Challenges for independence-driven and context-repair responses to the proviso problem

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Abstract

This note presents challenge cases for prominent pragmatic responses to the proviso problem. I offer examples of uses of conditionals *if* ψ, ϕ_P that seem to commit the speaker unconditionally to the presupposition P of the consequent clause ϕ, even though the sentence's predicted semantic presupposition $\psi \supset P$ is antecedently satisfied (contrary to context-repair accounts), and independence between ψ and P isn't antecedently assumed (contrary to independence-driven accounts). The examples provided avoid problems with other examples from the literature used against pragmatic accounts. I leave the matter as an unresolved challenge for satisfaction theories of presupposition.

Keywords Proviso problem · Presupposition · Accommodation · Conditionals · Implicature

1 Introduction

This note presents challenge cases for prominent pragmatic responses to the proviso problem. The proviso problem (Geurts 1996, 1999) is the problem for many theories of presupposition of explaining why sentences predicted to semantically presuppose $\psi \supset P$ seem in certain uses to commit the speaker to an unconditional presupposition P — for instance, why a use of (1) would typically commit the speaker not merely to (1a) but to the logically stronger (1b).

(1)   If Alice wants to impress us, she will bring her wetsuit.

     a.   Alice wants to impress us ⊃ she has a wetsuit

     b.   Alice has a wetsuit

I focus primarily on speaker-based responses that attempt to derive the apparent unconditional presuppositions from an assumption of independence between ψ and P

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(van Rooij 2007, Schlenker 2011, Lassiter 2012); non-speaker-based responses invoking a mechanism of context repair are briefly considered (Heim 1992, 2006). I offer examples of uses of conditionals *if* ψ, ϕ_P that seem to commit the speaker unconditionally to the presupposition P of the consequent clause ϕ even though independence between ψ and P isn't antecedently assumed (contrary to independence-driven accounts) and the sentence's predicted semantic presupposition $\psi \supset P$ is antecedently satisfied (contrary to context-repair accounts).

The paper proceeds as follows. Section 2 introduces the proviso problem and the types of pragmatic accounts at issue. Section 3 presents the main challenge cases. Section 4 argues that the examples from Section 3 avoid problems with other examples from the literature used against pragmatic accounts. Section 5 takes stock.

2 Background

2.1 Satisfaction theories and the proviso problem

Uttering (2) would typically commit one to an assumption that Alice has a wetsuit. This commitment, unlike the commitment that Alice will bring the wetsuit she has, typically remains even when (2) is embedded in entailment-cancelling environments such as those in (3). In light of such behavior it is common to treat the implication that Alice has a wetsuit as a semantic presupposition of (2).[1]

(2)   Alice$_i$ will bring her$_i$ wetsuit.

(3)   a.   It's not the case that Alice will bring her wetsuit.
      b.   Will Alice bring her wetsuit?
      c.   Perhaps Alice will bring her wetsuit.

Many theories of presupposition predict that if a sentence ϕ semantically presupposes P (written ϕ_P), the presupposition of a conditional *if* ψ, ϕ_P is the material conditional $\psi \supset P$. To fix ideas I focus on satisfaction theories (Heim 1983; Beaver 2001; cf. Klinedinst and Rothschild 2012).[2]

Satisfaction theories aim to derive a sentence's semantic presuppositions from its meaning — in dynamic semantics, its context change potential (CCP) — and a principle of context satisfaction. The semantic presuppositions of a sentence are represented as definedness conditions on the sentence's CCP. If a sentence ϕ presupposes P, the CCP of ϕ is defined only on contexts that entail, or *satisfy*, P. The CCP is a partial function $[\phi]$ from contexts c that satisfy P, $c \subseteq P$, to contexts in which ϕ is accepted. (I simplify by representing contexts as sets of worlds.) For instance, the

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[1] I use 'implication' as a cover term for at-issue content, entailments, presuppositions, implicatures.

[2] For other types of theories that predict conditional presuppositions, see Karttunen and Peters 1979, Soames 1982. I focus on theories that treat the conditional presupposition as a material conditional (contrast Pérez Carballo 2009). So as to be neutral among different theories of presupposition, I will be sloppy about whether what is presupposed are sentences or propositions. The usage of schematic letters can be adapted accordingly.

