On the ambiguity of *will*-conditionals*

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Abstract

We bring together two widely accepted ideas: (i) conditionals with modal consequents are systematically ambiguous between a reading on which the if-clause restricts the modal, and a reading on which the if-clause introduces an epistemic supposition and the modal is unrestricted; (ii) 'will' is a modal. Together, (i) and (ii) imply that *will*-conditionals are systematically ambiguous between a reading as restricted historical claims, and one as unrestricted historical claims made under a supposition. We argue that this prediction is borne out and that the existence of the relevant ambiguity has far-reaching repercussions for several important debates concerning conditionals, including: the debate on the relation between past tense indicatives and counterfactuals; on whether *will*-conditionals belong with the former or with the latter kind; on the presuppositions of indicative conditionals; on the relation between conditionals and supposition; and on the role of indicative conditionals in deliberation.

1 Introduction

Our aim is to show that two widely accepted ideas, when taken together, have far-reaching implications for the analysis of conditionals. The first idea is that conditionals whose consequent contains a modal are systematically ambiguous (Geurts, 2004): on one reading, they are restricted modal claims; on another reading, they are unrestricted modal claims made under a supposition. The second idea is that *will* is a (historical) modal (Abusch, 1997; Condoravdi, 2003; Kaufmann, 2005; Cariani and Santorio, 2018; Cariani, 2021). Together, these ideas imply that conditionals of the form "if A, will B" (henceforth: *will*-conditionals) are systematically ambiguous between a reading as restricted historical claims, and one as unrestricted historical claims under a supposition.

We will argue that *will*-conditionals are indeed ambiguous in this way, and that this fact has important repercussions for several long-standing debates about conditionals. These debates revolve around the following four generalizations:

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1. ***Will*-conditionals are akin to counterfactuals:**
   A *will*-conditional "if A happens, B will happen" says the same thing, modulo tense, as a counterfactual "if A had happened, B would have happened".

2. **Indicative constraint:**
   An indicative conditional "if A, B" can be used felicitously only if the antecedent A is epistemically possible.

3. **Adams' Thesis:**
   The probability of an indicative conditional "if A, B" is the conditional probability of B, given A.

4. ***Will*-conditionals give reasons for action:**
   The truth of a conditional "if x does A, B will happen" provides a (defeasible) reason for x to do A, if B is desirable, and not to do A, if B is undesirable.

The literature contains counterexamples showing that, as stated, all these generalization are false. Nevertheless, there is ample evidence suggesting that something in the vicinity must be true. As we will see, recognizing the ambiguity of *will*-conditionals allows us to diagnose precisely why these generalizations sometimes fail, and to see how they should be amended in response.

We are not the first to claim that *will*-conditionals are ambiguous. This view has been taken, in particular, by Morton (2004), Kaufmann (2005), and Khoo (2015). However, our contribution is novel in at least three respects. First, we provide new evidence for the existence of the ambiguity. Second, our aim is not merely to show that *will*-conditionals are ambiguous, but to show that their ambiguity is a special case of a general, and well-known, ambiguity observed in many other kinds of conditionals. This is a crucial point which, to the best of our knowledge, has not been made before: previous work either left the relevant ambiguity unexplained (Morton, 2004), or gave a different account of the ambiguity (Kaufmann, 2005; Khoo, 2015, cf. §6). Third, and most importantly, we will argue that the existence of this ambiguity has far-reaching repercussions for the issues mentioned in the previous paragraph, which have not yet been fully appreciated.

The paper is structured as follows: in Section 2 we introduce relevant background on the restrictor view of conditionals and on the systematic ambiguity of modal conditionals; in Section 3 we argue that this ambiguity is present in *will*-conditionals; in Section 4 we discuss the repercussions of the ambiguity; in Section 5 we discuss the scope of the ambiguity, arguing that it does not extend to past tense indicative conditionals; in Section 6 we discuss alternative accounts of our ambiguity, comparing them to our own; Section 7 concludes.

2 Background

This section introduces some background for our contribution. We present a prominent theoretical framework for thinking about conditionals—the *restrictor view*—and we illustrate a systematic ambiguity that arises in quantified conditionals—the *C/O ambiguity*—discussing how it finds a natural explanation in the restrictor view.

2.1 The restrictor view of conditionals

The *restrictor view* of conditionals (Kratzer, 1981, 1986) is the view that *if*-clauses are, in general, devices to restrict the domains of various operators. It is widely regarded as the most satisfactory linguistic account of conditionals, and as the most promising route to a fully unified analysis of the wide range of conditional constructions (Rothschild, 2012).

To illustrate the view, consider a conditional involving the adverbial quantifier *always* (cf. Lewis, 1975):

(1) If it's a sunny day, we always have breakfast on the terrace.

Intuitively, this sentence can be paraphrased as:

(2) On every day which is sunny, we have breakfast on the terrace.

As this paraphrase suggests, *always* acts as a universal quantifier over a relevant domain of cases, which in this example can be identified with days. The role of the *if*-clause is to restrict this domain to those cases that satisfy the *if*-clause—here, to those days that are sunny. Without committing ourselves to a particular theory of how the restriction comes about compositionally, we may represent the logical form of (1) as

$$\textsc{always}_{\mathsf{sunny}}(\mathsf{terrace})$$

where the subscript notation indicates that the domain of ALWAYS is being restricted by the clause sunny (= "it's a sunny day").[1]

For another example, this time involving an epistemic modal, consider:

(3) If the murder took place in the morning, it cannot have been the butler.

On the standard account (Kratzer, 1981), epistemic modals quantify over a set of epistemic possibilities—possible worlds compatible with the available information. It is then natural to analyze (3) as follows:

(4) No possibility in which the murder took place in the morning is one where it was the butler.

Thus, the modal *cannot* acts as a negative universal quantifier over the set of epistemic possibilities. The role of the *if*-clause in (3) is to restrict the domain of this modal, from all epistemic possibilities to only those where the murder took place in the morning. In our notation, we can represent the logical form of (3) as $\textsc{cannot}_{\mathsf{morning}}(\mathsf{butler})$.

The restrictor view faces a potential problem with *bare* conditionals like (5), that do not seem to contain any operator for the *if*-clause to restrict.

(5) If the murder took place in the morning, the gardener did it.

In response, various authors have proposed that (5) in fact contains a covert modal, which could be either a necessity modal (Kratzer, 1986), or a selectional modal (Cariani, 2021; Khoo, 2022). Alternatively, Ciardelli (2022) proposed an account that does not postulate covert modals, but treats the *if*-clause in (5) as restricting an information state

[1] For compositional implementations of the restrictor view see, among others, von Fintel (1994); Kaufmann (2005); Reich (2009); Schulz (2010); Kratzer (2012); Khoo (2018); Ciardelli (2022).

parameter that plays a distinctive role in the semantics/pragmatics interface. While these theories differ in various respects, they all agree that the role of the *if*-clause in (5) is to restrict a set of epistemic possibilities: by asserting (5), one conveys that every epistemic possibility where the murder took place in the morning is one where the gardener did it. In order to remain neutral about which modal, if any, is restricted by the *if*-clause, we will represent (5) by the notation

$$\mathsf{morning} \Rightarrow \mathsf{gardener}$$

and similarly for other conditionals where the *if*-clause makes an epistemic restriction in the absence of a corresponding overt epistemic modal.

