Proceedings of SALT 34: 253–273, 2024

# Future-less-vivid conditionals and the modal past*

Paolo Santorio
*University of Maryland, College Park*

**Abstract** Future-Less-Vivid conditionals (FLVs) are conditionals that display the typical morphological marking of counterfactuals, but whose antecedent has future reference time. An example is in (i):

(i) If Ada took semantics next term, she would take logic next year.

The literature has coalesced on a near-consensus that FLVs cannot be contrary-to-fact. In this paper, I argue that the near-consensus is wrong. FLVs can be genuinely counterfactual: in particular, FLVs are counterfactuals about the future, i.e. can involve suppositions that contradict settled future facts. This has an interesting theoretical upshot. The behavior of FLVs is challenging for all theories on which tenses affect root modals by backshifting the time index of the modal base. These theories include all so-called Past-as-Past theories of X-marking. Conversely, the behavior of FLVs can be accommodated by Past-as-Modal theories.

**Keywords:** *would*, *will*, historical modality, X-marking, branching worlds

## 1 Introduction

In many languages, the expression of counterfactual modality involves past tense. English is a case in point. In English counterfactuals, past morphology appears twice over: on the main verb in the *if*-clause, and on *would*, which is the realization of a modal auxiliary combined with past tense.

(1) If Ada were in New York, Ben would be in New York.

Following von Fintel and Iatridou's label (2023), I use 'X-marking' (for 'extra marking') to talk about the morphology found in sentences like (1).

X-marking is not a mere morphological curiosity. The link between past tense and counterfactuality holds in a vast array of languages: besides English, all Romance languages, Greek, German, Dutch, and Hindi, to name a few. So there is a

* For useful comments and conversations, thanks to Cleo Condoravdi, Jessica Mendes, Maribel Romero, the Maryland Meaning meeting, and audiences at the Construction of Meaning workshop in Stanford, SALT 34 at Rochester, and the Bounded Meanings workshop at UMass, Amherst.

systematic connection between past tense and a certain kind of modality. This is striking, both empirically and conceptually. Why should counterfactuality, a modal flavor, be realized via tense?

This paper focuses on a peculiar subcategory of *would*-conditionals, so-called Future-Less-Vivid conditionals (Iatridou 2000). Future-Less-Vivids (for short, FLVs) are *would*-conditionals that display a single layer of past morphology, and whose antecedent has future reference time, like (2).

(2) If Ada took semantics next term, she would take logic next year.

According to a first-pass generalization, despite the presence of X-marking, FLVs resist counterfactual readings. Rather, they seem to have the same truth-conditions as the corresponding *will*-conditionals.

In this paper, I make an empirical and a theoretical point. The empirical point is that the accepted generalization about FLVs is incorrect. FLVs can involve genuinely contrary-to-fact suppositions. For a quick preview, consider the contrast in (3):

(3) a. # If the candidate that will be elected is not elected...

b. If the candidate that will be elected were not elected...

To be sure, the counterfactuality allowed by FLVs is limited: FLVs can contradict settled facts about future, but not about the past. This is presumably why the correct generalization has been overlooked.

The theoretical point is that, given the correct generalization, FLVs pose a challenge to a general family of theories of X-marking, so-called Past-as-Past theories. On these theories, the past tense in X-marked constructions works by backshifting the time index of the modal base. The behavior of FLVs poses a challenge for these views. Conversely, as I go on to show, it can be captured by so-called Past-as-Modal views. So, overall, the empirical discovery that FLVs can be genuinely counterfactual yields an argument for one theoretical option over another.

I proceed as follows. §2 gives some general background and §3 discusses the received generalizations about FLVs. §4 introduces the new data, and §5 develops the argument against Past-as-Past views. I sketch a semantics that captures the data in §6, and show how one can predict the 'remoteness' inference of FLVs in §7.

## 2 Background

### 2.1 The problem of 'fake' tense

Across languages, modal constructions with counterfactual flavor tend to display a combination of tense, aspect, and mood features. Specifically, counterfactuality tends to be associated with: (i) past tense, (ii) imperfective or habitual aspect, and (iii) subjunctive mood.

To be sure, not all languages use tense, aspect, or mood to mark this kind of modality. For example, as Nevins (2002) points out, languages that do not possess overt tense morphology, like Mandarin or Tagalog, realize counterfactual meanings via other routes.[1] But we can still draw a substantial generalization.

**X-marking.** For any language *L*:

(i) if tense serves to express counterfactuality in *L*, it is past tense that marks counterfactuality;

(ii) if aspect serves to express counterfactuality in *L*, it is imperfective aspect that marks counterfactuality;

(iii) if mood serves to express counterfactuality in *L*, it is subjunctive mood that marks counterfactuality.