CCP of (2) would be a partial function that (i) is defined only on contexts which entail that Alice has a wetsuit, i.e. contexts c such that $[Alice\ has\ a\ wetsuit](c) = c$, and (ii) maps any such c to the set of worlds in c where Alice brings her wetsuit:

(4) $[(2)](c) = \{w \in c\colon \text{Alice brings the wetsuit that she has in } w\}$ if
        $c \subseteq \{w'\colon \text{Alice has a wetsuit in } w'\}$, undefined otherwise

A sentence ϕ presupposes P iff for any context c, $[\phi](c)$ is defined only if c entails P.

Although every sentence is interpreted in a context with respect to a body of information, embedding environments may modify the information with respect to which embedded sentences are interpreted. The presupposition of a complex sentence is derived by ensuring that the presuppositions of its constituents are *locally* satisfied — satisfied in the (local) context in which the constituent is interpreted:

(5)   *Local context satisfaction:*
        For any sentence ϕ, the semantic presupposition of ϕ is the minimal condition ensuring that, for any constituent ψ_P of ϕ, the local context of ψ entails P.

The local satisfaction requirement generates a condition on the discourse context corresponding to the semantic presupposition of the sentence. Consider, for instance, the following CCP from Heim (1982, 1983):

(6) $c + if\ \psi, \phi_P = c\backslash((c + \psi)\backslash(c + \psi + \phi_P))$

In order for the local update of $c' = c + \psi$ with ϕ_P to be defined, c' must entail P; so, in order for the update as a whole to be defined, c must entail $\psi \supset P$. Given the local satisfaction principle in (5), the predicted semantic presupposition of $if\ \psi, \phi_P$ is thus the material implication $\psi \supset P$.[3]

The previous prediction is supported by examples such as (7) (cf. Soames 1982, Geurts 1996, Beaver 2001). Although (2) presupposes that Alice has a wetsuit, one would typically take a speaker of (7) to be committed only to the conditional that if Alice is a scuba diver, she has a wetsuit.

(7)   If Alice is a scuba diver, she will bring her wetsuit.

        • *Predicted presupposition:* Alice is a scuba diver $\supset$ Alice has a wetsuit

The "proviso problem" (Geurts 1996, 1999) is the problem of explaining why some uses of $if\ \psi, \phi_P$ seem to presuppose not simply $\psi \supset P$, but P.[4] One would typically take a speaker of (8) — which has the same consequent ϕ_P as (7) — to be committed to the stronger unconditional implication that Alice has a wetsuit.

(8)   If Alice wants to impress us, she will bring her wetsuit.

        • *Predicted presupposition:* Alice wants to impress us $\supset$ Alice has a wetsuit

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[3]More generally, for any sentence ϕ with atomic constituents having semantic presuppositions $P_1, P_2, \ldots, P_n$ and occurring in local contexts $c_{\psi_1}, c_{\psi_2}, \ldots, c_{\psi_n}$, the predicted semantic presupposition of ϕ is $\psi_1 \supset P_1 \wedge \psi_2 \supset P_2 \wedge \cdots \wedge \psi_n \supset P_n$ (where c_ψ is the set of ψ-worlds in c, assuming that the relevant local contexts are subsets of the discourse context).

[4]Geurts emphasizes that the problem also arises with other complex sentences predicted to generate conditional presuppositions, such as conjunctions and disjunctions.

- *Apparent implication:* Alice has a wetsuit

Call the apparent implications P in certain uses of *if* ψ, ϕ_P "unconditional P-implications." The challenge for theories such as satisfaction theories is to explain what triggers unconditional P-implications and to delineate the uses in which they will (and will not) arise.

2.2 Pragmatic responses: Independence and context repair

A sentence's semantic presupposition provides a minimal condition that a context must satisfy in order for the sentence to be felicitously used (accommodation notwithstanding; cf. Stalnaker 1974, Soames 1982, Beaver 1999, 2001, van Rooij 2007, von Fintel 2008). The principle in (9) relates the notion of semantic presupposition with conditions on felicitous use in this way.

(9)   *Semantic presupposition and felicitous use:*
        If a sentence ϕ presupposes P in c, then ϕ may be felicitously used in c only if c entails P.

