example. Suppose Jack volunteers the following statement:

(2) Jill read some of Derrida's books.

Jack's utterance of (2) may, but need not, be understood as implying that Jill hasn't read all of Derrida's books. If it is, we account for the implication as a plausibility inference which is invoked for explaining why Jack said what he said. To enhance the vividness of the story somewhat, we may imagine a hearer going through the following train of thought:

Jack could have made a more informative statement by saying that:

(2*) Jill read all of Derrida's books.

So why didn't he say (2*) rather than (2)? Presumably, because he doesn't know for a fact that (2*) is true. But Jack is generally well-informed about Jill's reading, so if he doesn't know for a fact (2*) is true, it must be because (2*) is false. That is, as far as Jack knows, Jill hasn't read all of Derrida's books.

It will be evident that this is not so much a theory as a sketch of one, but for my purposes it will do (the theory has recently been developed in great detail by Sauerland 2004, van Rooij and Schulz 2004, and Spector 2006). My main interest lies in a premiss of this style of analysis that is usually taken for granted: it begins with a proposition. The hearer's soliloquy given above starts off with the question why Jack didn't make a statement stronger than (2), so the proposition Jack expressed is contrasted with one he could have made but didn't. Furthermore, it is standardly assumed that, for the purpose of deriving implicatures, we only need this proposition (and contextual information). There is an ongoing debate over the context dependence of propositions, but everybody would agree that, in the context in which it is used, (2) gives rise to an implicature by virtue of its propositional content alone; that is to say, by virtue of fact that it is used to affirm the proposition that Jill read some books by Derrida. It is this part of the Gricean story that I am taking issue with.

Multiplicatures

The best way of showing that implicatures are discourse-based is also the easiest, so I will start with that. Suppose I tell you the following mini-story:

(3) When Jill opened the box, it contained five oranges. She took one out.

I ask: “How many oranges were there left in the box?” You say: “Four.” Your answer relies on an implicature to the effect that, if Jill’s action hadn’t been the only one to affect the content of the box, I should have said so. By asking how many oranges there were left in the box, I made its content relevant to our discourse, and if I withheld information pertaining to that issue, I would have violated Q_1 . You assumed that I was trying to be cooperative, and thus arrived at the correct answer.

Although this account is not fully identical to the one we used for deriving scalar implicatures, the difference is mainly one of scale. In the case of (2), the inference that Jill hasn’t read all of Derrida’s books followed on the assumption that, instead of (2), Jack could have made a more informative utterance; whereas in the case of (3), the implicature requires the assumption that the speaker could have produced a more informative discourse. That is, while in the former case we only needed to take into account alternative statements that wouldn’t have required the speaker to make a bigger effort, the latter requires taking into account additional information the speaker might have given but didn’t.

It seems sufficiently obvious to me that the implicature we observed for (3) is an implicature of the entire discourse, rather than any of its parts. But suppose someone—a dyed-in-the-wool propositionalist—were to claim that the implicature is actually conveyed by means of the second sentence alone. Our propositionalist is thinking along the following lines. The opening sentence of (3) reports that, to begin with, the box contained five oranges, and this is the context in which the following sentence is interpreted. The second sentence in (3) states that Jill took one orange out of the box, and its implicature is that she didn’t take out more than one, so now the box contained four oranges.

But suppose that Jill put back her orange after taking it out of the box; or suppose that, just before Jill took out hers, Jack (or anybody else, for that matter) had taken out an orange already; or again that, due to a spectacular quantum coincidence, Jill’s action caused the oranges in the box to triple in number. Speaking pragmatically, my saying (3) implicitly rules out such possibilities; and it is my saying (3), rather than any part of it, which does that job. The implicature is discourse-based, not proposition-based.

Now let us consider the following scenario. Jill wants Jack to sort out the contents of three boxes containing fruits of various kinds. She tells him:

- (4) Most of the apples are in the blue box, but some of them are in the green box. All the pears are in the red box. All the oranges are in the green box.

Question: What will Jack do? Answer: Most likely, he will transfer the apples in the green box to the blue box. Why? Because he will take Jill to have implicated that the green box contains only apples and oranges, the red box contains only pears, and the blue box contains only apples. Were Jack to discover, e.g., that there are pomegranates in the green box, he might justifiably accuse Jill of having made her contribution less informative than required for the purposes of the exchange. The key implicature, for my purposes, is that the green box contains only apples and oranges.¹ This is not licensed by any individual sentence in (4): it requires at least the first and the third one.

