DISCOURSE LOGIC AND CONVENTIONAL IMPLICATURE*

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In the present paper, I want to do two things. First, I want to argue that, contra Grice (1975), the imputation of causality associated with discourse connectives like *therefore* is not a conventional implicature, but simply an entailment of the discourse fragments containing them. Secondly, I want to examine two additional cases of alleged conventional implicature (those associated with *even* and *too*) in order to suggest that this notion is undermotivated by the linguistic data. In the process, I will be arguing that the discussion of conventional implicature provided by Grice and by Karttunen and Peters (1979) fails to distinguish between entailment and conventional implicature in any adequate way.

In his initial presentation of the notion conventional implicature, Grice (1975 : 44—5) claims that in uttering the following discourse fragment (he calls it a sentence, presumably for orthographical reasons), a speaker will have 'committed [himself] by virtue of the meaning of

1. He is an Englishman; he is therefore brave.

[his] words, to its being the case that his being brave is a consequence (follows from) his being an Englishman'. But he denies that any 'utterance of this sentence would be, strictly speaking, false' if the *he* in question were both an Englishman and brave, but that one attribute did not, in fact, follow from the other. In other words, Grice is claiming that the speaker of 1 has not said 'in a favoured sense', that there is a causal relation between

* Portions of this paper appeared in Warner 1979, and an earlier version of it was presented during a seminar at Ohio State University in May, 1979. My thanks are due to those who heard it then as well as to David Dowty, Bill Lycan, Greg Stump, and Arnold M. Zwicky, each of whom gave much valuable criticism. It should not be assumed, of course, that any of them would fully endorse any claim made herein.

the two states of affairs described. Instead, he claims, the imputation of causality arising from 1 is a conventional implicature of 1, to which the speaker is committed 'by virtue of the word therefore'.

As already indicated, I want to claim that this imputation is an entailment of 1, not a conventional implicature[1]. But before arguing against Grice's position, I need to expound upon his notions *saying in a favored sense* (hereinafter, SAYING) and conventional implicature as they compare with entailment. By entailment, I mean the following: if one logical structure P entails another logical structure Q, then Q cannot be false without P also being false. By extension, a sentence is an entailment of a discourse fragment if the sentence cannot be false without the fragment also being false. The test for entailment is simply this, then: if the conjunction of a discourse fragment with the negation of a sentence alleged to be an entailment of that discourse fragment yields a contradiction, then the sentence is in fact an entailment of that discourse fragment. This is essentially the same test which Grice uses in distinguishing what is SAID from what is conventionally implicated, so we can say that if something is SAID, it is also entailed. What is SAID is logically independent from what is conventionally implicated, however, since the implicature can be false without thereby falsifying what is SAID.

But if something is entailed, it is not necessarily thereby SAID. Entailment is a relationship between logical structures. But if something is SAID it is also asserted, and assertion is a speech act which expresses a relationship between a logical structure and the real world. That SAYING is in fact a speech act is supported by Karttunen and Peters (1979 : 14), who offer the property which I will refer to as *non-challengability* as a definitional characteristic of conventional implicature: a conventional implicature cannot be 'challenged in a direct way ... if one wishes to take issue with one of the conventionally implicated propositions, one has to spell it out explicitly'. What is SAID, on the other hand, can be challenged directly. But challenging assertions, like making them, is a kind of speech act; it amounts to denying the claim that a relationship between a logical structure and the real world obtains. And as a speech act, we would expect its felicity to be dependent on other than purely logical considerations. It surely isn't difficult to find examples of entailments which cannot be challenged 'in a direct way'. Thus, for example, both 2a and 3a entail that John is a Republican:

2a. John, who is a Republican, voted for Reagan.

[1] What I have to say about the truth conditional content of *therefore* would also apply to discourse connectives such as *so*, *consequently*, *thus*, and *because* which, as I argue in Warner 1979, express the same semantic relation (viz. CAUSATION) between sentences. Similar arguments could also be constructed to show the truth conditional content of other discourse connectives, such as *otherwise*, *moreover*, *at least*, and *like*.

b. ?No he isn't.

3a. Ever since John became a Republican, he hasn't been any fun at all.

b. ?No he isn't.

Yet the b sentences are distinctly odd, if not impossible, as challenges to their respective a sentences. This is what we would expect if only what is asserted is subject to being challenged directly, for what is challenged in each case is entailed, but not asserted, by the a sentence.