A common approach to the proviso problem is to treat unconditional P-implications as pragmatic strengthenings of the sentence's semantic (conventionally encoded) presupposition. On *context-repair* accounts, the strengthened P-implications are understood as inferences drawn in response to violations of (9) (cf. Heim 1992, 2006). The contexts in which unconditional P-implications arise are contexts in which the semantic presupposition $\psi \supset P$ isn't antecedently satisfied and (for reasons to be specified) the preferred means of repairing the context is to accommodate P. On *speaker-based* accounts, the strengthened P-implications are understood as inferences about what the speaker is presupposing, given her performance of an act which conventionally presupposes $\psi \supset P$ (cf. Beaver 1999, 2001, von Fintel 2008). Prominent are *independence-driven* speaker-based accounts, which attempt to derive the unconditional inference P via pragmatic reasoning from the felicitous use of *if* ψ, ϕ_P and an assumption of independence (in a sense to be made precise) between ψ and P (van Rooij 2007, Pérez Carballo 2009, Schlenker 2011, Lassiter 2012). The contexts in which unconditional P-implications arise are contexts in which ψ and P are assumed to be independent.

Section 3 offers challenge cases for certain prominent pragmatic responses to the proviso problem. I focus first on independence-driven speaker-based accounts using a non-probabilistic notion of independence. Accounts invoking an assumption of probabilistic independence or a mechanism of context repair are briefly considered.

3 Challenges for independence and context repair

Independent-driven accounts understand unconditional P-implications as inferences about the speaker's presuppositions given her felicitous use of *if* ψ, ϕ_P, the sentence's conventional meaning, and an assumption of *independence* between ψ and P. Adapting Lewis's (1988) notion of orthogonal questions, van Rooij (2007) formalizes

the relevant relation of independence as in (10), where $\Diamond_c \phi$ iff$_{\text{def}}$ $[\phi](c) \neq \emptyset$. Roughly put, ϕ and ψ are independent in a context c iff committing to an answer on whether ϕ is true needn't commit one to an answer on whether ψ is true, given the information in c. The unconditional P-implication is derived from a felicitous use of *if* ψ, ϕ_P as in (11).

(10) ϕ and ψ are **independent** in c iff:

> (i)   If $\Diamond_c \phi \wedge \Diamond_c \psi$, then $\Diamond_c(\phi \wedge \psi)$
>
> (ii)   If $\Diamond_c \phi \wedge \Diamond_c \neg\psi$, then $\Diamond_c(\phi \wedge \neg\psi)$
>
> (iii)   If $\Diamond_c \neg\phi \wedge \Diamond_c \psi$, then $\Diamond_c(\neg\phi \wedge \psi)$
>
> (iv)   If $\Diamond_c \neg\phi \wedge \Diamond_c \neg\psi$, then $\Diamond_c(\neg\phi \wedge \neg\psi)$ (van Rooij 2007: 296)

(11)   a. ψ and P are independent in c.   (assumption)

>   b. $\Diamond_c \psi$.   (felicity condition for indicative conditionals)
>
>   c. c entails $\psi \supset P$.   (from semantic presupposition and (9))
>
>   d.   So, if $\Diamond_c \psi \wedge \Diamond_c \neg P$, then $\Diamond_c(\psi \wedge \neg P)$.   (from (a))
>
>   e.   So, $\neg\Diamond_c \psi \vee \neg\Diamond_c \neg P$.   (from (c), (d))
>
>   f.   So, $\neg\Diamond_c \neg P$.   (from (b), (e))
>
>   g.   So, $\Box_c P$.   (from (f))

This says that if a context c is compatible with ψ, and ψ and P are independent in c, then c entails the material conditional $\psi \supset P$ only if c entails P unconditionally. Suppose the speaker felicitously utters *if* ψ, ϕ_P. Given the bridge principle in (9), we can infer that c entails the sentence's semantic presupposition $\psi \supset P$, thus that c excludes $\psi \wedge \neg P$, i.e. $\neg\Diamond_c(\psi \wedge \neg P)$. So, insofar as ψ and P are assumed to be independent, either $\neg\Diamond_c \psi$ or $\neg\Diamond_c \neg P$ must be the case. But uttering an indicative conditional *if* ψ, ϕ is appropriate only if ψ is regarded as possible, i.e. $\Diamond_c \psi$. So $\neg\Diamond_c \neg P$, which is equivalent to $\Box_c P$, must be the case, i.e. c entails P.

For example, whether someone has a wetsuit is typically independent of whether they want to impress us, though plausibly dependent on whether they are a scuba diver — hence the apparent unconditional implication in (8) and not in (7). As van Rooij puts it: upon hearing an utterance of *if* ψ, ϕ_P, "we either assume that $[\psi]$ and $[P]$ are independent, or not. If independence is more plausible," as in (8), "the unconditional presupposition follows"; in (7), however, "it is [...] natural to assume that the independence assumption between $[\psi]$ and $[P]$ is not satisfied, and thus the conditional presupposition $[\psi \supset P]$ cannot be strengthened to $[P]$" (van Rooij 2007: 298; cf. 303).

