ARGUMENTATIVE PROPERTIES OF PRAGMATIC INFERENCES[*]

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I. Empirical Domain

We're interested in the argumentative properties of conversational implicatures.

I.A.   Central data

The **reinforcement** of implicatures, illustrated in (2), doesn't appear as *free* as it is sometimes claimed to be ([Sadock,78], [Levinson,00]…)

1. *a:* Do you know whether John will come?
    b: It's possible

2. +> It's not sure that John will come

The reinforcement of (2) appears better with an adversative connective:

3. It's possible but it's not sure

4. # It's possible and it's not sure

Although (4) can be construed as a felicitous utterance, a simple Google search for "*possible and not sure*" yields far less results than "*possible but not sure*"[1], suggesting the former is indeed generally dispreferred.

I.B.   A first generalization

We observe an apparent correlation between the argumentative orientation of implicatures and the *Q-based* and *R-based* implicatures classes presented in [Horn,89].

1. Reinforcement

We can check that the usual examples of *Q-implicatures* behave as in (3) when reinforced: clausals in (5), implicatures related to the maxim of manner in (6) and to attitude verbs in (7).

5. *a:* Where is Susan?
    b: Susan is in the kitchen or in the bedroom, #(but) I don't know which

6. *a:* What did Max do?
    b: Sam caused Max to die, #(but) he didn't kill him on purpose

7. *a:* What did you learn about Sam?
    b: Sam thinks Mary is pregnant, #(but) she isn't

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[1] Actually it doesn't produce any result at all. All the occurrences are of the form "**only** possible, but not sure". The use of restriction conventionally expresses the content of the implicature and the resulting utterance has different properties.

R-implicatures come in a wide variety of shapes. Their reinforcement doesn't allow for an adversative connective:

8. *a:* What has Gwen done when she came home?
    b: Gwen took off her socks and jumped into bed, (#but) in that order

9. *a:* What did Sam and Max?
    b: Sam and Max moved the piano, (#but) together

10. *a:* What happened?
     b: Walther broke a finger, (#but) it was his

11. *a:* What happened yesterday night?
     b: Cindy had a few drinks, (#but) they were alcoholic ones

2. Cancellation

Unsurprisingly, the *cancellation* of implicatures shows an opposed preference for the use of adversative connectives (as already noted in [Benndorf, Koenig, 98]).

12. It is possible that John will come, (#but) it's even sure

13. Gwen took off her socks and jumped into bed, #(but) not in that order[2]

From this Benndorf and Koenig conclude that *but* is intrinsically sensitive to the *Q* or *R* nature of an implicature. In (14) we give Anscombre and Ducrot original description of the meaning of *but* and in (15) we give Benndorf and Koenig's adapted version.

14. [Anscombre & Ducrot]: *A but B* is felicitous iff there is a proposition p such that

     a.   *A* is an argument for p

     b.   *B* is an argument for $\sim p$

15. [Benndorf & Koenig]: *A but B* is felicitous iff there is a proposition p such that

     a. p is an *R-inference* or a "world inference" derived from *A*

     b.   *B* together with the common ground entails $\sim p$

I.C.   Shortcomings

According to the analysis in (15), (16b) has to be an *R-implicature* derived from the first conjunct of (16a) and thus conveyed by this conjunct.

16. *a:* Mary almost fell but she caught herself
     b: Mary fell

(16) illustrates a central point in Ducrot's account of language : an utterance can convey a given meaning and at the same time argue in an opposite direction.

Another problematic example is the possibility of utterances such as (17), involving an adversative connective to cancel (what appears as) a *Q-based implicature* (highlighted in bold face)[3].

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[2] Dropping the *but* would be acceptable in (13) with a specific prosody on the cancelling part. We take this to be a cue marking for contrast.

[3] One can note that without a reformulative such as "*in fact*" the sentence would sound odd; this is characteristic of the cancellation of all Q-based implicatures.

17. (*Mother*): I hope Kevin has been polite with Granny and he has managed to eat some of her terrible cookies
(*Father*): The problem is, he did eat some of them, **but in fact he ate all of them** and Granny said that he was greedy

II. The case of R-based implicatures

R-based implicatures lack a propositional content of their own: they can't be expressed independently of the utterance that conveys them:

18. For a given *R-based* implicature *q* derived from an utterance *p*, the linguistic expression *r* used to reinforce *q* is such that $r \rightarrow p$ (*r* is the enriched form of *p*)

In Levinson's terms, an *R-implicature* can only be expressed through an ***implicature***.