Is there further evidence that only asserted propositions can be directly challenged? I believe there is. Consider the following sentences:

4. Harry's going because I'm going.
5. Because I'm going, Harry's going.

I know of no evidence to suggest that 4 and 5 have different entailments (I have argued elsewhere—in Warner 1979 : 47–51—that these entailments are that I'm going, that Harry's going, and that the second event is caused by the first). But their having the same entailments does not mean that those entailments are equally susceptible to being challenged in each sentence. Sentences 4 and 5 can both be challenged by 6:

6. No he isn't.

If 4 is so challenged, the most favored understanding of 6 is something like 'he's going for some other reason'. But if 5 is challenged by 6, that understanding is not available, as illustrated by 7—an extremely odd sequence:

7. S1: Because I'm going, Hárry's going.
   S2: *No he isn't; he's going for some other reason.

Instead, 6 is understood as challenging the entailment that Harry is going. But as 8 illustrates,

8. S1: Harry's going because I'm going.
   S2: ?No he isn't; he's staying.

this reading is only marginally available when 6 is used to challenge 4.

Further evidence that an utterance's potential for being challenged is sensitive to other factors than just the entailments of that utterance is given by the following two sequences:

9. S1: Harry's going, because I'm going.
   S2: No you aren't.
10. S1: Because I'm going, Harry's going.
    S2: *No you aren't.

The first sentences in 9 and 10 are semantically equivalent—indeed, there appears to be no reason for believing that they make different assertions.

Yet the entailment that S1 is going can be challenged quite directly in 9 but not in 10, even though the only demonstrable difference between the two sequences is the relatively minor one of the surface position of the adverbial clause relative to the matrix clause.

Now I am in a position to make the following distinction between SAYING and conventional implicature. For a proposition to be SAID by a particular utterance, two distinct conditions must be met: it must be an entailment of the utterance, and the utterance must count as an assertion of that proposition. It is only in cases where neither of these conditions is met that the proposition —assuming that the speaker of the utterance in question is committed to the truth of that proposition by virtue of the meaning of his words—is a conventional implicature. In what follows I will be arguing that the imputation of causality arising from fragments like 1 satisfies not one but both of these conditions, and that Grice's position with regard to *therefore* is without foundation.

First, some evidence pertaining to the question of entailment. Grice's position is that *therefore* makes no contribution to the truth conditions of the discourse fragment in which it occurs beyond the simple conjunction of the fragment's two constituent clauses. Note that this is equivalent to saying that *therefore* makes no semantic contribution at all, since a discourse fragment like 11, which doesn't contain a connective, also entails the conjunction of its

11. He is an Englishman; he is brave.

constituent clauses. But in fact it is not impossible to find examples where the inclusion of *therefore* does affect the truth conditions of utterances containing it. One such example was discovered by Kempson (1975:214), who cites the following:

12. If Bill hit Mary and therefore she was covered with bruises, she will have won her suit for damages.

She points out that 12 will be false if its antecedent is true and its consequent false. But if the antecedent of 12 were semantically equivalent to 13,

13. Bill hit Mary and she was covered with bruises.

and if Mary did in fact lose her case, we would not consider that state of affairs to falsify 13.[2] In fact, if Mary's counsel could only prove she would, given our current legal system, almost certainly lose her case for damages. For 12 to be false, its antecedent must entail not only 13 but something like 14:

14. Bill's hitting Mary caused her to be covered with bruises.

[2] There is a conversational implicature arising from 13 which is equivalent to 14. This implicature is irrelevant to the present discussion and will be resolutely ignored.

For Mary to win her case, she would have to prove 14. Hence, Kempson notes, *therefore* does indeed make a contribution to the truth conditions of 12, and this contribution cannot be explained by any appeal to an alleged conventional implicature.

Kempson's example involved subordinate clauses within a matrix clause. It is also possible to construct discourse fragments containing *therefore* and thus having truth conditions different than the simple conjunction of their constituent sentences. Most of us, for example, would probably accept the truth of 15, but would still not feel that 16 was true:

15. Italy was a member of the Axis during World War II and the Carthaginians lost the First Punic War.
16. Italy was a member of the Axis during World War II. Therefore, the Carthaginians lost the First Punic War.

Moreover, if sentences or discourse fragments containing *therefore* had only the entailments of analogous sentences and discourse fragments containing *and*, then we would expect that the operation of commutativity would be truth preserving. That is, we would expect 17 to be true in just those conditions under which 18 is true:

17. Ignatz did well in school. Therefore he was liked by his teachers.
18. Ignatz was liked by his teachers. Therefore he did well in school.

