What if?

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Overview

• “What if” questions in discourse (“re-asking”):
  (1) A: Is Henry coming to the party?
      B: Yes, he is.
      A: What if Isabella is there? (= Will he still come if Isabella is there?)

• “What if” serves to re-ask a question?
  – Immediate problems: licensed discourse-initially, and not generally licensed following questions.
    (2) A: (out of the blue) Henry is coming over this afternoon.
    B: What if Isabella is here?

• “What if” questions have a “suppositional” flavor – involve making temporary assumptions.
• Proposal: “what if” questions are conditional questions that are anaphoric to some salient question under discussion (QUD; Roberts 1996; Büring 2003 a.o.).
  – QUD supplies the content of the question, “if”-clause a domain restriction on that question.
  – Discourse-initiality is possible as long as there is a salient QUD that can be recovered.
  – Post-questioning restriction follows from pragmatics of such questions (which follows from pragmatics of questions in general).

Generalizations above turn out to be even more complicated.
  – Multiple readings for several of the above examples. ⇐ different resolutions for QUD.
  – Post-questioning restriction not absolute. (Plan questions.) ⇐ pragmatics of questioning.

1 A Tour of the Data

• Four core uses.
• Simple asking about consequences, following declarative.
  (4) A: Henry is coming to the party.
      B: Oh no, what if Isabella is there? = What will happen if they are both there?
• Re-asking (also possible in previous ex. without “oh no”):
  (5) A: Is Henry coming to the party?
      B: No, he’s not.
      A: What if Isabella is there? (= Will he come if Isabella is there?)
• Proposal response to a plan question.
  (6) A: How can we get to the airport?
      B: What if we borrow Alfonso’s car?

• Out of the blue hypothetical uses:
  (7) What if the moon were made of cheese?

• Some things you can’t do.
• Respond to a (non-plan) question with a “what if”:
  (8) A: Who is coming to the party?
      B: # What if Alfonso comes?
  (9) A: Is Henry coming to the party?
      B: # What if Isabella is there?

• Use “what about if” in an out of the blue hypothetical:
  (10) # What about if the moon were made of cheese?

• For within-speaker discourse, several of these conditions invert.
  (11) A: Is Henry coming to the party?
      A: What if Isabella is there?

• (However, re-asking use not present.)
• Related constructions: “what about if”, “even if”, “and if”.
  (12) (in re-asking dialogue)
       a. What about if Isabella is there?
       b. Even if Isabella is there?
       c. And if Isabella is there?

2 The Structure of “what if” Questions

Proposal: “what if” questions are sentential idioms with a compositionally interpreted “if”-clause.

Basic facts:
• Order of “what” and the “if”-clause fixed, no intervening elements.
  (13) * If Alfonso comes to the party, what?
  (14) * What [only / even] if Alfonso comes to the party?

• Restriction to “what”.
  (15) What if the moon is made of cheese?
  (16) * Who/how/when/where/which boy if the moon is made of cheese?

• Inability of “what” to participate in normal “wh”-modification (these tests are due to Baker 1968, 1970; see also Gawron 2001; Rawlins 2008).
• When "about" present, restriction to "what" or "how".

(21) What / how about if we borrow Henry’s car?

(22) * Who/when/where/which boy if we borrow Henry’s car?

• Consequence: "what" /"how" are not present with their normal meaning / properties.

In contrast, internals of "if"-clause seem entirely normal.

(25) * Alfonso knows what if Joanna comes to the party.
(26) Alfonso knows what would happen if Joanna comes to the party.

• Distribution of adverbs: can be modified by speaker-oriented adverbs, (maybe) by epistemic modifiers, no lower classes. (Cinque 1999; Ernst 2002)

(27) Seriously, what if Alfonso comes to the party?

(29) ? Maybe what if we borrow Alfonso’s car?

• Rudimentary proposal:

  \[
  \begin{array}{c}
  \text{ForceP} \\
  \text{Force} \\
  \text{WHIF} \\
  \text{WHIF pronunciation: "what"}
  \end{array}
  \]

\[c + "\text{if } \phi, \psi\" = (c + \text{assume } \phi) + \psi\]

• Proposed analysis:

  Conditional questions (Velissarotou 2000; Isaacs and Rawlins 2008) where the question-part is supplied anaphorically.

  Isaacs & Rawlins proposal: conditional question involves an "if"-clause restricting a question operator.

  Anaphoric to a salient QUD (Roberts 1996; Büring 2003, Beaver and Clark’s 2008 "recent question").