Considering an utterance *p* R-implicating *q* we have:

19. Reinforcing *q* is only possible by using **q* the **implicature* associated to *q*

    a. Reinforcing *q* with an adversative connective is done with a sentence of the form $U = p \ but \ *q$

    b. Interpreting *U* leads to an enriching of the content of *p* to **q*

    c. *U* should be interpreted as **q but *q* which is infelicitous

    d. To redeem the utterance the derivation of *q* from *p* is dropped

III. Argumentativity

Recent approaches in pragmatics ([Merin,99], [van Rooij, 04]) make crucial use of the notion of *relevance*, which is closely related to that of *argumentativity* as introduced by Ducrot.

Merin formalizes *argumentativity* as in (20).

20. A proposition *q* is an argument for a proposition *r* iff *q* is relevant to *r* (roughly: asserting *q* increases the probability of *r*)

We use the description of the contribution of *but* given in (14) and reformulate it thus:

21. *p but q* is felicitous iff there is a proposition *H* such that $r_H(p)>0$ and $r_H(q)<0$

Where $r_H(p)$ stands for the relevance of proposition *p* to proposition *H* (often the topic at hand).

Although the actual inference mechanisms differ between the approaches they all share a common point:

22. Most conversational implicatures attributed to Grice's *Quantity-1* maxim can be (and often are) derived by negating more relevant propositions that were not asserted. Thus, if *q* is conversationally conveyed by *p* in this manner, it is such that $0< r_H(p) <r_H(\sim q)$.

Among other things, this allows the derivation of the implicature (23c) (first given in [Hirschberg,85]).

23. *a*: (*Recruiter*): Do you speak Portuguese?
b: (*Applicant Jane*): My husband does.
c: +> Jane doesn't speak Portuguese.

III.A. Adversary Implicatures

An explanation for the possibility of marking a contrast is then straightforward:

Given an utterance of propositional form *p* that conversationally implicates *q* in the aforementioned manner, an utterance *U = p but q* is felicitous iff:

24. The goal of conversation *H* is such that $r_H(p)>0$ and $r_H(q)<0$

25. If *q* is as in (22):

    a. by Ducrot's *law of inversion* : $0< r_{\sim H}(q) <r_{\sim H}(\sim p)$

    b. therefore *q* is an argument for ~*H*: $r_H(p)= - r_H(p)<0$

    c. => the conditions for the use of an adversative are met

Let's call the implicatures derived in the manner of (22) *adversary implicatures*.

III.B. Allied Implicatures

The property in (22) isn't true of all implicatures. Most notably we don't want it to apply to (17).

As shown by its cancellation, the implicature from *some* to *not all* in (17) has the same argumentative orientation as the sentence using *some*. We will call such implicatures *allied implicatures*.

To explain (17) let's consider:

- *p*: the proposition denoting all worlds such that Kevin ate some cookies but not all
- *q*: the proposition denoting all worlds such that Kevin ate all of the cookies
- *U*: the utterance "Kevin ate some of the cookies"
- *H*: the "discourse goal" "Kevin behaved well at Granny's"
- The relevancies of *p* and *q* are such that: $r_H(\sim q) < 0 <r_H(p)$; it would be counter-argumentative to utter a sentence containing *all* if the speaker wishes to argue for *H*
- The denotations of *p* and *q* are in that of *U*, but *U* can't argue for both *H* and ~*H*
- There is a way to argue explicitly in favour of ~*H* (by using *q*), a hearer is thus entitled to understand that the speaker meant *p* (and had no choice but to use *some* since there's no way to express *p* straightforwardly, as abundantly commented in [Horn,89])
- An implicature of content ~*q* is then derived, but on different grounds than in (22)

In other terms we could say that *q* doesn't belong in the speaker's commitment.

III.C. Application: Possible Discourses

We now look at the possible discourse connectives for the reinforcement or cancellation of the inferences based on the following parameters:

- The logical relation between an implicated meaning and the utterance that conveys it (whether the implicature entails the utterance or is independent of it)
- The argumentative link between the implicated meaning and the utterance that conveys it: adversary or allied

The results are presented in *Table 1* with the preferred connectives and the reference to examples.

	Operation	Adversary impl. $0< r_H(p) < r_H(\sim q)$	Allied impl. $r_H(\sim q) < 0 < r_H(p)$
Entailment scale: $\sim q \rightarrow p$	Reinforcement: p,q	Adversative (3)	Ø/Reformulative? (27)
	Cancellation: p,~q	Reformulative (26)	Adversative+ Reformulative (17)
Logically Independent propositions	Reinforcement: p,q	Adversative (28a)	N.A.
	Cancellation: p,~q	Reformulative (28b)	N.A.