Problematic for this view would be uses of *if* ψ, ϕ_P which intuitively imply P although a premise that ψ and P are independent cannot plausibly be assumed. The reasoning in (11) couldn't get off the ground. Several examples are as follows.

Wintry weather is nigh. Whether one's street gets plowed typically depends on whether it snows. It's possible that the street will get plowed ($\Diamond plow$), and it's possible that it won't snow ($\Diamond \neg snow$); but it isn't possible that the street will get plowed without it snowing ($\neg\Diamond(plow \wedge \neg snow)$). And yet you are incensed when your local government official tells you:

(12)   If it snows, I regret/know that your street won't get plowed.

That is, it is "natural to assume that the independence assumption between [*snow* and ¬*plow*] is not satisfied" (van Rooij 2007: 298). And yet you draw the unconditional inference that your street won't get plowed.

Or suppose NASA has been seeking recruits for a trial teleportation mission. The mission is, well, fraught, so only those in top physical condition will be chosen. You are acquainted with Alice, though you don't know what she has been up to lately. Perhaps Alice will be teleported (◊*teleport*), and perhaps she hasn't been training (◊¬*training*); but it couldn't be that Alice is teleported and didn't train every day (¬◊(*teleport* ∧ ¬*training*)). I, who am better friends with Alice, say (13). You might assume that I must be more familiar with Alice's routine, and respond as in (14).

(13)   If Alice gets teleported, she will be glad she has been training every day.

(14)   *Me:* If Alice gets teleported, she will be glad she has been training every day.
        You: Oh wait, I didn't know Alice has been training.
        Me: Yeah, she started last month.

The strengthened inference that Alice has been training may be drawn although condition (ii) in (10) is violated.

The previous examples used factive attitude verbs. Examples with other types of presupposition triggers are also possible, as with the definite noun phrases and aspectual verbs in (15)–(16). One can imagine a context in which there is a music competition, and no one could make it to the finals without rigorous preparation.

(15)   If Sharon makes it to the finals,
        a.   she will be glad she has been practicing every day.
        b.   she will continue practicing every day.
        c.   all the practicing she has been doing will be clear to the judges.

(16)   If Julian doesn't make it to the finals,
        a.   he will regret that he didn't practice every day.
        b.   he will start practicing every day.
        c.   his lack of practice will have cost him a chance at a scholarship.

Upon hearing (15)–(16) one might infer that Sharon, unlike Julian, has been duly practicing.

The previous data are supported by results from an acceptability judgment task conducted via Amazon Mechanical Turk. Participants were 28 self-reported native English speakers, filtered to "Mechanical Turk Masters" with IP addresses from the US or Canada. Participants were presented with discourses including a target sentence *if* ψ, ϕ_P, followed by a "Hey wait a minute"-style (HWAM) reply echoing P (Shanon 1976, von Fintel 2004), like in (17).

(17)   [Scenario: Al and Bo are preparing for a scuba diving trip with some friends.]
        Al: If Alice wants to impress us, she'll bring her wetsuit.
        Bo: Wait a minute, I didn't know Alice already has a wetsuit. Are you sure?

Participants were asked how natural they found the replies on a scale from 1 ("completely unnatural") to 7 ("completely natural"). The participants' responses confirmed

the availability of the strengthened P-implication readings, such as by finding the HWAM reply relatively natural or finding a counter-reply that denies the unconditional commitment ("I didn't say P; (maybe) $\neg P$") relatively unnatural. For instance, for (12), the average rating for the HWAM reply was 6.3 (SEM = .19); for (13), the average rating for the HWAM reply was 5.8 (SEM = .23); and for (15c), the average rating for the HWAM reply was 5.4 (SEM = .29). (See Appendix.)

Motivations for using HWAM replies were twofold. First, the HWAM diagnostic is widely acknowledged to be among the best ways of directly testing for a speaker's pragmatic presuppositions in a particular utterance (von Fintel 2004, von Fintel and Matthewson 2008, Tonhauser et al. 2013). Second, what is important for present purposes is whether there is a plausible use of the target sentences which seems to imply P. Non-strengthened readings may also be possible. Soliciting judgments about HWAM replies extracts intuitions about the availability of strengthened readings while bracketing alternative ways of reconstructing the context.