2.2 The C/O ambiguity

As demonstrated by Geurts (2004), conditionals whose consequent contains a modal or a (different kind of) quantifier are generally ambiguous in a systematic way. Consider (6):

(6) If Beryl is in Paris, she often visits the Louvre.

On one reading, (6) is a claim of conditional frequency, which can be paraphrased as:

(7) On many of the occasions on which Beryl is in Paris, she visits the Louvre.

As this paraphrase makes clear, this reading arises when the *if*-clause restricts the domain of occasions that the quantifier *often* ranges over. Geurts calls this the *O-reading* of (6), since it arises when the *if*-clause restricts the domain of the Overt quantifier *often*.

However, (6) also has another reading, which becomes salient in the following context: our friend Beryl, an avid art lover, told us some months ago that she'd be spending her sabbatical in a European capital, visiting museums every weekend; she had not yet decided on her destination. Not knowing where she ended up going, we now assert (6). What we thereby express is that from the supposition that Beryl is in Paris we can conclude that she visits the Louvre often. In this case, the interpretation of (6) is analogous to that of a bare conditional like (5): the *if*-clause restricts a set of epistemic possibilities, while the adverbial quantifier remains unrestricted. Geurts calls this the C-reading, since he assumes, with Kratzer, that it arises when the *if*-clause restricts a Covert epistemic modal. Using the notation from the previous section, we can represent the LFs giving rise to the two reading as follows:

$$\text{O-reading: } \textsc{often}_{\mathsf{Paris}}(\mathsf{Louvre}) \qquad \text{C-reading: } \mathsf{Paris} \Rightarrow \textsc{often}(\mathsf{Louvre})$$

Let us now illustrate how the C/O ambiguity arises for conditionals whose consequent contains a modal. Suppose Alice and Bob are colleagues and consider:

(8) If Alice leaves, Bob must stay.

On one reading, (8) is a claim of conditional obligation: it is true in a situation in which it is required that one of Alice and Bob be present at work—it doesn't matter who. In this situation, Bob is not required to stay, but he is required to stay *conditionally on Alice leaving*. This conditional obligation reading is naturally accounted for as an O-reading, with the *if*-clause acting as a restrictor of the modal base for the deontic

must: on this analysis, what (8) claims is that among the worlds where Alice leaves, the deontically ideal ones are worlds where Bob stays.

On another reading, (8) is a conditional claim of plain, unconditional obligation: this reading is true in a situation in which a specific employee—Alice or Bob, we don't know who—is required to be present at work. Since Alice is very conscientious, if she leaves we may conclude that Bob is the one who must stay. This reading arises naturally as a C-reading, with the antecedent restricting the set of epistemic possibilities and the deontic modal remaining unrestricted. It may be paraphrased as: every epistemic possibility where Alice leaves is a possibility where the (overall) deontically ideal worlds are worlds where Bob stays. In our notation, we can represent the two readings as follows, where A = "Alice leaves" and B = "Bob stays":[2]

$$\text{O-reading: } \textsc{must}_{\mathsf{A}}(\mathsf{B}) \qquad \text{C-reading: } \mathsf{A} \Rightarrow \textsc{must}(\mathsf{B})$$

To conclude, it is worth emphasizing that the C/O ambiguity is not just something that we observe empirically. Rather, on the basis of the restrictor view, its existence is *expected*. Indeed, if a conditional contains a modal or quantifier in the consequent, an *if*-clause may, in principle, be interpreted as restricting the domain of this operator, leading to an O-reading. Meanwhile, the interpretation of bare conditionals suggest that *if*-clauses may always be interpreted as restricting a set of epistemic possibilities, even in the absence of overt epistemic modals, leading to a C-reading.

3 The C/O ambiguity in *will*-conditionals

As we discussed in the previous section, conditionals involving modals in the consequent are ambiguous in a systematic way. Furthermore, this ambiguity is expected to arise for such conditionals on theoretical grounds. In recent years, several authors have argued that *will* is a modal and have proposed accounts of *will* within the general framework of modal semantics (Abusch, 1997; Condoravdi, 2003; Kaufmann, 2005; Cariani and Santorio, 2018; Cariani, 2021). We thus expect the C/O ambiguity to arise, in particular, for conditionals whose consequent contains *will*. Such conditionals play a prominent role in the way we think and talk about the future, formulate predictions, and make decisions; they are also the subject of several important disputes in the literature. It thus seems crucial to ask whether the C/O ambiguity indeed arises for them, and if so, what consequences this fact might have. In this section, we will argue that the C/O ambiguity indeed arises for *will*-conditionals. In the next section we will then examine four important consequences of the existence of this ambiguity.

Consider (a geographical variant of) the famous riverboat scenario by Gibbard (1980). Sly Pete is playing poker in a smoky room of an old Venetian hotel. His opponent, don

[2]Our notation may suggest that we take the *if*-clause to have a very different semantics in the O-reading and in the C-reading. This is not the idea: we are assuming a uniform analysis of *if*-clauses as restrictors. As mentioned above, we use the notation $\mathsf{A} \Rightarrow \textsc{must}(\mathsf{B})$ to remain neutral about the exact LF of C-readings—whether they contain a covert modal and, if so, what kind. Thus, e.g., if 0 is an index for epistemic modality and 1 for deontic modality, then on a traditional Kratzerian analysis the O-reading could be represented as $(\textsc{must}_1)_{\mathsf{A}}(\mathsf{B})$ and the C-reading as $(\textsc{must}_0)_{\mathsf{A}}(\textsc{must}_1(\mathsf{B}))$; on the version of the restrictor view proposed by Ciardelli (2022), instead, the O-reading would be $\mathsf{A} \Rightarrow_1 \textsc{must}_1(\mathsf{B})$, and the C-reading $\mathsf{A} \Rightarrow_0 \textsc{must}_1(\mathsf{B})$. The crucial thing that our notation is meant to highlight visually is that the modal in the consequent is restricted in the O-reading, and unrestricted in the C-reading.

Sasso, has bet up to the limit for the hand, and it is now up to Pete to call or fold. Secretly, Pete's henchman Zack has signalled to Pete the content of don Sasso's hand.[3] Now consider the conditional:

(9) If Pete calls, he will win.

Is that true? Intuitively, for someone who knows what we know, there seem to be two natural answers, each of which seems supported by a reasonable line of thought.

- Answer 1: uncertain.

  Motivation: Should Pete call? We don't know. After all, we don't know whether he will win if he calls. That is, we don't know whether (9) is true. It depends on the cards he has.