I have given two examples designed to show that “what is said” need not be a single utterance. In both cases the pattern is the same. To begin with, there is a discourse purpose—a problem to solve. In the first example, the problem is to establish how many oranges there are in the box. In the second example, the ultimate problem is for Jack to sort out the contents of three boxes, and in order to solve that he first needs to find out what is the current content of each of the boxes; the purpose of the discourse is to assist him in that. Then there is the assumption that the speaker—i.e., myself in the first example and Jill in the second—is trying to be cooperative and therefore seeks to make his/her contributions sufficiently informative. Next, there is the assumption that the speaker is sufficiently informed about the relevant facts. Finally, and most importantly, in both cases the implicatures are licensed not by an individual utterance but rather by a sequence of utterances, i.e., a discourse or discourse segment.

One of the classical fallacies of quantificational logic is “illicit conversion”, which is said to occur when “All A are B” gives rise to the conclusion that all B are A. A logical fallacy it may be, but often illicit conversion is pragmatically valid (van Rooij and Schulz 2004, Stenning and Cox 2006):

(5) Q: What’s in the green box?

A: All the apples.

↷ The green box contains nothing but apples.

It will be clear that this form of inference is just a special case of what we observed in (4); that is to say, a special case of what I have argued is a discourse phenomenon. To drive home this point, compare (5) with the

[1] My point here is just to show that there are multi-utterance implicatures, but all sorts of fascinating complications arise when one takes a closer look at them. Consider, for example, the effects of replacing *all the pears* in (4) with *most of the pears*. An in-depth study of such phenomena, using the tools developed by van Rooij and Schulz (2004) and Spector (2006), would certainly be a good idea.

following:

(6) Q: What's in these boxes?

A: All the apples are in the green box. All the oranges are in the green box. All the pears are in the blue box.

\rightsquigarrow The green box contains nothing but apples and oranges.

Formulated in more general terms: a sequence of premisses “all A_1 are B, . . . , all A_n are B” may give rise to the implicature that all B are A_1 or . . . or A_n . The pattern can be generalised further, but this is sufficient for making my point, which is the following: what is traditionally called “illicit conversion” is the special case in which $n = 1$. (It will be evident by now that this form of inference is not illicit and doesn't involve conversion, either, so its name is doubly unfortunate.)

What goes for illicit conversion also goes for the alleged fallacy of denial of the antecedent, also known as “conditional perfection” (Geis and Zwicky 1971, Horn 2000, van Rooij and Schulz 2004). (7) is an Old-World version of the standard example:

(7) If you mow the lawn, I'll give you five euros.

\rightsquigarrow Only if you mow the lawn will I give you five euros.

This inference, too, can be explained as a quantity implicature, and it, too, is an instance of a more general phenomenon:

(8) I'll give you five euros if you do the dishes. I'll give you five euros if you mow the lawn. And if you walk the dog, I'll give you three euros.

\rightsquigarrow Only if you do the dishes or mow the lawn will I give you five euros.

So, the more general pattern is that a sequence of premisses “if p_1 then q, . . . , if p_n then q” may give rise to the implicature that q only if p_1 or . . . or p_n . The so-called fallacy of denial of the antecedent is the special case where $n = 1$. Which is to say that it is a special case of what is essentially a discourse phenomenon.

Transitional remarks

In the foregoing we have seen various examples which show that implicatures are discourse-based. The argument was relatively straightforward, because the implicatures in question could only be derived by taking into account several statements at once. In the remainder of this paper I will make a claim that, on the face of it, will seem to be more paradoxical. I will discuss cases in

which, *prima facie*, implicatures would appear to arise at a *sub*-propositional level (e.g., within the scope of a quantifier), and argue for explanations that, again, hinge on the assumption that implicature is a discourse phenomenon.

Examples of implicatures that seem to arise in the scope of some expression were first discussed by Cohen (1971), and have recently been used for bolstering radical departures from the Gricean party line (e.g., Levinson 2000, Landman 2000, Recanati 2003, Chierchia 2004). I am not yet convinced that (seemingly) local implicatures can only be explained by abandoning Grice's flag, and my programme is to account for such cases within a Gricean framework; in this respect I align myself with Sauerland (2004), van Rooij and Schulz (2004), Russell (2006), and Spector (2006). In the following pages, this programme will be executed in part; for I will argue that some "local" implicatures can be accounted for by adopting a discourse perspective. But there is a quantity implicature here: I don't believe that all such implicatures can be explained along the same lines. Hence, what I have to offer on this occasion is just an account of some local implicatures. The main objective remains to show that implicature is a discourse phenomenon.