3 ANALYSIS STAGE 1: THE BASICS

• How to implement? CQs following Isaacs and Rawlins 2008.

(28) c + "if φ, ψ?" = (c + assume φ) + ψ

• What does assume φ do?

  – Isaacs and Rawlins 2008 following Kaufmann 2000: updates context to include information that there is a temporary restriction provided by φ.

  – Implementation: context as a stack of context sets. Assume pushes temporarily restricted context set on top.

  – Cf. suppositional imperatives (Isaacs 2007).

  – (Database approach: context sets as updatable views of a larger information store.)

• What does ?ψ do?

  – Groenendijk 1999: partitions the context into alternatives corresponding to possible answers to the question.


  – Many ways of representing this. Groenendijk: context is an equivalence relation on possible worlds, connected worlds form an alternative.

  – Context is "uninquisitive" if there is one maximally connected alternative.

  – Questioning disconnects world pairs, asserting removes them altogether.

• Interpretation following an assumption?

  – Updates relative only to temporarily restricted context.

  – Implementation: assertions/questions operate on top context set in stack. (Slightly more complicated than this...)

• Example (from Isaacs and Rawlins 2008): 4 worlds. In worlds 1,2 only, Alfonso comes to the party.

  In worlds 1,3 only, Joanna leaves the party.

\[(c) s = s_0 : c = \{ \langle w_1, w_1 \rangle, \langle w_2, w_1 \rangle, \langle w_3, w_1 \rangle, \langle w_4, w_1 \rangle \}\]

\[s_0 : \{ \langle w_1, w_1 \rangle, \langle w_2, w_2 \rangle, \langle w_3, w_2 \rangle, \langle w_4, w_2 \rangle \}\]

\[(d) s' = s + [\text{If } \text{Alfonso comes to the party}] = \]

\[s'_0 : \{ \langle w_1, w_1 \rangle, \langle w_2, w_2 \rangle \}\]

\[s'_1 : c\]

\[(e) s'' = s' + [\text{Will Joanna leave?}] = \]

\[s''_0 : \{ \langle w_1, w_1 \rangle \}\]

\[s''_1 : \{ \langle w_1, w_1 \rangle, \langle w_2, w_2 \rangle \}\]

\[s''_1 : c\]
“what if” questions work the same, but question supplied by QUD.

(32) \[
\begin{align*}
  \ell''' &= \ell'' + \text{Yes} = \\
  \ell'''_q &:= \{ (w_1, w_1) \} \\
  \ell'''_t &:= \{ (w_1, w_2), (w_3, w_3), (w_4, w_4) \} \\
\end{align*}
\]

(33) \[
\begin{align*}
  \ell'''_c &= \text{pop}(\ell''') = \\
  \ell'''_c &:= \{ (w_1, w_1), (w_3, w_3), (w_4, w_4) \}
\end{align*}
\]

4 Analysis stage 2: deriving the distributional facts

- Problem for QUD analysis: why would “what if” questions be disallowed directly after questions?
  - Constraint requiring interlocutor to have attempted a resolution?
- Context with no proposed resolution:
  (40) a. (39A) = Who is meeting with Bill if Isabella or Henry is around?
  b. (39A) = Who is Alfonso meeting with if Isabella or Henry is around?

4.1 The problem

- Problem: non-trivial class of exceptions to such a constraint.
- Planning responses (“what if” function: propose an answer?):
  (42) A: How can we get to the airport?
  B: What if we borrow Alfonso’s car?
  (43) A: Who should we invite to the party?
  B: What if we invite Alfonso and all his friends?
- Same-speaker continuations (on a non-re-asking reading):
  (44) A: Is Henry coming to the party?
  A: What if Isabella is there?

4.2 The solution

- How to explain such exceptions? How to explain restricted readings available on such exceptions (no re-asking)?
  - Triviality constraint: “what if?” question is banned just in case its contribution to the discourse state is trivial. (Perhaps constraint on questioning in general.)
  - Coherence constraint: “what if?” question must cohere with prior discourse. (Cf. Stalnaker’s 1978 restriction on null updates.)
- How to spell this out?
  - A question would lead to a trivial update if it (or some question that entails it) has already been asked, or if the issue it raises is already settled. (Groenendijk 1999)
  - Re-phrasal of puzzle:
    - What is the effect of a proposed answer on the discourse state such that re-asking becomes possible?

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Rawlins = “what if?”
A: Is Henry coming to the party?
B: Yes, he is.
A: What if Isabella is there? (= Will he still come if Isabella is there?)