- Answer 2: acceptable.

  Motivation: Pete knows his opponent's cards, is a competent poker player, and plays to win: he is not going to call with a losing hand. So if he calls, that means he has a winning hand, and so he will win. Therefore, (9) is true/acceptable.[4]

We are going to show that these two reactions are exactly what we expect to see if (9) allows both for an O-reading and for a C-reading.

To make predictions about these readings we need to build on a theory of WILL. We adopt the theory proposed by Cariani and Santorio (2018) (henceforth: C&S) and further elaborated by Cariani (2021); this theory has a lot going for it, but we will not rehearse the arguments in its favor here. According to this theory, the semantics of WILL involves two parameters: a modal base m, and a selection function f. On the most common interpretation of WILL, the modal base is *historical*: it is initialized by context to the map m_c sending a world w to the set $m_c(w)$ of worlds which are duplicates of w up to the time of utterance.[5] The selection function f maps a world w and a set of worlds X to a world $f(w, X)$, in accordance with the following constraints.

1. Success: $f(w, X) \in X$ whenever $X \neq \emptyset$.
2. Centering: $f(w, X) = w$ whenever $w \in X$.

A claim WILL(A) is true at a world w relative to m and f in case A is true at $f(w, m(w))$.

To make the discussion more intuitive, it will be helpful to introduce a toy model of our scenario, which involves four possible worlds:

[3] A note of caution here: a famous variant of Gibbard's scenario involves not one but *two* henchmen, with different information states, who are intuitively justified in making conflicting conditional claims. However, our scenario crucially does *not* involve variation between different information states: we assume our sentence to be assessed (and potentially asserted) in a context where the relevant available information is the same for each participant, namely, the information given in the above description. So, our discussion does not depend on whether we diagnose Gibbard's two-henchmen case along contextualist lines (Kratzer, 1986), or along expressivist/dynamic semantics lines (Gibbard, 1980; Goldstein, 2022).

[4] On several accounts (e.g., Gillies, 2004; Yalcin, 2007; Starr, 2014; Ciardelli, 2021; Santorio, 2022) epistemic conditionals are not strictly speaking *true* or *false* relative to a state of affairs. On these accounts, our talk of a conditional being *true* actually tracks the fact that the conditional is *acceptable*, or *supported*, on the basis of the availabe information. This will not affect our argument.

[5] In addition, as a reviewer points out, WILL can receive an epistemic interpretation, as in "The laundry will be done by now". Cariani and Santorio's theory of WILL is designed to cover these readings as well, but they are not the focus of our paper. We briefly come back to them in Section 6.1.

- w_1: Pete has a winning hand and folds;
- w_2: Pete has a winning hand, calls, and wins;
- w_3: Pete has a losing hand and folds;
- w_4: Pete has a losing hand, calls, and loses.

We may represent these worlds visually as paths passing through two moments of time, as in Figure 1. Note that w_1 and w_2 are duplicates up to the time of utterance (i.e., the time prior to Pete's action), and so are w_3 and w_4.

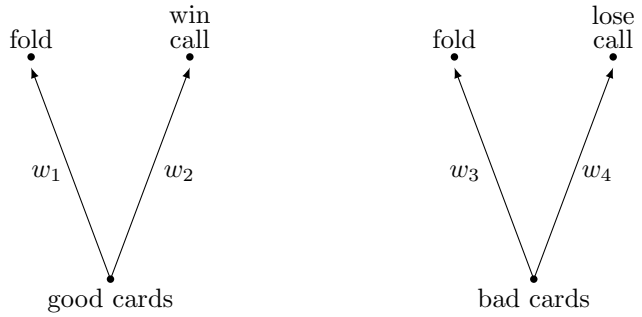

Figure 1: A toy model of the Sly Pete scenario.

Consider first the O-reading of our conditional, $\text{WILL}_{\mathsf{call}}(\mathsf{win})$. Take a world w in which Pete has a losing hand. All worlds in the historical modal base $m_c(w)$ (i.e., all historical duplicates of w up to the time of utterance) are worlds where Pete has a losing hand. Now suppose we restrict $m_c(w)$ to worlds where Pete calls. Then every world in the restricted set is a world where Pete calls with a losing hand and therefore loses. No matter which world is picked by the selection function for WILL, the prejacent win is false at that world. Therefore, the restricted modal claim $\text{WILL}_{\mathsf{call}}(\mathsf{win})$ is false at w.[6]

[6]How do we know that $m_c(w)$ contains any world in which Pete calls? In the given scenario, it seems determinate that Pete will fold if he has a losing hand. Thus, one may think that at the world w we are considering, where Pete has a losing hand, it is not historically possible for him to call—i.e., there are no worlds in $m_c(w)$ where he calls. This would make the O-reading uninterpretable at w, due to a general ban on empty domains (more in Section 4.2).

We think this objection rests on a specific conception of the domain of historical possibilities that are relevant for *will*, namely, that it contains those worlds that are left open by facts up to the relevant time and the laws of nature. This particular conception of the domain of *will* is not forced on us, however; it is merely a theoretical hypothesis, that must ultimately be assessed on the basis of linguistic data. In our view, it is more likely that the kind of branching time that is relevant to the way we think and talk about the future is one where, whenever an agent is faced with a choice between different actions, these actions are regarded as genuine historical possibilities, whether or not the decision of the agent is ultimately nomically determined (as it often will be, presumably, and as it always is if the world is deterministic). In Section 4.2 we will discuss some linguistic evidence that seems to support this idea.

In any case, while this point is interesting, it is not crucial for the purpose of establishing the ambiguity of *will*-conditionals. We may easily modify our example to ensure that this worry does not arise, by assuming that there is a small chance that Pete will make a mistake. In that scenario, the ambiguity still shows up in our assessment of the probability of (9): the C-reading is now judged almost certain, while the probability of the O-reading is simply the probability of Pete having the winning hand.

Reasoning in a similar way, we can see that in a world where Pete has a winning hand, the claim $\textsc{will}_{\mathsf{call}}(\mathsf{win})$ is instead true. So, the prediction is that on the O-reading, (9) is true if and only if Pete has a winning hand. Since we are uncertain whether Pete has a winning hand, we are uncertain about whether the O-reading is true. This accounts for Answer 1 above, vindicating the intuition that the truth of (9) depends on Pete's hand.

Let us illustrate this prediction by means of our toy model. Take world w_3: the set of its duplicates up to the time of utterance is $\{w_3, w_4\}$. Restricting to worlds where Pete calls leaves us with the singleton $\{w_4\}$. Therefore, the selection function is bound to pick w_4. Since Pete loses at w_4, the restricted modal claim $\textsc{will}_{\mathsf{call}}(\mathsf{win})$ is false at w_3. Reasoning similarly, we can see that this claim is instead true at w_2. Since w_2 and w_3 are both epistemically possible, we are uncertain whether $\textsc{will}_{\mathsf{call}}(\mathsf{win})$ is true or false.