But this is not the case; these two fragments make quite different claims. So, since *therefore* denotes a semantically asymmetric relation, that relation cannot be equated with conjunction[3].

There is also evidence to suggest that the imputation of causality arising from fragments like 1 (which we are now justified in calling an entailment of 1) satisfies the other condition for being SAID, namely, the property of counting as an assertion. For it turns out that this entailment can be challenged, and this property is restricted to asserted propositions. One can easily imagine, for example, the following response to 1 (say, by a Scotsman):

19. That's not true; he's brave in spite of the fact that he's an Englishman.

This response certainly takes issue with the entailment in question. It could be argued that 19 does not count as a direct challenge to 1 because the challenger has to spell out what part of 1 is being challenged. But my response to that

[3] This failure of commutativity can also be shown with Kempson's example. Note that the truth of 12 is no warrant for believing the following, which is in fact (again, given our legal system) probably false:

If Mary was covered with bruises and therefore Bill hit her, she will have won her suit for damages.

would be to point out that the challenge *that's not true* is very vague, since it could be taken as a challenge to any of the propositions entailed by 1, and in actual conversation it would probably be necessary in any case to spell out which of these were being challenged. Certainly, any of the following are possible continuations of 1:

20. S1: He's an Englishman; he is therefore brave.
    S2: That's not true.
    S1: What d'you mean?
    S2: He's an arrant coward.
    He's a Scotsman.
    He's brave in spite of the fact that he's English.

It is true that the locution 'challenge in a direct way' is itself sufficiently vague that it is hard to use it as the basis of a conclusive test. Nevertheless, it seems clear that the entailment of causality in question can be challenged reasonably directly. This, in conjunction with the entailment facts already discussed, leads me to believe that anyone uttering 1 has in fact SAID that there is a causal relation between the two states of being English and being brave.

It seems fair to say, then, that the datum which originally motivated the notion conventional implicature in the first place fails to satisfy either of the criteria Grice set up for it. But there are other cases which have been cited as alleged examples of (lexical) conventional implicatures. The most commonly cited of these (e.g. by Horn 1969, Fraser 1971, Kempson 1975, and Karttunen and Peters 1979) is the particle *even*. But this particle fails to satisfy one of the criteria for conventional implicature discussed above, since its content is, in at least the clear cases, truth conditional. I will develop this claim below; first I would like to suggest that Karttunen and Peters cannot account for this because they make a two way distinction between SAYING and conventional implicature while failing to distinguish SAYING from entailment. As a result, they cannot adequately distinguish between entailment and conventional implicature.

This can be seen, I think, by examining their discussion of the characteristics of conventional implicature. In addition to challengability (which, as noted above, is a property of assertions and not necessarily of entailments) they offer the following two criteria (1979 : 2).

Detachability: 'there is another way of saying the same thing without giving rise to the implicature'

Non-cancelability: 'it is contradictory for the speaker to deny something that is conventionally implicated by the sentence he has uttered'

The first of these criteria seems to speak to the irrelevance of what is conventionally implicated by any utterance to the truth conditions of that utterance. It fails, however, to distinguish between entailment and conventional implicature, and in fact we can only understand the definition of this criterion if we already know how to distinguish the two kinds of inferences. As a result, if we make the natural assumption that 'saying the same thing' means SAYING the same thing, then some entailments—namely, all those which are not asserted—would be mischaracterized as implicatures. Consider the following, for example:

21. Ralph, who is a Republican, voted for Reagan.
22. Ralph voted for Reagan.

Both of these sentences make the same assertion: that someone named Ralph voted for Reagan. They should therefore satisfy the criterion under discussion. But they clearly do not have the same truth conditions, since 21 entails that Ralph is a Republican and 22 does not.

We need to redefine this criterion to capture the necessary distinction:

An imputation is *detachable* if there is another possible utterance which will make the same assertion, share the same truth conditions, and not give rise to the same imputation.

Unfortunately, there does not appear to be any possible way of redefining non-cancelability to make this same distinction. This criterion rests on the notion of contradiction, which is a semantic notion, definitional of entailment. As written, then, this definition seems to equate conventional implicature with entailment, which cannot be what Karttunen and Peters intended: if they did, they presumably would not refer to 'both truth conditional and conventionally implicated meanings of sentences' (1979 : 3). At any rate, the only surviving criterion for distinguishing valid instances of conventional implicature from entailment is detachability, as redefined.