A problem with indefinites

Suppose Jack wants to tell an anecdote about his favourite cousin, and starts as follows:²

(9) A cousin of mine read some of Derrida's books.

The trouble is that, by applying the procedure used before, the hearer is bound to arrive at the conclusion that Jack doesn't have a cousin who read all of Derrida's books; which, under the circumstances, doesn't make any sense.³ In this case, the reasoning goes as follows:

Jack could have made a more informative statement by saying that:

(9*) A cousin of mine read all of Derrida's books.

[2] Although I assume here that the speaker of (9) has a particular cousin in mind, this is an accidental feature of the example: it is not difficult to find problem cases in which the wide-scope indefinite does not admit of a specific construal.

[3] That cases like (9) present problems for the Gricean account of implicatures was first shown, I believe, by van der Sandt (1992:372); his point was developed further by Geurts and Maier (2003). Although van der Sandt's comments are brief and somewhat hermetic, I suspect that the account presented below is essentially what he had in mind. More recently, van Rooij and Schulz (2004) have developed related ideas, but the phenomena they deal with are different from the ones under discussion here. In fact, I believe that they misapply their own theory, but will not go into that here.

Why did Jack say (9) rather than the more informative (9*)? Presumably, because he doesn't know for a fact that (9*) is true. But Jack is generally well-informed about his cousins' reading (especially if it is philosophy), so if he doesn't know for a fact (9*) is true, it must be because (9*) is false. That is, as far as Jack knows, none of his cousins read all of Derrida's books.⁴

There is a cheap way of solving the puzzle. We can take the line advocated by Landman (2000) and Chierchia (2004), and shoehorn scalar implicatures into the lexicon: if the "not all" implicature associated with *some* is part of its lexical content, the problem doesn't arise. But cheap solutions are seldom the best, and this one is no exception. For one thing, it is blatantly stipulative. For another, the lexicalist approach yields overly strong predictions in many other cases; e.g., it predicts that (10) implies that none of the speaker's cousins read all books by Derrida:

(10) All of my cousins read some of Derrida's books.

Intuitively, this prediction is too strong, and experimental evidence by Geurts and Pouscoulous (in preparation) confirms this intuition. These and other problems suggest rather forcefully that the lexicalist approach is on the wrong track, and I will consider it no further (for extensive critical discussion of the Chierchia-Landman line, see Sauerland 2004, van Rooij and Schulz 2004, Russell 2006, and Spector 2006).

It is not so hard to see what causes the problem. The derivation of the fake implicature started out from the question why Jack didn't say (9*) rather than (9). That was the wrong question. What we should have asked is this: "Why did Jack say that *the cousin in question* read some rather than all of Derrida's books?" Small difference, but it makes all the difference. For, if we answer *this* question, in the usual Gricean way, we arrive at the implicature that, according to Jack, the cousin in question didn't read all of Derrida's books; which is correct, of course.

Before I try to explain what distinguishes this approach from the orthodox one, I should like to put forward an authority argument: whatever his theoretical views may be, in practice, Grice himself adopts this approach, too. Here is one of his examples:

(11) A: I am out of petrol.
B: There is a garage round the corner.

[4] The assumption that Jack is generally well-informed about his cousins' reading is perhaps less obviously true than the corresponding assumption in the earlier application of this argument. If so, let it be stated explicitly.

Grice glosses this as follows:

B would be infringing the maxim “Be relevant” unless he thinks, or thinks it possible, that *the garage* is open, and has petrol to sell . . .
(Grice 1989: 32; emphasis added)

Apparently, Grice is not reasoning merely on the basis of the proposition expressed by B’s statement. Rather, he accepts that B is right in claiming that there is a garage around the corner, and then proceeds to ask whether the garage in question is open. The same holds for other examples discussed by Grice, like the following:

Anyone who uses a sentence of the form *X is meeting a woman this evening* would normally implicate that *the person to be met* was someone other than X’s wife, mother, sister, or perhaps even close platonic friend.
(Grice 1989: 37; emphasis added)

On the received propositionalist account, the question should have been why the speaker avoided saying that X is meeting his wife, sister, or close platonic friend. But that is not how Grice frames the question, and rightly so, because he would have ended up with the wrong implicatures.

Discourse referents

The derivation of an implicature begins with the question why the speaker said what he said. Whether or not it is in line with his theory, Grice’s own examples show that he takes this saying something to involve more than merely asserting a proposition. More in particular, Grice tacitly assumes that, when the speaker said, e.g., that “X is meeting a woman this evening”, the hearer will construe the indefinite as introducing a *discourse referent*: an entity referable by means of a pronoun or a definite description.