Following much of the literature, my main focus here will be on tense. Let me start by saying more about the sense in which tense 'serves to express counterfactuality'. The key observation, due to Iatridou 2000, is that, in X-marked constructions, tense does not appear to have its usual meaning. For illustration, consider:

(4) If Ada took semantics next term, she would take logic the term after that.

Even though it involves a past tense, the antecedent clause in (4) cannot describe a past event. (4) can only present a hypothesis about the future. So, whatever the past tense is doing in (4), it doesn't seem to be temporal shift to the past. For this reason, tenses appearing in conditional antecedents are sometimes called 'fake'.

Existing theories of X-marking are divided into two camps, depending on how they tackle the problem of fake tense. 'Past-as-past' theories (see e.g. Arregui 2009; Ippolito 2013) claim that in X-marked constructions the past tense has its usual meaning, despite appearances. Conversely, 'Past-as-Modal' theories (see e.g. Iatridou 2000; Schulz 2014; Mackay 2019) postulate that the past tense in X-marked constructions carries a modal meaning, which can be captured as a kind of a 'remoteness' feature.

## 2.2 Taxonomy of WOLL-conditionals

It is helpful to have a taxonomy of all WOLL-conditionals. We have three basic types, depending on the kind of tense morphology that we find on both antecedent and consequent.[2]

1 According to what Nevins reports, both Mandarin and Tagalog realize counterfactuality via dedicated complementizers (*yaobushi* for Mandarin, and *kung* for Tagalog).

2 See Iatridou 2000 and Ippolito 2013 for similar proposals.

(i) **No X-marking (*will*-conditionals)**

(5) If Ada returns, Ben will be happy.

(ii) **Simple X-marking**

(6) If Ada returned, Ben would be happy.

(7) If Ada was here, Ben would be happy.

(iii) **Double X-marking**

(8) If Ada had returned, Ben would have been happy.

Within simple X-marked conditionals, it is customary to single out conditionals where the antecedent has future reference time, such as (6), as 'Future-Less-Vivids' (FLVs). At first sight, FLVs seem truth-conditionally analogous to *will*-conditionals, aside from a suggestion that the antecedent clause describes a 'less vivid' possibility. I discuss FLVs at length in §3.

Let me also clarify in what way, and to what extent, *will*-conditionals like (5) enter the taxonomy. Since *will* is a modal (see, among others, Klecha 2011; Cariani & Santorio 2018; Cariani 2021), it can be restricted by an *if*-clause. However, as Ciardelli & Ommundsen 2022 point out, conditionals like (5) are potentially ambiguous between two structures. The *if*-clause may restrict the overt *will*; but it might also restrict a covert epistemic modal, as it does in bare conditionals. So potentially (5) has two LFs:

(9) [if Ada returns] [will [Ben be happy]]

(10) [if Ada returns] MUST [[will [Ben be happy]]]

This difference in LF is linked to a difference in modal flavor. In the latter case, the conditional has epistemic flavor. In the former, I will say—following the literature—that it has historical flavor. All my claims about *will* only apply to conditionals where *will* is the restricted modal. I reserve the phrase '*will*-conditional' for conditionals with the LF in (9), i.e. conditionals that express historical flavor.[3]

### 2.3 The branching worlds framework

As I mentioned, *will* is standardly taken to express a dedicated modal flavor, so-called historical modality. Accounts of this modal flavor in formal semantics (see

3 It is an interesting question whether all conditionals with an overt *will* in the consequent are systematically ambiguous between the two readings. I am inclined to answer 'no'. There is evidence that conditionals with antecedents that have a future reference time involve a kind of historical modality in the antecedent (see Mendes 2024). These conditionals might only have a historical reading.

e.g. Kaufmann 2005; Copley 2009) build on branching time models of tense logic (Thomason 1970; Thomason & Gupta 1980). It's helpful at this stage to give an informal overview of branching models.

The basic idea behind branching models is that there is a fundamental asymmetry between past and future. The past is entirely settled, while the future is not. The future is, using standard terminology, open. The notion of openness here picks out a kind of indeterminacy.[4] Given a world and a time, there are several historical possibilities compatible with it—several ways that the full course of world history might turn out to be.

The past-future asymmetry affects what worlds are historically accessible at a given time. For any time $t$, worlds that are historically possible at $t$ with respect to $w$ fully agree with $w$ about past events, but differ with respect to at least some future events. I call these worlds **historical alternatives** of $w$ at $t$. As time passes, some of these historical alternatives are ruled out. This situation is often represented in branching diagrams like that in Figure 1.