Consider now the C-reading of our conditional, $\mathsf{call} \Rightarrow \textsc{will}(\mathsf{win})$. Remember that we have remained neutral about the LF of C-readings—whether it involves a covert necessity modal (Kratzer, 1986), a selectional modal (Cariani, 2021), or no modal at all (Ciardelli, 2022). For our purposes, all we need is an assumption about what it takes for a C-reading $\mathsf{A} \Rightarrow \mathsf{B}$ to be acceptable—a claim that all these analyses of epistemic conditionals (as well as many others) agree on: provided A is epistemically possible, $\mathsf{A} \Rightarrow \mathsf{B}$ is acceptable if in every epistemic possibility where A is true, B is true.

In the described scenario, we may take ourselves to know that Pete will call only if he has a winning hand (given that he knows his opponent's hand and he is a competent and rational player): in other words, every epistemic possibility is either one where Pete calls with a winning hand, or one where he folds with a losing hand. Thus, every epistemic possibility in which Pete calls is one in which he has a winning hand and, therefore, one where he will win. This shows that in every epistemic possibility where the antecedent of $\mathsf{call} \Rightarrow \textsc{will}(\mathsf{win})$ is true, the consequent is true.[7] Thus, the C-reading of (9) is predicted to be acceptable, which explains Answer 2.

Let us again illustrate this prediction in our toy model: among the worlds $w_1, \ldots, w_4$, the epistemic possibilities are only w_2 (Pete calls with a winning hand) and w_3 (Pete folds with a losing hand). Of these, the only world where Pete calls is w_2, and in this world, Pete will win. This explains why we accept the epistemic conditional $\mathsf{call} \Rightarrow \textsc{will}(\mathsf{win})$.

Summarizing: empirically, there seem to be two natural ways to react to (9) in the context we described. These two reactions are exactly what we expect to see if (9) is ambiguous between an O-reading, on which the *if*-clause restricts a set of historical possibilities, and a C-reading, on which it restricts a set of epistemic possibilities. So, there is empirical reason to think that *will*-conditionals are not an exception to the general pattern: just like other modal conditionals, they are ambiguous between an O-reading and a C-reading.[8]

[7] Given C&S's semantics for WILL, the worlds where the consequent $\textsc{will}(\mathsf{win})$ is true are simply those in which the prejacent win is true; this is because every world w belongs to the set $m_c(w)$ of its own duplicates up to the time of utterance; by constraint 2 on the selection function, $f(w, m_c(w)) = w$, so when the modal base is unrestricted, to evaluate $\textsc{will}(\mathsf{win})$ at w is just to evaluate win at w.

[8] A structurally analogous example is described in Khoo (2022), pp. 220–222. Khoo gives a different diagnosis of the ambiguity, which we compare to our own in Section 6.1.

4 Repercussions

In the previous section, we argued that *will*-conditionals are ambiguous between a historical O-reading and an epistemic C-reading. We will now show how recognizing this ambiguity can shed light on several long-standing problems about conditionals.

4.1 The classification of conditionals

The literature is dominated by a classification of conditionals into two kinds: *indicatives*, and *subjunctives*. The distinction is motivated by the following contrast, pointed out by Adams (1970):

(10) a. If Oswald didn't kill Kennedy, someone else did.
b. If Oswald hadn't killed Kennedy, someone else would have.

The two sentences are judged and interpreted differently. (10-a) receives an epistemic reading: in supposing the antecedent, we revise our beliefs about what the world is like; (10-b) receives a historical reading: in supposing the antecedent, we entertain a non-actual course of history.

Many authors have assumed that this difference is to be accounted for in terms of the contribution of indicative or subjunctive marking (Stalnaker, 1976; von Fintel, 1998; Starr, 2014; Schulz, 2015).[9] But, is this assumption correct?

We saw that the difference between epistemic readings and historical readings arises even for a single *will*-conditional like (9)—thus, even in the absence of a difference in tense or mood marking. To see that this is the same difference manifested by Adams' pair, take again the riverboat scenario, and suppose we leave the room before Pete calls or folds. Time goes by: the events are now in the past, but our information has not changed. Now we are clearly in a position to accept (11-a): if Pete called, that means he had a winning hand, so he won. But we are not in a position to accept (11-b): after all, perhaps Pete had a losing hand and folded; in that case, if he had called, he would have lost; so (11-b) may be false.

(11) a. If Pete called, he won.
b. If Pete had called, he would have won.

This strongly suggests that (11-a) shares the acceptable epistemic (C-)reading of (9), while (11-b) shares the uncertain historical (O-)reading of (9). Hence, the difference between the past indicative (11-a) and the past subjunctive (11-b) presumably comes about in just the same way as the difference between the two readings of (9): in (11-a), the *if*-clause restricts a set of epistemic possibilities, while in (11-b), it restricts a set of (past) historical possibilities. This seems independently plausible: after all, (11-a) contains no overt modal to be restricted, so the only available reading is an epistemic C-reading; by contrast, (11-b) contains the historical modal *would*, which may be restricted by the *if*-clause yielding a historical reading.[10] The same goes for Adams' pair in (10).[11]

[9] Or, perhaps more appropriately, *O-marking* and *X-marking* (von Fintel and Iatridou, 2023).

[10] In addition, (11-b) may have an epistemic reading as well, arising as a C-reading. While this reading appears to be less prominent, there is some evidence for its existence (Edgington, 2008; Khoo, 2015).

[11] To be clear, we are not denying that mood and tense play an important role in the semantics of the

This conclusion also dissolves a long-standing debate on whether *will*-conditionals should semantically be grouped with past indicatives like (10-a) (as argued by Gibbard, 1980; Edgington, 1995; Bennett, 2003), or "relocated" with past subjunctives like (10-b) (as argued by Dudman, 1984; Bennett, 1988). Both sides of the debate had strong arguments going for them. If we are right, the debate was based on a false dilemma: *will*-conditionals have *both* a reading in common with past indicatives, and one in common with past subjunctives.

Our perspective also suggests an alternative to the traditional classification of conditionals into indicatives and subjunctives. Indeed, on the basis of the restrictor view, a semantically natural way to classify conditionals is according to the kind of domain targeted by the *if*-clause. We will thus have:

- epistemic conditionals, whose *if*-clause targets a domain of epistemic possibilities;
- historical conditionals, whose *if*-clause targets a domain of historical possibilities;
- deontic conditionals, whose *if*-clause targets a domain of deontic possibilities;
- frequential conditionals, whose *if*-clause targets a domain of cases/occasions;
- ...

Of course, this classification applies at the level of logical form; so, e.g., our conditional in (9) may be interpreted as a historical conditional $\textsc{will}_{\mathsf{call}}(\mathsf{win})$ or as an epistemic conditional with a historical consequent, $\mathsf{call} \Rightarrow \textsc{will}(\mathsf{win})$.