The independence-driven account from van Rooij (2007) uses a non-probabilistic notion of independence. Examples such as (12)–(16) are also problematic for accounts such as Schlenker's (2011) which treat unconditional P-implications as arising in contexts where the consequent presupposition P is regarded as probabilistically independent of the antecedent ψ, per (18). ($Pr(p \mid q)$ is the conditional probability of p given q.)

(18) p and q are **probabilistically independent** iff $Pr(p) = Pr(p \mid q)$

Probabilistic independence of ψ and P needn't be assumed in (12)–(16) as a premise in one's pragmatic reasoning. Typically the fact that it snows makes it more likely that your street will get plowed — hence your outrage upon receiving the official's news in (12). The conditional probability of P given ψ here is plausibly less than the unconditional probability of P, i.e. $Pr(P \mid \psi) < Pr(P)$. In (13)–(16), ψ and P cannot be assumed to be probabilistically independent for the opposite reason: $Pr(P \mid \psi) > Pr(P)$. $\psi \supset P$ is presupposed, and $Pr(P \mid \psi)$ is (close to) 1. Yet P hasn't been settled, and you aren't independently au fait with Alice's, Sharon's, or Julian's daily activities. So, the conditional probability is significantly greater than the unconditional probability of P.

Lassiter (2012) develops a sophisticated probabilistic account which he argues improves on Schlenker's. In contexts where ψ can be assumed to be probabilistically independent of P or to lower the probability of P, the unconditional P-implication is derived via the argument in (19). ('$Pr(p) \geq \theta$' means that the probability of p is sufficiently high for p to count as taken for granted in the context, where θ is the threshold of probability sufficient for acceptance. Premise (a) is Lassiter's posited felicity condition for the conditional sentence.)

(19)   a. $Pr(P \mid \psi) \geq \theta$
           b. $Pr(P) \geq Pr(P \mid \psi)$
           c.   So, $Pr(P) \geq \theta$

In (12), $Pr(P) > Pr(P \mid \psi)$, per (19b). However, the availability of strengthened inferences in (13)–(16), where the conditional probability $Pr(P \mid \psi)$ is assumed to be greater than the unconditional probability $Pr(P)$, remains unexplained. (19b) cannot

be assumed as a premise to derive the unconditional implications that Alice has been training every day, that Sharon has been practicing every day, etc.

Independence-driven accounts follow a speaker-based approach to the proviso problem, which treats unconditional P-implications as pragmatically derived inferences about what the speaker is presupposing. Examples such as (13)–(16) are also problematic for context-repair accounts (Section 2.2). Context-repair accounts claim that inferences P in response to a use of *if* ψ, ϕ_P are responses to violations of the felicity condition in (9). Unconditional P-implications are predicted not to arise in contexts where the semantic presupposition $\psi \supset P$ is already satisfied, as in (20).

(20)   If Lyle flies to Toronto, he has a sister. Moreover, if he flies to Toronto, his
         sister will pick him up from the airport.   (Katzir and Singh 2013: ex. 8a)

In (13)–(16) the strengthened inference may be drawn although the semantic presupposition is satisfied. In (13) the conditional presupposition *teleport* $\supset$ *training* follows from our background assumption that anyone chosen for the mission must be in peak physical condition. The posited mechanism for triggering unconditional P-implications is unavailable.

4 Literature comparison

This section compares the examples from Section 3 with a class of examples from Mandelkern (2016a,b) used in arguing against pragmatic accounts of the proviso problem.[5] Mandelkern reasons as follows: Pragmatic responses treat unconditional P-implications as conversationally derived implicatures. As such, we would expect the implications to be cancelled in contexts where there are reasons against inferring P or inferring that the speaker presupposes P. Mandelkern offers examples such as (21) as evidence that this prediction is not borne out.

(21)   ??John was limping earlier; I don't know why. Maybe he has a stress fracture.
         I don't know if he plays any sports, but if he has a stress fracture, then he'll

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[5]Geurts (1999) offers examples such as (i) below, which seems to unconditionally imply P that Fred failed the exam. Since the antecedent ψ implies P, the independence-based reasoning in (11) doesn't get off the ground; and the conditional presupposition $\psi \supset P$ is trivially satisfied, so there is no need for context repair.