There are several ways of fleshing out the notion of discourse referent, and I will adopt the framework of Discourse Representation Theory here (Kamp 1981), but the differences between various approaches are immaterial to my purposes. As its name already indicates, Discourse Representation Theory is concerned with the interpretation of discourses, not just sentences. As a discourse unfolds, interlocutors incrementally construct a model of what was said. Such models consist of two parts: a set of discourse referents, which represent the objects under discussion, and a set of conditions which encode the information that has accumulated on these discourse referents.

For example, the statement in (12) will give rise to the model in (13):

(12) Jack read a book by Derrida.

(13)

| |
|------------------------|
| x |
| x is a book by Derrida |
| Jack read x |

This representation may be given a truth-conditional meaning in exactly the way one should expect. That is, (13) is true in a given state of affairs s iff s contains a book by Derrida that Jack read. The discourse referent x is introduced into the model by the indefinite noun phrase *a book by Derrida*. Other expressions may serve to pick up such discourse referents. To illustrate, suppose the speaker continues his discourse as follows:

(14) It is about Heidegger.

Since this statement is made in the context represented by (13), the pronoun may be construed as picking up x , and if it is, the effect of (14) is that our discourse model is extended as follows:

(15)

| |
|------------------------|
| x |
| x is a book by Derrida |
| Jack read x |
| x is about Heidegger |

The key idea underlying DRT is that utterances are interpreted against the background of a model of the preceding discourse. These models are structured, inter alia, in terms of discourse referents: pegs that are used to hang descriptive information on. Some expressions (e.g. indefinites) prompt the introduction of new discourse referents; others (e.g. pronouns) are used to retrieve discourse referents that are already available.

One of the appealing features of this view on discourse interpretation is that it has no need for propositions—no need, that is, for sentence-sized truth-value carriers. Consider sentence (14) again. It is obvious enough that, taken on its own, it is neither true nor false. It may be true or false in a given context, such as the one represented by (13), but even then we first have to decide that the pronoun is to be interpreted by the discourse referent x , and once we have made that decision, whatever (14) means has become inextricably tied up with the information in (13).

The primary unit of meaning, on this view, is the discourse. In the first instance, it is discourses, not sentences, that have truth conditions. This is not to deny that individual utterances have truth-conditional import. Utterances serve to extend the discourse, and can be assigned meanings in

these terms. For example, we may define the meaning of (14), as used on this particular occasion, in terms of the difference between the truth conditions associated with (15) and (13). But this will yield a merely derivative notion of meaning that doesn't play a role in the theory, and that, moreover, is very much unlike any conventional notion of proposition.

Let us now return to implicatures, and the problem discussed in the previous section:

(16) A cousin of mine read some of Derrida's books. (= (9))

This is interpreted along the following lines:

(17)

| |
|--|
| x x and the speaker are cousins x read some of Derrida's books |
|--|

As in example (13), the singular indefinite causes the introduction of a new discourse referent, x (the plural indefinite will do likewise, of course, but we will leave that for the next section). On the harmless though admittedly unrealistic assumption that the previous context is empty, (17) represents what the speaker said by uttering (16), and it is on the basis of this interpretation that the hearer will ask himself how the fact that the speaker chose to utter (16) can be reconciled with the assumption that he is trying to be cooperative. In particular, why didn't he say that x read all of Derrida's books? And so on. At the end of the line, the implicature is that x hasn't read all of Derrida's books; which is intuitively correct.

Spelling this out in slightly more detail, my suggestion is that statements the speaker could have made instead of (16) are evaluated in the context of (17). For example, the alternative statement that the speaker's cousin read all of Derrida's books might be represented by extending (17) as follows (with the alternative content underlined):

(18)

| |
|--|
| x x and the speaker are cousins x read some of Derrida's books <u>x read all of Derrida's books</u> |
|--|

If this alternative gives rise to an implicature, it is negated, which results in the following model:

- (19)

| |
|--|
| x |
| x and the speaker are cousins |
| x read some of Derrida's books |
| \neg [x read all of Derrida's books] |

Technically, what makes this analysis work is that the semantic value of the indefinite is held constant across alternatives. Conceptually, the idea is that, when considering alternative statements the speaker could have made but didn't, hearers reason in terms of discourse referents: they assume that an alternative statement like, "A cousin of mine read all of Derrida's books", would have been about the *same* cousin. This is just what Grice did in the passages cited above.