But this criterion turns out to be very problematic in its application. When, for example, Karttunen and Peters (1979 : 11—3) claim that 23 and 24 have the same truth conditions, and that 25a and 25b are conventional implicatures, and not entailments of 23, they are appealing to our semantic intuitions.

23. Even Bill likes Mary.
24. Bill likes Mary.
25a. Other people besides Bill like Mary.
b. Of the people under consideration, Bill is the least likely to like Mary.

But such intuitions are often unreliable: my own intuitions in this particular case, for example, differ sharply from theirs, and there is no obvious way of arguing whose intuitions are most valid.

The following data, however, allow a stronger claim to be made about the truth conditional content of *even*. The only surface difference between 25 and 27 is that 26 contains the particle *even* and 27 does not:

26. Mary will leave even if John stays.
27. Mary will leave if John stays.

But it can easily be demonstrated that these sentences do not have the same truth conditions, since 27 allows modus tollens and 26 does not. So given 27 and 28, it is a valid inference that John didn't stay (I am ignoring tense here):

28. Mary didn't leave.

No such inference is possible from the conjunction of 26 and 28; indeed, this conjunction yields a contradiction. This is so because, as Fraser (1971 : 157—58) notes, so called concessive conditionals are not conditionals at all: 26, but not 27, entails 29:

29. Mary will leave.

But to say that Mary's leaving is not conditional on John's staying is equivalent to saying that 26 entails 30:

30. Mary will leave in other events besides that in which John stays.

So, just as 23 commits its speaker to 25a, 26 (but not 27) commits its speaker to 30. But 30 is clearly an entailment of 26. And, insofar as 30 and 25a are corresponding inferences of the assertions 26 and 23, respectively, it seems implausible to claim that such apparently similar inferences are due in one case to entailment and in the other to conventional implicature[4].

Another piece of evidence cited by Karttunen and Peters has to do with the behavior of *even* in embedded clauses. They cite 31

31. I just noticed that even Bill likes Mary.

and claim (correctly, I think) that this sentence 'says that the speaker has just noticed that Bill likes Mary... not ... that he has just noticed that other people like Mary or... that Bill is the least likely person to do so' (1979: 13). But it is not clear to me that this is relevant to the issue of 23's (or for that matter, of 31's) truth conditions. Consider the following two pairs of sentences:

[4] With regard to 25b: Kempson (1975:200—2) has argued that this sort of felt implication is cancelable. If so, 25 b would also fail to be a conventional implicature. But whether or not her claim is correct, it is irrelevant to may present goal of showing that *even* does indeed affect the truth conditions of sentences co ntaining it.

32a. Bill, who is a misogynist, likes Mary.
b. I just noticed that Bill, who is a misogynist likes Mary.

33a. Mary is from Massachusetts, where McGovern won in 1972.
b. I just noticed that Mary is from Massachusetts, where McGovern won in 1972.

It seems plausible that in uttering 32b the speaker has in no way committed himself to just noticing that Bill is a speaker. But it's not at all clear, that 32b can be true unless Bill is a misogynist. What is clear, I think, is that 32a must be false if Bill is not a misogynist. Similarly, 33a must be false if McGovern lost in Massachusetts in 1972, but the speaker of 33b is not committing himself to just noticing that fact. If this is correct, then it is not true that '*notice* applies only to the proposition that constitutes the truth conditions of' the clause embedded under it (Karttunen and Peters 1979:13). Instead, it looks as though *notice* applies to the assertion made by the embedded clause.

A final piece of data presented by Karttunen and Peters is the following

34. If even Bill likes Mary, then all will be well.

They claim (1979 : 15) that 34 does not commit the speaker to 24, but that it does commit him to 25a and 25b. If so, they continue, 25a and 25b cannot be entailments of 34, but need to be treated differently from the truth conditional aspects of meaning. But here again it is possible to find entailments which appear to survive inclusion in *if* clauses:

35. If Bill, who is a misogynist, likes Mary, then all will be well.

36. All will be well if Mary is from Massachusetts, where McGovern won in 1972.

I conclude from this that 34 does not provide evidence against the claim that *even* has truth conditional content. In fact, this same datum can be used to support the position that *even* makes a contribution to the truth conditions of 34. Note that the antecedent of 34 is ambiguous, in that it makes the consequent conditional on two distinct states of affairs. In one—that envisioned by Karttunen and Peters—it has a sense something like 37:

37. If everyone—even Bill—likes Mary, then all will be well.

On the other reading, 34 has a sense something like 38:

38. If anyone—even Bill—likes Mary, then all will be well.

I will not propose an analysis of this ambiguity here, except to note that it must be due to the presence of *even*, since 39 is not ambiguous:

39. If Bill likes Mary, then all will be well.

But I will point out that 34, like any conditional, can be falsified only if its antecedent turns out to be true and its consequent, false. With that in mind, note that 40 counts as a denial of the reading expressed by 37, while 41 counts as a denial of the reading expressed by 38. Note further that neither of these would count as a denial of 39. So, if the two readings of 34 can be falsified by denial of the content of *even* for each reading, and

40. S1: If even Bill likes Mary, then all will be well.
    S2: That's not true: she is so conceited now that if everybody likes her she'll be impossible.
41. S1: If even Bill likes Mary, then all will be well.
    S2: That's not true: if only one person likes her, she'll be terribly upset.

if neither of these denials falsify 39, it would follow that the content of *even* must be part of the truth conditions of 34 on both readings.[5]

To summarize: there appears to be no clear evidence that the particle *even* has any content which must be explicated in terms of conventional implicature. On the contrary, the weight of the evidence supports the position that *even* has truth conditional content which must be accounted for by any adequate analysis.

Another case cited by Karttunen and Peters is that of the particle *too*, which they identify as 'a particularly simple example of conventional implicature' (1979:35). This is not the place for a full analysis of this particle. However, it appears fair to say that in a number of cases (if not in all) this particle acts as a device for emphasis. In fact, it is not clear that *too* has any more content than contrastive stress—that 42, for example, has any content not shared by 43:

42. Harry drinks, and John drinks too.
43. Harry drinks, and John drinks.

But in any case, I believe that it is simply false to claim, as do Karttunen and Peters, that a sentence like 44 implicates or even suggests that anyone else drinks.

44. John drinks, too.

[5] Following a line of argument suggested by Kempson (1975:217–8), one might also argue that the interaction of even with the truth conditional operator *if* (which allows the ambiguity in question) is itself suggestive that *even* has truth conditional content.

I say this because sentences like 44 do not occur in isolation or even as the first of a series of sentences within a discourse. For 44 to be uttered with noun phrase focus, and for the proposition that someone else drinks to follow from it, it will have to follow a sentence which entails that someone else drinks. Hence, far from being an implicature of 44, the proposition that someone other than John drinks can only arise as an entailment of the discourse in which it occurs.

For evidence that the noun phrase focused reading of *too* does not in general lead to any conventional implicature of the existence of other noun phrases with the same properties, consider 45:

45. Your mother's coming to visit, too.

If Karttunen and Peters are correct, then it should be true that the utterance of 45 will irrevocably commit the speaker to the position that someone else is coming to visit. But it doesn't. Imagine a situation in which a harried wife is greeting her husband at the door with the following remarks:

46. We've got a rough weekend ahead, honey: the basement's flooded and your mother's coming, too.

Given this discourse fragment, the existential implicature cited above never arises. I conclude from this that it fails to satisfy the criteria defining conventional implicature[6].

In this paper, I have examined three words which have been alleged to lead to conventional implicature. One of them, *therefore*, was shown to make contributions not only to the truth conditions of the discourse fragments containing it, but also to what was asserted (what was SAID) by those fragments. The second, *even*, which apparently has no effect on the assertional content of utterances containing it, was shown to have truth conditional content. The third, *too*, was argued to make no contributions to the meaning of sentences containing it beyond those arising from the sentences without the particle and the context of the sentences. In other words, the same notion has been used to attempt the analyses of lexical items of distinctly different semantic and pragmatic types. It is very difficult to prove a negative, and to prove conclusively that there are no such things as conventional implicatures would be virtually impossible. But the burden of proof must be on those who claim that an additional piece of descriptive or theoretical apparatus is

[6] It could be argued that the non-occurrence of this implicature merely shows that the focus of *too* in this example is not the stressed noun phrase. But since stress is the only formal indicator of focus, that response would reduce to vacuity the claim that *too* leads to an existential implicature when it has noun phrase focus, since the only remaining way to tell if *too* had noun phrase focus would be to find that it led to a conventional implicature.

needed. The examples discussed above suggest that, far from adding to our understanding of the semantic and pragmatic content of natural language, the notion conventional implicature simply adds to our confusion. Hence, I would conclude, we would be better off without it.

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