(i)   If all the boys failed the exam, then it wasn't only Fred who did so.
        a.   *Predicted presupposition:* all the boys failed the exam $\supset$ Fred failed the exam
        b.   *Apparent implication:* Fred failed the exam   (cf. Geurts 1999: 111)

As various authors have noted, a confound in Geurts's examples is that, on plausible reconstructions of the context, the question under discussion (QUD) already implies P (van Rooij 2007, Katzir and Singh 2013). A natural use of (i) is as an answer to whether Fred was the only boy who failed the exam. Since the context already implies P that Fred failed the exam, no further pragmatic mechanism is needed to trigger the unconditional inference. The examples from Section 3 avoid this problem. For instance, the QUD in (13)–(14) might be what's new with Alice or what the teleportation process is like. Yet the unconditional inference may be drawn although ψ and P aren't independent and the conditional presupposition $\psi \supset P$ is satisfied. Katzir and Singh (2013) also aim to provide counterexamples to context-repair accounts which avoid the confounds in Geurts's examples. However, they report being unable to get reliable data from informants indicating that the unconditional P-implications were being derived.

stop running cross-country now.

<div align="right">(Mandelkern 2016a: ex. 14; cf. 2016b: exs. 29b, 34b-ii)</div>

Mandelkern diagnoses the oddity of (21) as due to the fact that the speaker professes ignorance about whether John plays any sports yet then seems to imply with the underlined sentence that John ran cross-country. The objection is that if unconditional *P*-implications were pragmatically derived, they shouldn't arise in contexts such as (21) where deriving them would lead to infelicity. So (21) should be felicitous, contrary to fact:

> [I]t is only because of this strengthening that [(21)] strikes us as infelicitous. If strengthening were indeed a pragmatic process, then we would expect it to be blocked in cases like this, where there is strong pragmatic pressure against strengthening. (Mandelkern 2016a: 397; cf. 2016b: 13, 15)

Both of Mandelkern's points are questionable — that the oddity of (21) must be due to an unconditional *P*-implication that conflicts with contextual information; and that if a potential implication is pragmatic, it won't be derived if deriving it would lead to infelicity.

Take the latter point first. Mandelkern's assumptions about pragmatic reasoning are in tension with work on mandatory (uncancelable) implicatures. Various Gricean and optimization-based formal pragmatics make perspicuous how certain implicatures can arise even if they render the utterance infelicitous (Franke 2009, Magri 2011, Lauer 2013, 2014). Here are two examples from Magri:

(22)   #Some Italians come from a warm country.

(23)   #John is sometimes tall.   (Magri 2009: exs. 2–3)

In (22) the use of *some* implicates that, for all one knows, not all Italians come from a warm country. This implication is in tension with the background assumption that all Italians come from the same country. So, by Mandelkern's assumptions, we should expect the implication not to arise. But it does, rendering (22) infelicitous. In Magri 2011 such infelicities are even used as a *diagnostic* for implicatures.

Of course, it doesn't follow from the point that some implicatures might be mandatory that pragmatic strengthenings of conditional presuppositions are mandatory. Even if a strengthened *P*-implication doesn't arise in (21) for conversational reasons, there are other grounds for the oddity of the example. Addressing a question with a projective content is typically infelicitous, as with *B*'s answers with the definite description and factive verb in (24)–(25) (adapted from Simons et al. 2010: 319; cf. Roberts 2011: 7).

(24)   *A:*   Will there be any boys in your group?
         B: #(If I get put in the Monday session,) I won't like the boys.
         B′: (If I get put in the Monday session,) there will be goddam boys.

(25)   *A:*   What is the weather like by the cabin?
         B: #(If it snowed again,) Bob doesn't realize that it's icy.
         B′: (If it snowed again,) it's icy, which Bob doesn't realize.

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In (21) a plausible QUD might be why John is limping, which could be addressed by answering the subquestion of whether John has played any sports. The conditional presupposition *John has a stress fracture ⊃ John used to run cross-country* provides a partial answer (cf. Roberts 2012). Whether John wouldn't do cross-country (given a stress fracture), in contrast, doesn't directly address the QUD. This may be part of why the example improves if the conditional presupposition is asserted; as Mandelkern observes, (26) is felicitous.

(26)   I'm not sure why he was limping. Maybe he has a stress fracture. I don't
         know if he plays any sports, but <u>if he has a stress fracture then he used to run
         cross-country, but he'll stop now.</u>
                                            (Mandelkern 2016a: ex. 16; cf. 2016b: exs. 29a, 34b-i)

The oddity of (21) may thus be due not to an unconditional P-implication that conflicts with contextual information, but to the fact that it backgrounds the implication that directly addresses the QUD.

