*What If*s

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"What if" questions are extremely versatile. Most vividly, they are one of the characteristic ways of initiating new lines of inquiry into what the world might be like, or might have been like, under some restricted set of circumstances.

(1)   A: What if cats could text?   *(hypothetical/speculative use)*
        B: They'd be constantly messaging about food.

But "what if" serves a variety of other functions and can be used for more targeted inquiry:

(2)   A: Is Alfonso coming to the party?
        B: Yes.
        A: What if Joanna is coming? (Are you sure?)   *(challenging use;* Rawlins 2010*)*

(3)   I heard that Alfonso's going to the party. What if Joanna is there?   *(consequential use)*

(4)   A: Who should we invite to speak at the next colloquium?
        B: What if we invite Professor Plum?   *(planning/suggestive use)*

(5)   A: Where are my keys? Have you seen them?
        B: What if you left them in the car?   *(tentative answer/suggestive use)*

Our main interpretative puzzle is to clarify the sense in which "what if" is question-like and conditional-like, and to account for its different uses.

The Structure of *What If*. The data suggests that "what if" is a sentential idiom with a compositionally interpreted "if"-clause (only a small subset of the pertinent data is presented here). First off, the "what" in "what if" is idiosyncratic:

(6)   *{Who/When/How/Why/Where} if we invite Joanna?

(7)   *What {else/on earth} if we invite Joanna? (wh-modification tests due to Baker 1968)

Moreover, the externals of the "if"-clause are non-standard:

(8)   *What {only/even} if we invite Joanna? (limited intervention; von Fintel 1994)

(9)   *What whether or not we invite Joanna? (cannot form *unconditionals*; Rawlins 2008)

(10)   *What if and when Joanna graduates? (cannot substitute in other complementizers)

On the other hand, the internals of the "if"-clause seem normal:

(11)   What if it {had snowed/were snowing}? (past perfect/subjunctive for counterfactuality)

(12)   What if you flew through Iceland? (allows for fake past tense; Iatridou 2000, Schulz 2014)

So we treat "what if"s as syntactically clause-sized idiom chunks that are nevertheless *iffy* (they are related to ordinary conditionals).

The Semantics of *What If*. We interpret "what if" questions within a dynamic semantics (Heim 1982, Veltman 1996, Beaver 2001, a.m.o.) as consequentless *suppositional questions* that serve only to put new assumptions into play subject to the constraint that the triggered local context is *inquisitive* (Groenendijk 1999). This is implemented in a broadly Stalnakerian (1978, 2002, 2014) model of context where a context c consists of (i) a context set $cs_c \subseteq \mathcal{W}$ encoding mutually accepted propositions, (ii) a slot $a_c \subseteq \mathcal{W}$ for current assumptions (the *view*), (iii) an *assertion*

stack $\mathcal{A}_c$ loaded up with any asserted propositions awaiting confirmation/rejection (Farkas & Bruce 2010), and (iv) a *goal stack* $\mathcal{G}_c$ populated with any salient question denotations (which determine the current QUD_c; Roberts 1996, Ginzburg 1996, Büring 2003) and decision problems (van Rooy 2003) tethered together by relevance. `Assert`/`Confirm`, `Assume`, and `Question` operations manipulate these various components of the context.

(13)   **What if update** $c' = c + \ulcorner\text{What if } \varphi?\urcorner = c + \text{Assume}(\varphi)$
       Felicity condition: appropriate in c only if $|\text{QUD}_{c'}| > 1$ (Inquisitivity)

The core `Assume` step in (13) serves to update the assumption slot a_c with the content $[\![\varphi]\!]$ of the "if"-clause. The questioning comes by way of the accompanying felicity condition requiring that after an appropriate update, $\text{QUD}_{c'}$ must partition the domain of live possibilities $cs_{c'} \cap a_{c'}$ into multiple equivalence classes (i.e., $\text{QUD}_{c'}$ must not yet be settled in the post-suppositional context).

Challenges. Our minimal semantics for "what if" nicely handles challenging uses like (2) above. It predicts that A's "what if" effectively transposes her discourse-initial question into the subordinate context where it is assumed that Joanna is coming—the intuitively correct result. However, other uses of "what if" pose a challenge. First, hypothetical and consequential "what if"s like (1) and (3), as well as some challenging uses, are problematic since these questions can (arguably) be asked when there is no open QUD. Second, suggestive uses like (4) raise a tricky puzzle since they do not seem to be transposing the prior question that they directly respond to over a restricted domain.

Accommodation & Subservience. We argue that these cases involve accommodation with new QUDs to ensure that the inquisitivity condition in the "what if" update (13) is met. This is where the decision-theoretic dimension of our model comes in: we show how the active *domain goals* of the participants, modeled using decision problems (DPs) on the goal stack $\mathcal{G}_c$, constrain the repair.

(14)   A: Open the window.
       B: What if it's still raining?

	rain and A wants open	rain and A wants closed	no rain
open window	1	0	1
keep closed	0	1	0

In this exchange where B's "what if" is used to resist A's command, B's DP is reified on the goal stack where it becomes available for his subsequent "what if" question to exploit. The "what if" restricts the view to the raining-worlds (the shaded region). It also adjusts the context with a new QUD the complete answers to which must each *help to resolve* the current DP by ruling out a "conflict state" where some of B's potentially optimal actions compete (we are generalizing the classic account of relevance in Roberts 1996 where the complete answers to questions higher up on the QUD stack must partially answer questions lower down). Our full technical analysis predicts that the `Assume` + repair updates launched by B's "what if" together simulates the dynamics of the conditional interrogative 'If it's still raining, do you want the window open?' as desired.

Outlook. We are currently exploring the collaborative/brainstorming function of many "what if"s. In follow-up research, we also plan to explore related constructions both in English and in other languages that involve "if"-clauses with some minimal extra morphology but no obvious consequent; for example, "what/how about if...?", "and if...?", "even if...?".

References. Baker 68, Illinois PhD. Beaver 01, CSLI. Büring 03, *L&P*. Farkas & Bruce 10, *JoS*. Ginzburg 96, *LLC 1*, CSLI. Groenendijk 99, SALT 9. Heim 82, UMass PhD. Iatridou 00, *Lin Inq*. Lasersohn 99, *Language*. Rawlins 08, UCSC PhD. Rawlins 10, SALT 20. Roberts 96, *Papers in Semantics*. Schulz 14, *NLS*. Stalnaker 78, Assertion. Stalnaker 2002, *L&P*. Stalnaker 14, *Context*, Oxford. van Rooy 03, *L&P*. Veltman 96, *JPL*. von Fintel 94, UMass PhD.