Table 1 Preferred Discourses Connectives

26. It's possible that John will come, in fact it's sure

27. Kevin ate some of the cookies and (?in fact) not all of them so Granny said he was a polite boy.

28. *a:* My husband speaks Portuguese, but I don't
    b: My husband speaks Portuguese, in fact I also speak it

The grey areas indicate that we couldn't find proper examples of allied implicatures that would be independent of the utterance that conveys them. We think we can't derive such inferences.

1. A Note on Reformulatives

An interesting point in *Table 1* is that the presence of a reformulative connective (such as *in fact*) is preferred for the cancellation of implicatures independently of the argumentative orientation of the implicatures.

In the case of the cancellation of allied implicatures the preferred solution is to use both an adversative and a reformulative connective.

2. Reverting the Order

Depending on the logical dependence of inferences to the utterance that convey them we observe that discourses of the form $\sim q$, p are acceptable (cf. (29a)) or not (cf. (30) and (31)).

29. I speak Portuguese, and so does my husband

30. # It's sure that John will come, (in fact/but/and) it's possible

31. # Kevin ate all the cookies, (in fact/but/and) he ate some of them

These utterances match (28b), (26) and (27) but change the order of the discourse segments.

In (30) and (31) a *consequence* link would be acceptable, but the resulting utterances wouldn't be irrelevant as answers to the considered questions.

In (29) the content of a weaker argumentative proposition that isn't entailed by the first segment can be felicitously asserted. The weaker argument appears as a strengthening of the first.

In the case of logically related propositions asserting an entailed proposition is infelicitous, even if it has an opposite argumentative orientation (as in (31)). In the latter case the only proper way to handle the second conjunct would be to interpret *some* as *some but not all* which would contradict the first conjunct.

IV. Preferences

In **III.A** we explained the *possibility* of having an adversative connective, not the *preference* for it.

IV.A. Maximization

[Sauerland,08] postulates a principle of "Maximize Redundancy" that we paraphrase as in (32).

32. Prefer an utterance that presupposes an already existing proposition

This principle accounts for the oddness of (33a) versus (33b).

33. *a:* # A father of the victim came to the scene of the murder
    b: The father of the victim came to the scene of the murder

Since in (3) an argumentative opposition is present between the conjunct, one could argue that (3) is favoured over (4) because an adversative "captures" the opposition already present.

This leaves several questions unanswered:

- The argumentative contribution of *but* isn't usually treated as presupposition, but rather as a conventional implicature or as a secondary content (see [Bach,99])

- It is not sure that the preference for (3) over (4) is as strong as the preference for (33b) over (33a) and thus the applicability of the same principle for the two pairs could be seen as dubious

IV.B. Idiosyncrasy

In [Asher, Lascarides, 03] the semantics of the discourse relation *Contrast* are such that:

34. a clue for the *Contrast* relation such as a cue element like *but* or intonation is necessary when two propositions are connected and one proposition denies a default consequence of the other

In example (35) the second conjunct denies a default consequence of the first and thus a "cue marker" is necessary. Simple juxtaposition is possible only with a specific intonation.

35. John hates sports, #(but) he likes curling

Thus we could consider that the systematic argumentative opposition in (3) somehow embodies the relation of *Contrast*.

However it's not clear how the second conjunct of (3) denies a default consequence of the first. Even if it can be figured out[4], one can find examples that exhibit the same preference and for which the second conjunct appears very redundant with the first:

36. *a:* Does John want some cake?
    b: Yes, he'd like a bit of cake, but not a lot.

V. Conclusion

We argued that we can't account for the argumentative properties of pragmatic inferences on the sole basis of classical Gricean mechanisms.

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[4] *e.g.* by considering that *being sure* entails *being possible* and thus that the implicature denies a situation compatible with *being possible*.

Rather, it's in argumentative frameworks that the argumentative relations linking an implicature and the utterance that conveys it can be described. The argumentative properties of the implicatures stem from the propositions they express and not from their inferential nature.

We showed that the operations of implicature reinforcement and cancellation were not *free* as often supposed, but should obey discursive constraints related to the argumentative and logical links between an utterance and its inferences.

One point remains open to investigation: the exact reason for the preference for certain connectives. As stated we claim that this preference is not grounded on inferential mechanisms. We intend to pursue an experimental validation of this claim based on recent results (see [Breheny et al.,05] and [Noveck,Sperber,07]) that suggest that implicatures are a nonce phenomenon. If the same preference for adversative connectives is observed in the absence of the implicatures this would strengthen our position.

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