Unlike Mandelkern, I am not arguing against pragmatic responses to the proviso problem in general. The examples from Section 3 don't show that no unconditional P-implications are derived from a prior assumption of independence between ψ and P, or derived in response to a mismatch between the sentence's semantic presupposition and conditions on felicitous use. While (13)–(16) are evidently problematic for context-repair accounts, I haven't argued that an alternative speaker-based account or hybrid account cannot succeed.

5 Recap

Satisfaction theories of presupposition predict that conditional sentences *if* ψ, ϕ_P semantically presuppose the material conditional $\psi \supset P$. The proviso problem challenges such theories to explain why certain uses of conditionals *if* ψ, ϕ_P seem to carry a stronger unconditional implication P. A prominent approach is to treat the apparent unconditional P-implications as pragmatic strengthenings of the sentence's semantic presupposition. Examples such as (13)–(16) show that unconditional P-implications can arise in contexts where the sentence's semantic presupposition $\psi \supset P$ is satisfied, contrary to context-repair accounts, and in contexts where ψ isn't antecedently assumed to be independent of P or to lower the probability of P, contrary to previous independence-driven speaker-based accounts. In (14), for instance, one may infer that Alice has been training daily, even if it is assumed that NASA would only accept peak physical specimens for the mission.

One response would be to reject pragmatic accounts of the proviso problem. One might instead pursue a theory such as DRT which predicts a general preference for global accommodation of presuppositions (van der Sandt 1992, Geurts 1996, 1999). Such a response needn't be inevitable. An aim of utterance interpretation is to winnow down possible hypotheses for what the speaker's state of mind is like given her performance of a certain (linguistic) act. One might expect there to be various pragmatic mechanisms and assumptions about a speaker's state of mind such that the best ways of making sense of her utterance of *if* ψ, ϕ_P involve attributing to her a presupposition P. I leave the matter unresolved as a challenge for satisfaction theories.

Appendix: Supplementary materials

Participants were given the following preliminary instructions and sample examples:

Please read the following instructions carefully.

We are looking for your reactions to speakers in a conversation. Some examples may include a brief description of a scenario or a short dialogue. Feel free to imagine that the statements are part of a larger conversation in order to help them make sense.

Here is an example: Please indicate how natural you find Alice's statement in the following scenario — in the sense of being a natural thing to say, or whether it would make sense in the situation. Indicate your response on a scale from 1 ("completely unnatural") to 7 ("completely natural").

> [Scenario: Alice has one son. Alice says:]
> *Alice*: "I have to pick up my son at the airport."
>
> (Completely   1   2   3   4   5   6   7   (Completely
> unnatural)   ○   ○   ○   ○   ○   ○   ○   natural)

In the above example, it is clear that Alice's statement is natural, so please select a button on the right, such as 7.

Here is another example: Please indicate how natural you find Bert's reply in the following conversation:

> *Bert*: "I have to pick up my son at the airport."
> *Cathy*: "Wait, I didn't know you have a son."
> *Bert*: "I didn't say that I do. Sheesh."
>
> (Completely   1   2   3   4   5   6   7   (Completely
> unnatural)   ○   ○   ○   ○   ○   ○   ○   natural)

In this case you would probably feel that Cathy's reply is natural, since she may not have known whether Bert has a son. But you would probably find Bert's reply to be unnatural, since he seems to be contradicting himself. So please choose a button on the left, like 1 or 2, indicating that Bert's reply is unnatural.

Here is one more example: Please indicate how natural you find Don's reply in the following conversation:

> *Betty*: "I have to pick up Alice's son at the airport."
> *Don*: "Wait, I didn't know you have a son."
> *Betty*: "I didn't say that I do. Sheesh."
>
> (Completely   1   2   3   4   5   6   7   (Completely
> unnatural)   ○   ○   ○   ○   ○   ○   ○   natural)

In this case you would probably feel that Don's reply is unnatural, since Betty didn't say she has a son. So please choose a button on the left, like 1 or 2, indicating that Don's reply is unnatural.

Are you a native speaker of English? ○ Yes ○ No

The main questions were introduced with the following additional instruction:

Please indicate how natural you find the following statements in the given scenarios — in the sense of being a natural thing to say, or whether it would make sense in the situation — on a scale from 1 ("completely unnatural") to 7 ("completely natural"). Please read each example carefully.

