Versatile anti-presuppositions in counterfactual conditionals

Adèle Hénot-Mortier

Massachusetts Institute of Technology

The puzzle

O-marked and X-marked conditionals

(1) a. If it **is** raining outside, then Sally **is** inside.

 b. If **was** raining outside, then Sally **would be** inside.

- Semantically, (1a) and (1a) seem to convey different meanings: (1a) talks about the actual world while (1a) seems to talk about (plausible) possible worlds.

- Morphosyntactically, (1a) uses the present indicative while (1b) uses the simple past and an extra modal auxiliary in the consequent (*woll*).

- Following we call this *morphosyntactic* marking O-marking in the case of (1a) and X-marking in the case of (1a).

- Other languages may use other strategies to X-mark, among which special tense, mood, aspect, or special independent markers.

The counterfactual inference

(1b)   If **was** raining outside, then Sally **would be** inside.

- Roughly, (1b) implies that the closest possible worlds in which it is raining outside are such that Sally is inside.
- But it also conveys something more, namely that it is actually not raining outside. Some evidence that this is not part of the core meaning of (1b):

(2)   a.   It's not the case that if it was raining outside, Sally would be inside.
          ⤳ Not raining.
      b.   Perhaps if it was raining outside, then Sally would be inside.
          ⤳ Not raining.
      c.   Is it true that if it was raining outside, then Sally would be inside?
          ⤳ Not raining.
      d.   (1b) –Hey, wait a minute! I did not know it wasn't raining outside!

- We call this inference the counterfactual inference (CI), which arises in a majority of X-marked conditionals.

The nature of the CI

- The tests in (2) suggest that the CI is a presupposition. But why would X-marking (whose realization is variable across languages) be the trigger for such an inference? What is the role of the competing O-marked conditional? Also, why does the CI disappear in sentences like (3) – dubbed Anderson Conditionals?

(3) If Jones had taken arsenic, he would have shown the same symptoms he is actually showing.

- In this talk, we want to better understand the source of the CI, by relating the use of X-marked conditionals to the QUD:
    - We show that the inference pattern of a conditional depends on *how* it answers a given QUD.
    - We relate this observation to a constraint stated by Heim about the use of presuppositions in answers to questions.
    - We show how this line of reasoning could apply to Anderson conditionals.

- A conditional *If P then Q* can answer differ kinds of questions:
  - Is "If P then Q" true?
  - Under what conditions is Q true?
  - Is P true?
  - Is Q true?
- In te talk, we focus on the last two. For instance, we assume that (1b) repeated below can answer the QUDs in (4) and (5).

  (1b) If **was** raining outside, then Sally **would be** inside.

  (4) Is it raining outside?

  (5) Is Sally inside? (More generally: what about Sally?)

(6) QUD: Is it raining outside?
If **was** raining outside, then Sally **would be** inside.
Conveyed answer: It is not raining outside, *because sally is not inside*.

(7) QUD: What about Sally?
If **was** raining outside, then Sally **would be** inside.
Conveyed answer (weak): Sally would be inside if if was raining but it's not, draw your own conclusions.
Conveyed answer (strong): Sally is not inside.

- How is the answer conveyed?

The CI and the QUD

(6) A: Is it raining outside?
   B: If **was** raining outside, then Sally **would be** inside.
   C: Hey wait a minute! I did not know it wasn't raining outside! ✗
   C: Hey wait a minute! I did not know Sally wasn't inside! ✓

(7) A: What about Sally?
   B: If **was** raining outside, then Sally **would be** inside.
   C: Hey wait a minute! I did not know it wasn't raining outside! ✓
   C: Hey wait a minute! I did not know Sally wasn't inside! ✗

- This pattern makes sense, given the following constraint:

Heim's constraint on asnwering the QUD

Questions cannot be answered by an accommodated presupposition.

- But it also means that if the QUD targets the antecedent of an
  X-marked conditional, the answer should not be conveyed by the CI!

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Overview of the analysis

- We want to argue that the CI is "versatile" in that it can target either the antecedent of the consequent of the X-marked conditional, depending on the QUD:
    - If the QUD targets the consequent, then the CI targets the antecedent (as previously assumed).
    - If the QUD targets the antecedent, then the CI is derived from the consequent (novelty).
- The proper answer to the QUD is derived *via* reasoning:
    - If the QUD was targeting the consequent, the answer is either conditionalized or presented as a strengthened *modus ponens* argument.
    - If the QUD was targeting the antecedent, the answer is provided as a *modus tollens* argument.

Some background

The CI as a presupposed implicature

- The nature of the CI is debated:
    - Implicature [Iatridou, 2000, Ippolito, 2003] : supported by the fact that it can be cancelled and reinforced in specific contexts.
    - Presupposition [von Fintel, 1998, Karawani, 2014] : supported by the classic projection tests and the *Hey, wait a minute!* test.
    - Anti-presupposition ([Leahy, 2011, Leahy, 2018], building on [Heim, 1991, Sauerland, 2003, Percus and Ueyama, 2006] a.o.): may allow to account for the mixed behavior of the CI.

- Here we want to suggest that the CI is a presupposed implicature [Bassi et al., 2021].[1]

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[1]We realized *a posteriori* that this insight was already present in a footnote of [Bassi et al., 2021], although the focus was on testing Downward Entailing contexts.

Presupposed Implicatures

- A presupposed implicature is just like an implicature computed *via* ExHaust [Fox, 2007, Spector et al., 2008], except that the extra inferences it creates are treated as non-at issue.

- PEX, which replaces EXH, inherits the ability to compute the CIs locally, at the level of the antecedent or consequent.

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- Both the antecedent and the consequent of an O-marked conditional
- CIs in an X-marked conditional are derived by competition with the O-marked alternative.
- In that sense, the CI is an implicature at the presuppositional level.

If P M (Q) the set of clostest worlds in which P holds are s.t. Q holds
Q(the(P)) Q(p)(q)

if p then M q q? p => q not p accomodate after antecedent ==> does
not hold in actual word and in all closest worlds where p holds q holds
==> could have just said q? not q?

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Appendix: on Heim's constraint

- The following example is taken from [Aravind et al., 2022] to illustrate the point in the general case:

(8) *Context: A is visiting a dog shelter and is particularly interested in adopting a Labrador.*
   A: Can I adopt the Labrador?

   a.   B: Someone from NY just adopted the Lab.
       No presupposition.

   b. # B: It is someone from NY who just adopted the Lab.
       ⇝ Someone adopted the Labrador.

(9) *Context: A is visiting a dog shelter and is particularly interested in adopting several Labradors.*
   A: Do you have more than one Lab for adoption?

   a.   B: There is 3 Labradors available for adoption.
       No presupposition.

   b. # B: There is a Labrador available for adoption.
       ⇝ There is more than one.