In the rest of this section we will illustrate the power of this alternative classification by showing how it allows us to improve on existing generalizations about conditionals.

4.2 The indicative constraint

It is widely held that indicative conditionals require their antecedents to be epistemically possible (see, a.o., Stalnaker, 1976; Gillies, 2004; Starr, 2014; Schulz, 2015; Mandelkern, 2021), obeying some version of the following principle.

Traditional compatibility constraint
An indicative conditional can be used felicitously in a context only if its *if*-clause is true at some world that is epistemically possible in that context.

For instance, the discourse in (12) is infelicitous, which is plausibly explained by the fact that the first sentence rules out the antecedent of the subsequent conditional.

(12) Pete didn't call. #If he called, he lost.

However, there are apparent counterexamples to this claim. Some of these involve *will*-conditionals. For instance, if we know that Pete had a losing hand, we can say:

(13) Pete won't call. [After all,] if he calls, he will lose.

relevant conditionals—they do, but they are not responsible for the different flavor of (10-a) and (10-b).

Although the first sentence rules out Pete calling, the subsequent indicative seems perfectly felicitous.[12]

Other counterexamples involve adverbial quantifiers, as illustrated by the following discourse.

(14) Beryl is not in town. [After all,] if she's in town she always gives me a call.

Again, the conditional is perfectly felicitous.

How should we make sense of these observations? The solution is to avoid sweeping generalizations about indicative conditionals, and instead pay attention to the more fine-grained classification discussed in the previous section. Some indicative conditionals are epistemic, but some are not, and their semantic properties are bound to be different from those of epistemic conditionals. In a single context, there are multiple domains of possibilities (epistemic, historical, deontic, etc.) that an (indicative) if-clause could in principle serve to restrict. In view of this, we think the correct generalization is the following:[13,14]

Generalized compatibility constraint
A conditional can be used felicitously in a context only if its *if*-clause is true at some element of the particular domain it restricts.

Let us see how this proposal allows us to explain the data above. In the case of epistemic conditionals, the relevant domain is the set of *epistemic* possibilities open in the context. So, for these conditionals our constraint amounts to the requirement that the antecedent be epistemically possible. This explains the infelicity of (12).

However, in the case of historical conditionals, the *if*-clause does not restrict a set of epistemic possibilities, but a set of *historical* possibilities—the set of histories open at a

[12] One may wonder whether the felicity of (13) is due to the particular explanatory role of the conditional, rather than to the fact that the conditional is about the future. A natural idea ([redacted], p.c.) may be that in the context of giving reasons for a proposition p, the presupposition of p is temporarily suspended. This, however, does not seem to be the reason why (13) is felicitous. Suppose again we know that Pete had a losing hand, and suppose we left the room before Pete made his decision: even though the conditional is intended to play an explanatory role, the discourse in (i-a) still sounds infelicitous, in contrast with the ones in (13) and (i-b).

(i) a. Pete did not call. [After all,] #if he called he lost.
b. Pete did not call. [After all,] if he had called he would have lost.

[13] This subsumes as special cases proposals that have been made before about epistemic conditionals (see, e.g., von Fintel, 1998; Gillies, 2009; Khoo, 2015) and counterfactuals (see, e.g., von Fintel, 2001; Gillies, 2007; Khoo, 2015) (cf. also Schultheis, 2023, for related ideas on counterfactuals).

[14] Some authors (Mandelkern, 2021; Boylan and Schultheis, 2022) have pointed out that the compatibility constraint must be generalized to deal with embedded conditionals: the idea is that an indicative conditional requires its if-clause to be true at some element of its *local context*, which could differ from the domain of live epistemic possibilities if the conditional is embedded. Our proposal is meant to generalize the constraint in a different direction, by recognizing that even in the unembedded case, there are different domains of possibilities that an if-clause could target, resulting in different felicity conditions. We think both generalizations are needed, and take it that the above principle should be combined with a theory that determines local domains for embedded occurrences of *if*-clauses, in the spirit of the above accounts. Ultimately, the requirement in its general form amounts to the condition that the domain resulting from the restriction with an *if*-clause be non-empty, which is presumably grounded in a general ban against empty domains of quantification (cf. von Fintel, 1998).

given time. The requirement will then be that the antecedent be true at some of these possibilities—i.e., be historically possible. In (13), since Pete is yet to call or fold, the possibility of calling is presumably historically open, which explains why the conditional is felicitous.[15]

Finally, in (14), the relevant interpretation of the conditional is one where the *if*-clause restricts a set of relevant occasions. Thus, in this case what is required is that there be occasions on which Beryl is in town. This requirement may well be satisfied even though Beryl is known not to be in town on the current occasion, which explains why (14) is felicitous. This diagnosis is confirmed by contrasting (14) with (15), where the requirement is violated:

(15) Beryl is never in town. #After all, if she's in town she always gives me a call.

To conclude: if we classify conditionals according to the parameter restricted by the *if*-clause, as proposed in the previous section, we can explain why different kinds of (indicative) conditionals differ in their felicity conditions, and we can give a simple and plausible explanation of observations which are puzzling for a view that treats indicative conditionals as a semantically uniform class.

4.3 Conditionals and supposition

In its general version, the *Ramsey test* idea (so-called after an influential passage in Ramsey, 1929) is the idea that to bear an attitude to a conditional is to bear that attitude to the consequent on the supposition of the antecedent. Thus, e.g., to accept a conditional is to accept the consequent on the supposition of the antecedent; to have a certain degree of credence in a conditional is to have that degree of credence in the consequent on the supposition of the antecedent; and so on. The idea has great psychological appeal and is well-supported by empirical data (Evans and Over, 2004). Nevertheless, the literature contains apparent counterexamples (McGee, 2000; Kaufmann, 2004; Rothschild, 2013; Moss, 2018; Mandelkern and Khoo, 2019; Mandelkern, 2024). These are cases in which our attitude to a conditional seems to diverge from our attitude to the consequent on the supposition of the antecedent. The most compelling of these examples involve *will*-conditionals, and scenarios which instantiate precisely the same kind of structure as the Sly Pete scenario discussed above, illustrated by Figure 1.[16]

To illustrate the general pattern, consider again the conditional (9) ("if Pete calls, he will win") in the scenario above. On one reading, it is true just in case Pete has a winning hand. Thus, our credence in the conditional is just our credence that Pete has a winning hand; we may suppose this is low, since (let us stipulate) we know that don Sasso has an excellent hand. At the same time, we consider it nearly certain that Pete will call only if he has a winning hand, and so our conditional credence that Pete will win given that he in fact calls is very high. So, it would appear, we have low credence in the conditional, although we have high credence in the consequent on the supposition of the antecedent, in violation of the Ramsey test idea.

[15] Note that, if our diagnosis is right, the felicity of (13) is evidence that the possibility of Pete calling is regarded as historically open, even though it is known—and presumably nomically determined—that he is going to fold (cf. footnote 6).