The examples and results for the target sentences from 3 are as follows. (I omit the rating scales. The order of the examples differed.) For (12):

> Please answer how natural you find the townsperson's reply in the following conversation.
>
> > *Mayor*: "If it snows, I regret that your street won't get plowed."
> > *Townsperson*: "Wait, my street isn't going to get plowed?"
> > > *(mean = 6.3; SEM = .19)*

> Please answer how natural you find the mayor's reply in the following conversation.
>
> > *Mayor*: "If it snows, I regret that your street won't get plowed."
> > *Townsperson*: "Wait, my street isn't going to get plowed?"
> > *Mayor*: "I didn't say that. Maybe it will."
> > > *(mean = 2.0; SEM = .37)*

For (13)/(14):

> Please answer how natural you find Charlie's reply in the following conversation.
>
> > [Scenario: NASA has been seeking recruits for a trial teleportation mission. The mission is dangerous, so only those in the top physical condition will be chosen.]
> > *Bert*: "If Alice gets teleported, she will be glad she has been training every day."
> > *Charlie*: "Oh, I didn't know Alice has been training. What exercises has she been doing?"
> > > *(mean = 5.8; SEM = .23)*

For (15):

> Please answer how natural you find Sal's reply in the following conversation.
>
> > [Scenario: An advanced music competition is being held, and no one could make it to the finals without rigorous preparation.]
> > *Manuel*: "If Sharon makes it to the finals, she will be glad she has been practicing every day."
> > *Sal*: "Oh, I didn't know Sharon has been practicing so much. How long does she usually practice for?"
> > > *(mean = 5.4; SEM = .30)*

> Please answer how natural you find Sal's reply in the following conversation.
>
> > [Scenario: An advanced music competition is being held, and no one could make it to the finals without rigorous preparation.]
> > *Manuel*: "If Sharon makes it to the finals, she will continue practicing every day."
> > *Sal*: "Oh, I didn't know Sharon has been practicing so much. How long does she usually practice for?"
> > > *(mean = 5.0; SEM = .32)*

> Please answer how natural you find Sal's reply in the following conversation.
>
> > [Scenario: An advanced music competition is being held, and no one could make it to the finals without rigorous preparation.]
> > *Manuel*: "If Sharon makes it to the finals, all the practicing she has been doing will be clear to the judges."

> *Sal*: "Oh, I didn't know Sharon has been practicing so much. How long does she usually practice for?"
>
> *(mean = 5.4; SEM = .29)*

Additional examples included variants of (7)–(8) (adapted from the literature), an 'if not' tag, and an attention and comprehension check with 'think':

Please answer how natural you find Ellie's reply in the following conversation.

> [Scenario: Dorothy and Ellie are preparing for a scuba diving trip with some friends.]
> *Dorothy*: "If Amanda wants to impress us, she will bring her wetsuit."
> *Ellie*: "Wait, I didn't know Amanda already has a wetsuit. Are you sure?"
>
> *(mean = 5.6; SEM = .27)*

Please answer how natural you find Justin's reply in the following conversation.

> [Scenario: Jenn and Justin are preparing for a trip with some co-workers.]
> *Jenn*: "If Sara wants to impress us, she will bring her skis."
> *Justin*: "Oh, I didn't know Sara has skis. Does she have poles too?"
>
> *(mean = 5.1; SEM = .39)*

Please answer how natural you find Daniel's reply in the following conversation.

> [Scenario: Ellen and Daniel are preparing for a trip with some co-workers.]
> *Ellen*: "If Sally is a skier, she will bring her skis."
> *Daniel*: "Oh, I didn't know Sally has skis. Does she have poles too?"
>
> *(mean = 3.6; SEM = .38)*

Please answer how natural you find Al's reply in the following conversation.

> [Scenario: Al recently moved to a new home. He informed the movers that his books were important to him, and his crystal dishes were invaluable. Pat, the head of the moving company, later tells Al:]
> *Pat*: "I regret that we damaged your books, if not your crystal."
> *Al*: "Wait, my books got damaged? How did that happen?"
>
> *(mean = 6.0; SEM = .28)*

Please answer how natural you find Andre's reply in the following conversation.

> [Scenario: An advanced music competition is being held, and no one could make it to the finals without rigorous preparation.]
> *Rita*: "If Julian doesn't make it to the finals, people will think he hasn't been practicing."
> *Andre*: "Oh, Julian hasn't been practicing? What has he been doing instead?"
>
> *(mean = 2.4; SEM = .23)*

Participants were instructed to ensure that every question was answered. For quality purposes, incomplete submissions, submissions completed in under 200 seconds, and submissions that answered the attention and comprehension check question with a 6 or 7 were not included in the analysis. (38 participants were recruited in total. 10 were excluded for failing the quality checks.)

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