Extending the analysis: plural indefinites

As we have just seen, the proposed theory yields predictions that are different from, and better than, a proposition-based account in those cases in which a scalar term, like *some*, is in the scope of an existential expression. If the wide-scope expression is universal, the predictions of the two accounts are identical. To illustrate, consider the following variation on (16):

- (20) All of my cousins read some of Derrida's books. (= (10))

On the received view, this may give rise to the implicature that, as far as the speaker knows, not all of his cousins read all of Derrida's books, or equivalently, that some of his cousins didn't read all of Derrida's books. This is in accordance with my intuitions, and the discourse-based account makes the same prediction. (Recall that this type of example presents a problem for the lexicalist approach advocated by Landman and Chierchia.) We can construe the universal expression *all of my cousins* as introducing a plural discourse referent, X, which represents the speaker's cousins, and the sentence as saying that all members of X read some of Derrida's books. Then the implicature we obtain is that not all members of X read all of Derrida's books, which is the same as before. Hence, adopting the discourse perspective only makes a difference if a scalar term occurs in the scope of a non-universal quantifier. In the last section, we looked at singular indefinites. In this section and the next one, I turn to plural indefinites and existential modals, respectively.

Consider the following example:

- (21) Some cousins of mine read some of Derrida's books.

Adopting the proposition-based approach, (21) will be associated with the implicature that none of the speaker’s cousins read all of Derrida’s books; which is clearly too strong.⁵ On the discourse-based approach, we get the following. By saying (21), the speaker introduces a new discourse referent, X, which represents a collection of cousins of his who read some of Derrida’s books. Reasoning that, if the speaker had known that all members of X read all of Derrida’s books, he would have said so, the hearer infers that, as far as the speaker knows, not all the cousins in question will have read all of Derrida’s books. It seems to me that this is correct.

Apart from what I take to be its intuitive appeal, the proposed analysis has the advantage of extending in a natural way beyond the run-of-the-mill cases of scalar implicature. Take, e.g., the following sentence:

(22) Several of my cousins had cherries or strawberries.

As observed (independently) by Klinedinst (2005) and Eckardt (to appear), sentence (22) will tend to be understood as implying that some of the cousins had cherries and some had strawberries. This inference can be accounted for as follows. An utterance of (22) gives rise to the following model:

(23)

| |
|---|
| X |
| $\forall x \in X$ [x and the speaker are cousins] |
| $\forall x \in X$ [x had cherries or strawberries] |
| <u>$\forall x \in X$[x had cherries]</u> |
| <u>$\forall x \in X$[x had strawberries]</u> |

The underlined parts of this model represent the contents of the alternative statements that the cousins in question had cherries and that they had strawberries. If these alternatives gives rise to implicatures, we get the following model:

[5] More accurately, it is too strong on at least one way of reading the plural indefinites in (21). In general, English *some* may be read as scalar or non-scalar:

- (i) I bought some of the apples.
- (ii) I have some apples.

In (i), but not in (ii), *some* competes with *all*, and therefore it is scalar in the former case but not in the latter. The scalar interpretation may be signalled by stressing *some*, whereas a reduction of the word (“sm”) favours a non-scalar construal. The relevant reading of (21) is the one on which the first *some* is non-scalar while the second one receives a scalar interpretation.

- (24)

| |
|--|
| X $\forall x \in X[x \text{ and the speaker are cousins}]$ $\forall x \in X[x \text{ had cherries or strawberries}]$ $\neg \forall x \in X[x \text{ had cherries}]$ $\neg \forall x \in X[x \text{ had strawberries}]$ |
|--|

This says that not all of the cousins in question had cherries, and that not all of them had strawberries—which is intuitively correct. Furthermore, this model entails that some of the cousins had cherries and some had strawberries, and thus the inferences observed by Eckardt and Klinedinst are entailed by the full information content of (22), i.e. they follow from its implicatures in conjunction with “what is said” by this sentence.

Another way of viewing the Eckardt/Klinedinst inferences is as follows. The interpretation of (22) results in a plural discourse referent, X , representing a collection of cousins who had cherries or strawberries. Now we reason as follows. Could it be the case that none of the members of X had cherries? Presumably not, because then the speaker would have said that several of his cousins had strawberries. Therefore, (22) implicates that some of the speaker’s cousins had cherries, and by the same reasoning we obtain the implicature that some of the speaker’s cousins had strawberries.