[16] Alleged counterexamples not involving *will*-conditionals include McGee (2000) and Khoo's (2016) adaptation of the cases in Kaufmann (2004). About these cases, see [redacted].

But this conclusion is premature. To see why, consider the following question:

(16) Suppose Pete calls. How likely is it that he will win?

In this case, too, there seems to be two natural answers, corresponding to the two judgments for (9). For when we suppose that Pete calls, we could do either of two things. We could treat Pete's calling as if it were a piece of evidence, and consider what that would tell us about the present state of affairs. In this case, we would come to the conclusion that he most likely has winning cards, and will probably win. Or, we could treat history until now as fixed, and imagine what course of events would result from Pete calling. In this case, given that the probability of Pete having a winning hand is (say) middling, we would not consider it very likely that he will win.

This suggests that, just as there are two ways to interpret the *if*-clause in a *will*-conditional, there are also two ways to make a supposition. On one way—call it the *epistemic* mode of supposition—we restrict the set of worlds we consider possible, with a corresponding rescaling of probabilities, captured by the notion of conditionalization; on a different way—call it the *historical* mode—we restrict the possible continuations of each partial history compatible with our beliefs, and transfer probabilities by (some version of) imaging. Such a distiction between two modes of supposition has been extensively discussed in the literature on decision theory (see, e.g. Joyce, 1999; Bradley, 2017), belief revision (see, e.g., Gärdenfors, 1988; Katsuno and Mendelzon, 1992; Eva *et al.*, 2022) and causal inference (Pearl, 2000, e.g.). For instance, Bradley (2017) delineates a difference between "evidential" and "interventional" suppositions as follows.

> When you make a supposition as part of evidential reasoning, you reason as if you have received evidence that implies the truth of the supposition. In contrast, when you suppose something interventionally you imagine that there has been some intervention in the course of events which makes the supposition true. In this latter case, unlike the former, you do not revise your degrees of belief in any of the causes of the condition supposed true because you do not treat your supposition as positive evidence for them. (Bradley, 2017, p. 91)

With this distinction in mind, we can now explain what is wrong with our putative counterexample to the Ramsey test (and the similar ones in the literature). The problem arises from comparing our attitude towards a *historical* conditional, $\textsc{will}_{\mathsf{call}}(\mathsf{win})$, with our attitude to the consequent under the *epistemic* supposition of the antecedent. However, the correct way to understand the Ramsey test, we propose, relates kinds of conditionals to *corresponding* kinds of supposition (see also Bradley, 2007).

Generalized Ramsey test
Attitudes towards conditionals of a certain kind coincide with conditional attitudes under the corresponding kind of supposition.

In particular, our attitude to an *epistemic* conditional $\mathsf{A} \Rightarrow \mathsf{B}$ should reflect our attitude to B under the epistemic supposition of A; but our attitude to a *historical* conditional $\textsc{will}_{\mathsf{A}}(\mathsf{B})$ should reflect our attitude to B under the *historical* supposition of A. Furthermore, since Bayesian conditionalization captures the *epistemic* mode of supposition,

Adams' thesis that the probabilities of conditionals are conditional probabilities should be understood as a claim about the probabilities of *epistemic* conditionals. It should not be expected to apply to historical readings of *will*-conditionals, and as a consequence, intuitions about the probabilities of historical readings do not threaten the thesis.

In this way, many (though admittedly not all) alleged counterexamples to the Ramsey test and to Adams' thesis can be diagnosed as stemming from equivocation. Once the ambiguity of *will*-conditionals is properly taken into account, these seeming counterexamples are not only dispelled, but receive a natural explanation.

4.4 Conditionals in deliberation

Recognizing the ambiguity of *will*-conditionals also sheds light on another puzzle that has received attention in the literature (cf. DeRose, 2010; Barnett, 2012; Krzyzanowska, 2020). This puzzle concerns the role of *will*-conditionals in deliberation.

In deciding what to do, one normally entertains conditionals such as:

(17) a. If I do A, B will happen.
b. If I were to do A, B would happen.

If such conditionals are acceptable, they provide the deliberator with (defeasible) reason to do A, if B is desirable, and to refrain from doing A, if B is undesirable.

However, it has long been observed that this is not always the case with *will*-conditionals (Lewis, 1981; DeRose, 2010). In our scenario above, we may accept:

(18) If Pete calls, he will win.

Should we therefore advise Pete to call? Obviously not: after all, for all we know, he might have a losing hand. The acceptability of (18) gives Pete no reason whatsoever to call. The fact that we can *infer* from Pete's calling that he will win does not mean that his calling will *bring about* a win.

In response to such observations, many (e.g. Gibbard and Harper, 1978; Lewis, 1982) have concluded that indicative conditionals generally should not be used in deliberation. However, as DeRose (2010) and Krzyzanowska (2020) point out, this seems too radical: *will*-conditionals like (17-a) are routinely used in deliberation and to give advice, apparently interchangeably with (17-b). This raises an interesting question: why do *will*-conditionals usually, but not always, provide a reliable guide in deliberation?

In light of the preceding discussion, this question has a natural answer. It seems reasonable to assume that what matters for deliberation are *historical* readings of conditionals. This is in keeping with the fundamental idea of causal decision theory: in deciding whether to do A, what matters are the historical consequences of bringing about A, not what one can infer from the fact that A is brought about.

Thus, when we use a *will*-conditional in deliberation, what is relevant is its historical O-reading, $\textsc{will}_{\mathsf{A}}(\mathsf{B})$, not its epistemic C-reading, $\mathsf{A} \Rightarrow \textsc{will}(\mathsf{B})$. We can then characterize precisely the circumstances in which a *will*-conditionals can lead us astray in deliberation: these are cases in which the conditional is acceptable only under the C-reading, while the O-reading relevant for deliberation is unacceptable.

Our diagnosis also allows us to do justice to DeRose's claim that *will*-conditionals are unfit for deliberation if their acceptance is essentially based on backtracking consid-

erations. This is because the historical modal base for *will* fixes all facts up to the time of utterance; as a result, historical suppositions, which restrict this modal base, cannot affect what is accepted about the past. Thus, if a *will*-conditional is accepted based on backtracking considerations, what is accepted can only be the epistemic C-reading, which is indeed irrelevant for deliberation.

Finally, we can explain why (17-a) and (17-b) can often be used interchangeably in deliberation: presumably, they share a historical reading, differing only in how the antecedent is presented.

5 The scope of the ambiguity

We have linked the ambiguity of *will*-conditionals to the possibility for the *if*-clause to restrict the modal *will*. This diagnosis makes a prediction: a past tense indicative conditional like (19) should not be ambiguous in the same way.

(19) If Pete called, he won.

Is this prediction correct? We believe it is. Consider again the context in which we left the room before Pete called or folded. In this context, (19) clearly has an acceptable reading. Does it also have an uncertain reading? We, and many informants we consulted, think it does not (in contrast with the corresponding *will*-conditional).