- Key intuition: A actually rejects B’s attempt at an answer, but only in a limited way.
  - Answer accepted for cases where Isabella isn’t there.
  - Answer not accepted for cases where Isabella is there.
  - Implication of dialog: speaker A suggests that B did not consider the possibility of Isabella coming.
  - My name for this phenomena: “conversational backoff”.

- “Defect” in common ground revealed (/publicly assumed by A): B was assuming a way of making the context precise where Isabella isn’t there. A does not make this assumption.

<table>
<thead>
<tr>
<th>Worlds where Isabella is there (W_I)</th>
<th>As private information state</th>
<th>B’s private information state</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worlds where Isabella is not there (W¬I)</td>
<td>present</td>
<td>present</td>
</tr>
</tbody>
</table>

- Net result of conversational backoff on public shared information state:
  1. For W¬I: worlds where Henry does not come removed.
  2. For W_I: question asked about whether he will come.

- Key point: conversational backoff provides a mechanism for question to be asked non-trivially.
  - Question would be trivial relative to W¬I but not W_I, the worlds resulting from conversational backoff. These worlds target of conditional question.
  - Re-asking reading not possible without a mechanism of this type.

- Prediction: biased questions (Borkin 1971; Guerzoni 2003 a.o.) should be able to prevent triviality.
  - Prediction easiest to see on Reese’s 2007 account, where biased questions are speech-act conjunctions of questions and assertions. Follows from (hopefully) any account of bias.

A: Why would anyone lift a finger to help Henry?
B: What if he has done something nice for them?

vs. (neutral context)

A: Why did Alfonso help Joanna?
B: # What if she has done something nice for him?

- Coherence/relevance constraint: in question/answer contexts, a response is licensed only if it can make some contribution toward an answer.
  - Notoriously hard to formalize / state precisely.
  - Following Büring 2003:

  “I will resort to the rather vague formulation that A is an answer to Q if A shifts the probabilistic weights among the propositions denoted by Q.”

A discourse contribution C is relevant in a D-tree DT if C is an answer to the QUD for C in DT.

- Caveats: upper bounded by Quality. Various non-monotonic responses don’t obey this.
  - Basic idea: if planning-type QUD salient, with asked question as a sub-question, “what if” question can satisfy coherence.
  - Pragmatic reasoning:
    1. Assume speaker is obeying relevance constraint in responding to a question.
    2. Therefore they must mean to shift probability mass among possible plans.
    3. Consequence: probability mass in temporary context must be shifted towards some particular plan.

- Examples:
  (51) A: Who should we invite?
  B: What if we invite Alfonso? (QUD could be e.g. “how can we decide who to invite?”)
  (52) A: How can we get to the airport?
  B: What if we borrow Alfonso’s car?

- Planning QUD in 2nd example: Question itself.
- Planning responses/questions remain fairly mysterious!

4.3 Same-speaker discourse
Why is “what would happen” type reading licensed immediately following a question in monologues?

A: Is Alfonso coming to the party? What if Joanna is there?

- Polar questions license something like modal subordination (Roberts 1989) to the “yes” alternative in same-speaker dialogue.
  - (This is already a pretty interesting fact that I have never encountered before. Closest case: Declerck and Reed’s 2001 split conditionals, i.e. supposition imperatives; Isaacs 2007)
  - Cued by “would”:
    A: Is Alfonso coming to the party? He would have a good time.

- Temporary suppression of the “no” alternative acts leaves context locally unquisitive. Coherence relation to question entirely different.

5 Conclusions and further puzzles
Recap:
- “What if” questions act as conditional questions, with the question-component supplied anaphorically by the Question Under Discussion in discourse.

This is distinct from Büring’s formulation in that it applies to both questions and answers, and is sufficient but not necessary. I assume that there are other sufficient constraints in play as well; what I need here is to allow a question to contribute to answering in this sense.

Rawlins: “what if?”
• On the conditional-question account, complicated distribution of readings of “what if” questions in discourse follows from fairly straightforward assumptions about the pragmatics of questioning.

Many remaining puzzles:
• Better understanding of planning “what if”/s
• “What about if”, “And if”, “even if”? Properties differ...
• “What about” in general?
• Languages with only “and if” type? E.g. French “et si”...
• Better understanding of conversational backoff.

Final point: Support of the best kind for QUDs: Quine’s dictum “to be is to be the valuable of a variable.”

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Bibliography