Extending the analysis even further: modals

One of the classic problems in modal logic is caused by sentences like the following:

- (25) a. You may read Derrida or Deleuze.
 b. Jill may have been reading Lacan or Althusser.

The problem is that (25a) may be construed as giving the addressee permission to read Derrida *and* to read Deleuze, though not perhaps both; and similarly, on its most natural construal, (25b) implies that, for all the speaker knows, it is possible that Jill was reading Lacan, and it is *also* possible that she was reading Althusser. So the puzzle is that, when embedded under *may*, the disjunctive particle *or* gives rise to a quasi-conjunctive reading.

As observed by Klinedinst (2005) and Eckardt (to appear), this problem has the same logical structure as the one posed by (22)—assuming, of course, that *may* is construed as an existential quantifier over possible states of affairs—and if that is so, it should be solved in the same way. On a standard possible-worlds analysis, statements like (25a) and (25b) make existential claims about sets of possible worlds. Thus, (25a) says that, amongst the

worlds that are compatible with the speaker's wishes (say), there are at least some in which the addressee reads Derrida or Deleuze. Similarly, (25b) says that, amongst the worlds that are compatible with the speaker's beliefs, there are at least some in which Jill was reading Lacan or Althusser.

In the DRT version of this analysis proposed in Geurts (1995, 1999a), modal expressions introduce discourse referents, just like indefinite noun phrases do.⁶ On this account, (25a) prompts the introduction of a discourse referent representing a set of worlds compatible with the speaker's wishes in which the addressee reads Derrida or Deleuze, and similarly, (25b) introduces a discourse referent representing a set of worlds compatible with the speaker's beliefs in which Jill was reading Lacan or Althusser.

Deploying discourse referents only makes sense if there are expressions or constructions that will pick them up, so if we treat existential modals as introducers of discourse referents, there should be modal anaphors, as well. And there are, the italicised expressions in (26) being cases in point:

(26) Suppose Jack read Derrida. *Then* he may read Deleuze, as well. But *in that case* he must read Lacan, too.

This discourse is construed as follows. To begin with, the first sentence introduces a discourse referent, p , representing a set of worlds in which Jack read Derrida. The adverbial pronoun *then* retrieves p , and the second sentence states that there is a non-empty $q \subseteq p$, in all of whose worlds Jack read Deleuze. Then the last sentence picks up q by means of the anaphor *in that case*, and states that Jack read Lacan in all the q -worlds.

Supposing that this treatment is adequate, at least in principle, the solution to the puzzle posed by (25a,b) follows immediately. Suppose Jill says (25a) to Jack. So Jack sets up a new discourse referent, p , representing a set of worlds compatible with Jill's wishes in which he reads Derrida or Deleuze; and then he reasons as follows: "Could it be that I don't read Derrida in any of the worlds in p ? Clearly not, because then Jill would have said, 'You may read Deleuze', rather than (25a). Therefore, I have Jill's permission to read Derrida, and by the same reasoning I have her permission to read Deleuze." The same, *mutatis mutandis*, for (25b).⁷

[6] The same and similar ideas have been pursued by Frank (1997), Stone (1997), and others. I should note that what I sketch here is a somewhat simplified version of my theory of modality.

[7] Following Zimmermann (2000), I have proposed elsewhere that examples like the following call for a non-Boolean analysis of *or* (Geurts 2005):

Jack may read Derrida or he may read Deleuze.

In the same paper, I also suggested that examples like (25a,b) should be treated similarly.

This analysis extends in a straightforward way to the problem posed by disjunctions occurring in counterfactual antecedents (Alonso-Ovalle 2004):

- (27) Had Jill been an expert on Deleuze or Guattari, she might have been given the job.

Intuitively, this implies that the job might have been Jill's if she had been an expert on Deleuze, and likewise if she had been an expert on Guattari. On the proposed account, these inferences come out as implicatures, too, on the assumption that (27) prompts the introduction of a discourse referent representing a set of possible worlds that are compatible with the speaker's beliefs in which Jill gets the job and is an expert on Deleuze or Guattari. I have argued for such a construal in Geurts (1995, 1999a).

According to the received view, an implicature is always calculated on the basis of a proposition expressed by a sentence φ , as uttered in a context c . This can't be right: we need the discourse referents which are *introduced* into c in the process of interpreting φ —and propositions don't contain discourse referents. So there is a choice to be made. If we want to hold on to the opinion that sentences express propositions, we have to assume that, before its implicatures are computed, the context in which φ is uttered must be updated according to φ —but then the proposition expressed by φ is just an auxiliary device for enriching the context. Alternatively, we could give up on propositions, and assume that discourse referents are implicated in utterance interpretation from the start. It will be clear which option I prefer.