To reinforce this *prima facie* intuition, we consider three ways to elicit the relevant (uncertain) historical reading. First, we have seen that historical readings become salient in contexts of deliberation. Indeed, this is the strategy we used in Section 3 to bring out the historical reading of our *will*-conditional. Let us try the same strategy with (19), and compare it with the corresponding future-directed case:

(20) (Before the events)
A: Should Pete call?
B: I don't know. After all, we don't know whether he will win if he calls.

(21) (After the events)
A: Should Pete have called?
B: I don't know. #After all, we don't know whether he won if he called.

There is a stark contrast between B's responses in the two cases: in the first dialogue, B's claim sounds justified; in the second dialogue, it just sounds false—we *do* know whether he won if he called. The reason why B's response in (20) can be heard as true is that the conditional "Pete will win if he calls" has an uncertain historical reading. If this reading were also available for the past tense indicative "Pete won if he called", we should similarly be able to hear B's response in (21) as true, contrary to fact.

A second diagnostic of historical readings is that they provide reasons for action, as we saw in Section 4.4. Now suppose B knows that Pete has a losing hand, and compare the following dialogues:

(22) (Before the events)
A: Why won't Pete call?
B: Because if he calls, he will lose.

(23) (After the events)
A: Why didn't Pete call?
B:??Because if he called, he lost.

Again, B's response in (22) sounds felicitous due to the historical reading of the *will*-conditional: the fact that calling would bring about a loss is a reason for Pete not to call. By contrast, B's response in (23) sounds not just false, but plainly incoherent: it does not provide even a *potential* reason for Pete's actions. This is presumably because the past indicative lacks the relevant historical "reason-giving" reading.

Finally, we argued above that the presence of a historical reading is what allows *will*-conditionals to obviate the requirement that the antecedent be epistemically possible, resulting in the following felicitous discourse:

(24) Pete will not call. After all, if he calls he will lose.

If a historical reading were available for (19), we would expect the following discourse (as uttered in a context where we left the room before Pete announced his decision) to be similarly felicitous. To our ears, it clearly isn't.

(25) Pete did not call. #After all, if he called he lost.

Based on these observations, we conclude that past-tense indicatives do not share the ambiguity we identified, in accordance with the predictions of our account.[17]

By contrast, the ambiguity could be present in future-oriented indicative conditionals, even in the absence of *will*. In our scenario, the following conditional might share the ambiguity of (9).

(26) If Pete calls, don Sasso is in trouble.

If this is right, one may wonder how it fits with our view, which ties the ambiguity to the presence of the modal *will* in (9). However, what is crucial for us is not the presence of *will* in particular, but more generally the presence of a historical modal. And, there are good reasons to think that there *is* such a modal in the relevant LF of (26).

First, the consequent of (26) clearly has a future-shifted interpretation, in spite of its present tense: don Sasso is not in trouble *right now*, but he will be *later*, if Pete calls.

[17] A reviewer points to the following passage from Moss (2018) that might be taken to suggest that past indicatives are ambiguous.

> Suppose that Zack and Jack are your henchmen, and you are collecting information from them. Zack says that if Pete called, he won. Jack says that if Pete called, he lost. As you reflect on your high credence that Zack is trustworthy, you are justified in saying: "Probably, if Pete called, he won". On the other hand, as you reflect on your high credence that Jack is trustworthy, you are justified in saying: "Probably, if Pete called, he lost". (Moss, 2018, p. 71)

In our view, a single rational subject cannot accept both conditionals at the same time. To the extent that we can endorse these contrary conditionals, we do so by temporarily focusing only on part of our total information. But of course, the fact that the same epistemic conditional can be supported by some evidence, and a contrary conditional simultaneously supported by different evidence, does not show that these conditionals are ambiguous. Furthermore, even if this example did show an ambiguity in past indicatives, this would not be the same ambiguity we identified in *will*-conditionals: nothing in Moss's example (or in her analysis of it) suggests that the past indicatives above have a historical reading.

If we accept the main thesis of Cariani (2021), that devices of future reference *generally* have a modal component, this will be the case in particular for whatever operator is responsible for future-shifting in (26). But then, it is not surprising that the modal base for this operator can be restricted by an *if*-clause, giving rise to a historical O-reading.

Second, note that if a speaker x utters (26), and this is given a historical reading, we can later accurately report this by saying "x said that if Pete had called, don Sasso would have been in trouble". This indicates that, on this reading, (26) has (modulo tense) the same semantics as (27), which involves the overt historical modal *would*.

(27) If Pete had called, don Sasso would have been in trouble.

6 Comparison

In this section we discuss two alternative accounts of the ambiguity we observed, comparing them to our approach.

6.1 Ambiguous modals

As we mentioned in the introduction, we are not the first to claim that *will*-conditionals are systematically ambiguous between an epistemic and a historical (or metaphysical) reading. In particular, the ambiguity is explicitly noted by Kaufmann (2005) and Khoo (2015). However, their accounts of the ambiguity differ from the one we propose: for us, the ambiguity derives from the fact that the *if*-clause can restrict different modals; for them, the *if*-clause restricts the same modal in both cases, and the ambiguity arises from the fact that this modal can be associated either with an epistemic or with a historical modal base. In particular, Kaufmann (2005) ascribes the ambiguity to the fact that *will* can receive both historical and epistemic readings.

Let us briefly explain why we are skeptical of this idea. The assumption that *will* can be associated with an epistemic modal base is well-motivated, given examples like (28) where *will* has an epistemic flavor (Enç, 1996; Palmer, 2001; Cariani, 2021).

(28) The laundry will be done by now.

However, epistemic readings of *will* seem to be exclusively present- (or past-)directed in the sense of Condoravdi (2002), i.e., they involve cases where the time of the prejacent coincides with (or precedes) the time at which the modal base is determined. We are not aware of any examples of such readings in cases when the time of the prejacent follows the time of the modal base. Indeed, examples with other auxiliaries indicate that this is not possible for epistemic modals, as illustrated by (29) and (30).[18]

(29) a. Sue must be tired today/*tomorrow. (when *must* is epistemic)
b. It must be raining right now/*tomorrow.

(30) The butler must commit the crime tomorrow. (deontic/*epistemic)

[18]Interesting evidence for this: https://forum.wordreference.com/threads/it-must-be-raining-tomorrow.3682320/

Note that future orientation becomes readily available as soon as the relevant modal is non-epistemic: e.g., "Sue must be tired tomorrow" is fine if it conveys that Sue has an obligation to be tired. The same phenomenon can be observed when the relevant modals are in the consequent of conditionals, as illustrated by (31) and (32).