Presupposition

We now come to the third way in which implicatures are discourse-based rather than proposition-based, and I will let the cat out of the bag forthwith: I would like to suggest that presuppositions, too, may give rise to implicatures. More precisely, if a sentence comes with a presupposition p , implicatures may be derived from p just as if it was asserted. My argument falls into two parts: first I will show that this is what we observe, and then I will argue that, on any of the more popular views on what presupposition is, this is what one should expect.

First, to the data:

- (28) Jill knows that Jack took some of the apples.

I now believe that was a mistake, and that there are crucial differences between the cases in which *or* outscopes *may* and the ones in which it is the other way round.

Since *know* is a factive verb, (28) presupposes that Jack took some of the apples, and it seems to me that it also conveys (or, at the very least, may be taken to convey) that Jack didn't take all of the apples.⁸ This may be a coincidence, of course, but what about the following examples:

- (29) a. Does Jill know that Jack took some of the apples?
b. Please make sure that Jill knows that Jack took some of the apples.
c. Jill doesn't know that Jack took some of the apples.

As is usual with a bona fide presupposition, each of these sentences suggests rather strongly that Jack took some of the apples. But they also convey (or, at the very least, may be construed as conveying) that Jack didn't take all of the apples. (Note, by the way, that (29a) and (29b) show that non-declarative speech acts may give rise to implicatures, too.) This pattern extends to other presupposition triggers:

- (30) a. It was Jack who took some of the apples.
b. It wasn't Jack who took some of the apples.
c. Wasn't it Jack who took some of the apples?
- (31) a. The man who took some of the apples will be arrested.
b. It's possible that the man who took some of the apples will be arrested.
c. How likely is it that the man who took some of the apples will be arrested?

Ceteris paribus, the sentences in (30) presuppose that somebody took some of the apples (in the first case this is an entailment, as well), and according to my intuitions they will also tend to imply that the person in question didn't take all of the apples. Parallel observations apply to the sentences in (31).

These are admittedly concocted examples, but real data pattern similarly. In (32)-(34) I present samples from the Google corpus involving, respectively, *it*-clefts, factive verbs, and definite descriptions:

- (32) a. It wasn't me who got some of the font sizes wrong on the Vacancy Pages, though!
b. ... perhaps it was they who have convinced some of the Eastern European nations to implement 287.

[8] According to Russell (2006), this inference is "relatively weak", and he reports that his intuition is shared by other native speakers of English. I don't know if this is right, but it would make sense. Given that presuppositions are (presented as) background information, in some sense or other, it is only to be expected that any implicatures they give rise to should be less salient.

- (33) a. Bet you didn't know that some of the guys behind *The Scoop* are actually... girls!
- b. I didn't realize that some of the early church fathers and even the great reformers (Luther, Calvin) believed in the perpetual virginity of Mary.
- (34) a. *Mailer on Mailer* provides an extremely personal glimpse into the life of the man who wrote some of the best and most shocking books of his time.
- b. After all, this was the latest film from Quentin Tarantino, the man who brought some of the greatest films of the last decade.

According to my intuitions, it is not unlikely that the author of (33b) intended to convey to his audience that not all of the early church fathers and the great reformers believed in the perpetual virginity of Mary.⁹ The other examples are similar.

These observations are readily explained if implicatures can be licensed by presupposed material. But how plausible is that assumption? In my view, it is quite plausible, and what is more, it is how it should be on practically any theory of presupposition. This may seem like a rash claim, considering that presupposition research is currently going through one of its turbulent phases, and the diversity of theories is as bewildering as it was in the 1970s. However, as far as I can tell, all current theories share one key assumption, namely, that presuppositional devices may be used for presenting new information. If this much—and it really isn't that much—is agreed upon, it shouldn't come as a surprise that presuppositions, when used for conveying new information, can license implicatures.

On some accounts, the notion that presuppositions may carry new information is entirely unproblematic. For example, one view which recently has found some supporters is that presuppositions are just parts of information that are less central to the speaker's concern than what he wants to assert, question, and so on (e.g. Geurts 1999b, Abbott 2000, Simons 2006). Clearly,

[9] It is important not to conflate the doctrine of perpetual virginity with those of immaculate conception and virgin birth; the three are related but distinct. There is a popular misunderstanding to the effect that "immaculate conception" refers to the conception of Jesus. This is a grave mistake: what the dogma actually says is that *Mary*, at the time of *her* conception, was preserved by God from the stain of original sin. It is the doctrine of virgin birth which asserts that Jesus was conceived without the assistance of a human male. Finally, the concept of perpetual virginity entails that Mary remained a virgin before, during, and after the birth of Jesus. It may also be noted that, in view of recent advances in medicine (especially in vitro fertilisation and refinements in the execution of caesarean deliveries), it is the dogma of immaculate conception that is the most puzzling of the three; the other two have become rather unproblematic.

if one takes this line, presuppositions may carry new information, and thus give rise to implicatures.

Things are somewhat less straightforward if one adheres to what may still be called the received view on presupposition, which is mainly due to Stalnaker (1973, 1974). For, on this account, to presuppose something is to present it as given, as part of the common ground between oneself and the hearer: a presupposition is “an item of presumed common knowledge” (Stalnaker 1973: 450). However, according to Stalnaker and his followers, just as one can present old stories as if they were new, a speaker can present new information as if it were already part of the common ground. In such an event, the speaker dispenses new information by pretending that his audience already know. For example, if I come late to a meeting, I may apologise by saying:

(35) I’m sorry I’m late: my bicycle had a flat tire.

In saying this, I presuppose that I have a bicycle. It may be that no one in the audience knew this beforehand, but they will let me get away with my presupposition because, at least in my own country, it is perfectly normal for people to own bicycles, and because they appreciate that in order to avoid the presupposition I should have resorted to a cumbersome formulation such as:

(36) I’m sorry I’m late: I own a bicycle and it had a flat tire.

Hence, new information can, and often will, be conveyed by way of presupposition:

In such a case, a speaker tells his auditor something in part by pretending that his auditor already knows it. The pretense need not be an attempt at deception. It might be tacitly recognized by everyone concerned that this is what is going on, and recognized that everyone else recognizes it. In some cases, it is just that it would be indiscreet, or insulting, or tedious, or unnecessarily blunt, or rhetorically less effective to openly assert a proposition that one wants to communicate. (Stalnaker 1974: 202)

My point is simply this. Even on an account that explains presupposition in terms of givenness, it has to be granted that, de facto, presupposed information is often new, and that it may be common knowledge between speaker and hearer that this is so. More briefly, presupposition is an accepted way of conveying new information. In this sense it is no different from assertion (which is not to deny of course that presupposition and assertion are different in other respects), and there is no reason why it shouldn’t give rise to implicatures.

If this much is right, something in the received doctrine of “what is said” has got to give. Either presuppositions are part of what is said, or they aren’t. If they aren’t, then what is said is not the only source of conversational implicatures. If they are, what is said is not one thing, but has at least two parts, each of which may give rise to implicatures. Either way, the received view is false.

To conclude

According to received opinion the source of an implicature is always a single proposition expressed, in context, by way of a single utterance. I have argued that this is false for various reasons, all of which show, in different ways, that implicatures are discourse-based rather than proposition-based.

As I may have hinted already, I am not a fan of propositions at all. If I had to nominate the single most pernicious idea in the history of semantics and pragmatics, they would have to compete only with the compositionality principle and Russell’s theory of descriptions. The concept of proposition is,



Figure 1: Proposition

in a popular German phrase, a “*eierlegende Wollmilchsau*”, i.e. a sow that, in addition to meat, is supposed to produce eggs, wool, and milk (Figure 1). The proposition conveyed by a sentence φ is expected to be determined, more or less, by the meanings of the words φ contains and the way they are put together; it has to represent φ 's truth conditions, which at the same time are the key message conveyed by φ ; and it is to be the launch pad for conversational implicatures. I see absolutely no reason for believing that there is one thing that meets all these requirements; in fact, I have argued that there isn't.

“But how are we going to do without them?”, I hear some of my readers cry. My recommendation is to adopt a discourse perspective on interpretation. I have tried to show that the sources of implicatures come in various kinds and varying sizes. A theory like DRT is a natural framework for accommodating this diversity. DRT seeks to capture how utterances serve to update discourse models. In this framework, an assertion is one possible update unit, but there are others. Presuppositions, too, may be used for updating the discourse, and sequences of utterances may be viewed as higher-level updates.

Quantity implicatures may arise whenever the hearer singles out the information proffered by the speaker on a given topic, and assumes that this is all the information he is going to get on the topic in question. The information may be the main point of a statement, it may be a presupposition, or it may have been conveyed by a several utterances. But, generally speaking, it is a far cry from “what is said”.

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