(31) If Sue doesn't get enough sleep, she must be tired tomorrow. (*epistemic)

(32) If the butler is planning to murder the duchess, he must commit the crime tomorrow. (*epistemic)

Now consider again our Sly Pete conditional (9): even in its epistemic interpretation, the time of the prejacent of *will* (the time of Pete winning) is clearly posterior to the time of the modal base (the present). Based on the above observations, this suggests that the flavor of *will* is non-epistemic, contrary to what Kaufmann assumes. Note further that, if the epistemic component is provided by a covert epistemic modal whose prejacent is WILL(win), then that modal can indeed be present-directed: for while "Pete wins" can only be true in the future, "Pete will win" can be true right now (and also at the future time of the antecedent).[19]

As a final remark, let us point out that the success of our present project does not hinge on refuting these alternative accounts of the ambiguity. This is because our aim is not to use the data about *will*-conditionals to argue for the existence of the C/O ambiguity: we take that to be sufficiently established by Geurts (2004) (see Section 2.2). Rather, our reasoning proceeds in the opposite direction: we use the independently attested C/O ambiguity to argue for the ambiguity of *will*-conditionals, by showing that the latter falls out as a special case of the former. If it turned out that other well-supported assumptions also independently predict the same ambiguity, that would not show that our account is wrong, given that the proposed accounts are compatible (e.g., the epistemic reading of our conditional could in principle arise both as a C-reading, and as an O-reading where *will* receives an epistemic modal base); it would only mean that the ambiguity of *will*-conditionals has two distinct sources.

6.2 Partition dependence

An alternative diagnosis of our ambiguity builds on the idea that the interpretation of a conditional is sensitive to a contextually given partition of the space of possible worlds, which may be construed as a salient question under discussion. For the sake of concreteness, we will discuss a particular implementation of this idea, developed by Khoo (2016, 2022) building on insights from Kaufmann (2004). The points we will make, however, generalize to other accounts based on similar ideas, in particular to those of Moss (2018) and Mandelkern (2024).

According to the approach defended by Khoo (2016, 2022), conditionals are interpreted by means of a Stalnakerian selection function, but this selection function is re-

[19] In the theory of Khoo (2015), it is not *will*, but a covert modal that can be interpreted either epistemically or historically, yielding the relevant ambiguity. Our worry about this theory is that, to avoid overgeneration, it crucially relies on Condoravdi (2002)'s *diversity constraint*, requiring the prejacent of a modal not to be settled in the modal base. However, it has been convincingly argued that this constraint is too strong, especially in the case of *will* claims (Majdič, 2024). Khoo (2022) replaces the diversity constraint with a structural economy constraint; a problem for this more recent view is discussed by Santorio (2023).

quired to respect the boundaries set by the given partition, in the following sense: when applied to a world w and an antecedent A, the selection function must pick an A-world located in the same partition cell as w. As Khoo shows, under suitable assumptions this leads to the prediction that the probability of a conditional "if A then C" relative to a partition Π is given by the weighted average:

$$\sum_{\pi \in \Pi} P(C|A \wedge \pi)P(\pi).$$

This idea can account for the ambiguity of our key sentence (9) in the following way. Suppose the salient partition is the trivial partition $\{W\}$, having the set W of all worlds as its only element; then the probability of (9) is simply the conditional probability of Pete winning given that he calls; this probability is 1, or close to 1, which accounts for the intuition that (9) has an acceptable reading. Suppose on the other hand the salient partition is the set $\{\mathsf{winning\text{-}cards}, \mathsf{losing\text{-}cards}\}$, consisting of the set of worlds where Pete has winning cards and the set of worlds where he has losing cards. Then the probability of (9) is the weighted average:

$$\begin{aligned}
&P(\mathsf{win}|\mathsf{call} \wedge \mathsf{winning\text{-}cards})P(\mathsf{winning\text{-}cards}) + P(\mathsf{win}|\mathsf{call} \wedge \mathsf{losing\text{-}cards})P(\mathsf{losing\text{-}cards}) \\
&= 1 \cdot P(\mathsf{winning\text{-}cards}) + 0 \cdot P(\mathsf{losing\text{-}cards}) \\
&= P(\mathsf{winning\text{-}cards})
\end{aligned}$$

So, relative to this partition the probability of (9) is just the probability that Pete has good cards. This accounts for the intuition that (9) has an uncertain reading.

This account of the data is admittedly an elegant one. Nevertheless, we have two concerns about it. First, this approach does not discriminate between future-directed and past-directed conditionals, and thereby does not account for the contrast we discussed in Section 5. Second, this approach overgenerates, predicting many more readings than we actually observe. Khoo is aware of this problem, and stipulates certain restrictions on the admissible partitions to mitigate it. But even with these restrictions, the problem persists. For an example, consider the following context: Pete is offered a bet which he has a 50% chance of winning and a 50% chance of losing. He will decide at random, by flipping a fair coin, whether or not to accept the bet. Now what is the probability that:

(33) If Pete takes the bet, he will win.

The answer seems to be unambiguous: 50%. However, Khoo's theory predicts that there should be an alternative reading of (33) for which the answer is 75%. This reading results if the salient partition is $\{\mathsf{lose}, \mathsf{not\text{-}lose}\}$, where lose is the set of worlds where Pete loses the bet, and $\mathsf{not\text{-}lose}$ is its complement (i.e., the set of worlds where Pete declines the bet or wins). This partition respects Khoo's pragmatic constraints on admissible partitions. Furthermore, it is not an exotic partition to have as a question under discussion: in a suitable context, it may amount to the pressing question of whether Pete will soon be broke. Yet no matter how salient we try to render this question, the alternative reading of (33) does not seem to exist.[20]

[20] Moss's theory faces a similar overgeneration problem. For instance, take a version of our Sly Pete scenario in which there is a small probability that Pete will make a mistake. Moss' theory predicts that

7 Conclusion

We discussed how some well-supported assumptions about conditionals and *will* jointly lead to the prediction that *will*-conditionals should be ambiguous in a very specific way. We argued that the relevant ambiguity is indeed attested, and that the recognition of this ambiguity can help elucidate a large spectrum of puzzles about conditionals.

Besides providing a crucial test case for the underlying theoretical framework (the restrictor view of conditionals and a modal selectional theory of WILL), we think this work brings out the importance of replacing the traditional classification of conditionals into indicative and subjunctive by a more fine-grained classification based on the domain of possibilities targeted by the *if*-clause. We hope to have illustrated the potential of this alternative classification in capturing many generalizations about conditionals, including those about the antecedent compatibility condition (§4.2), the relation to supposition and the Ramsey test (§4.3), and the role of conditionals in deliberation (§4.4).

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the sentence "It is certain that if Pete calls, he will lose" has a true reading in that scenario, which is clearly wrong. (For the reader interested in verifying this claim: this reading arises when the partition associated with the conditional is {lose, not-lose}, consisting of the set of worlds where Pete loses and its set-theoretic complement; the partition associated with the modal "it is certain that" can be taken to be {winning-cards, losing-cards}, or alternatively {drunk, not-drunk}.)

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