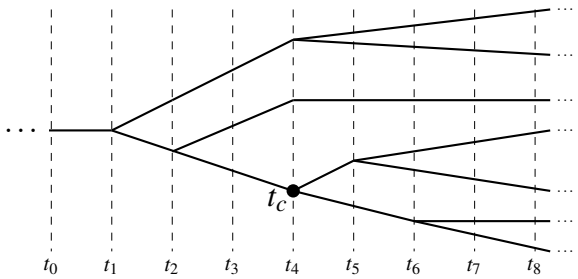


**Figure 1**. the branching time representation of historical alternatives.

For a simple example, suppose that a die was tossed yesterday (and, say, landed on 3), and a coin will be flipped tomorrow. Suppose that both die tosses and coin flips are indeterministic events. Then, today, the outcome of the die toss is settled, but that of the coinflip is open. A minimal branching model of this scenario involve two worlds. In both of them the die landed on 3; but in one of them the coin lands tails, in the other heads. This situation is represented in Figure 2.

4 Normally, this indeterminacy is understood as metaphysical, though this doesn't matter for current purposes.

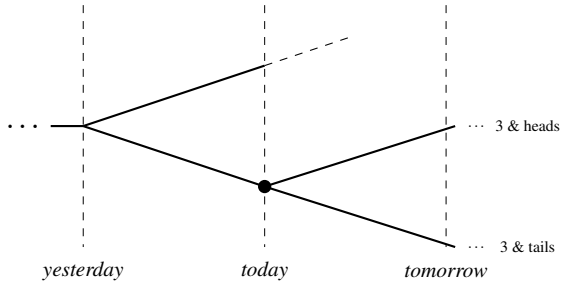


**Figure 2**. Branching diagram for the coin scenario.

Let me make an observation about the notion of settledness. The branching framework assumes that all past facts are settled, and that, conversely, *some* facts about the future are open. On a natural view, some facts about the future are also settled. For example, it seems settled that the sun will go out at some point in the next 5 billion years. So the historical alternatives of $w$ at $t$ will agree on all propositions that are about times that precede $t$, but also on some propositions about the future.

### 2.4 Past-as-Past theories and temporal backshift

The Past-as-Past (henceforth, PaP) theory starts from a compelling idea: the past tense should have the same meaning in all linguistic environments, including X-marked constructions. Given the branching framework, it's easy to see how this can be implemented.

It is commonly assumed that root modals like *will* and *would* take scope below tense (see Condoravdi 2002). So the LF of a *will*-claim like (11a) is in (11b), and the LF of a *would*-conditional like (12a) is in (12b).[5]

(11) a. Ada will take semantics next semester.

b. PRES [WOLL [Ada take semantics next semester]]

(12) a. If Ada took semantics, Ben would take logic.

b. PAST [WOLL [[if Ada take semantics] [Ben take logic]]

Given this background, the idea behind PaP accounts is simple. PRES and PAST interact with the domain of quantification of the modal by fixing the time index of the modal base. In particular, PAST backshifts the time index of a modal base, so that *would* quantifies over worlds that were open options at a past time (but are not necessarily open at speech time).

5 For current purposes I assume, following Past-as-Past theories, that the PAST and the modal take scope over the whole conditional, and not just the consequent. This assumption is actually questionable; see Santorio 2024 for discussion.

For concreteness, let us introduce a simple modal semantics for WOLL in the style of Kratzer (Kratzer 1977, 1981, 2012). We relativize the denotation of modals is relativized to the usual two 'conversational background' parameters, a *modal base* and an *ordering source*. The function of the modal base is to determine a domain of quantification of the modal. The function of the ordering source is to determine a ranking of those possibilities. For current purposes, I just take the modal base to be a function $f$ from a world and a time to a set of worlds. Moreover, I assume that the ordering source is used simply to determine a set of 'best' worlds (denoted by '$\text{BEST}_g$') within the ones picked out by the modal base.

These assumptions yield the meaning for 'WOLL' in (13).[6]

(13) $[\![\text{WOLL [A]}]\!]^{t,w,f,g}$ = true iff $\forall w' \in \text{BEST}_g(f_t(w)), [\![\text{A}]\!]^{t,w',f,g}$ = true

Given (13), by adopting a standard denotation for PAST like that in (14a), we get that *would* quantifies over a backshifted set of historical possibilities, as in (14b).

(14) a. $[\![\text{PAST [A]}]\!]^{t,w,f}$ = true iff $\exists t' \prec t$ s.t. $[\![\text{A}]\!]^{t',w,f}$ = true

b. $[\![\text{PAST [WOLL [A]]}]\!]^{t,w,f}$ = true iff
$\exists t' \prec t$ s.t. $\forall w' \in \text{BEST}(f_{t'}(w)), [\![\text{A}]\!]^{t',w',f}$ = true

Overall, the predicted truth conditions for (12a) are in (15)

(12a) If Ada took semantics, Ben would take logic.

(15) (12a) is true at $w$ iff there is a past time $t'$ such that, for every best world $w'$ open at $t'$ and $w$ such that Ada takes semantics in $w'$, Ben takes logic in $w'$.

## 3 Future-Less Vivids

FLVs have been singled out for special treatment since the beginning of the modern literature on conditionals. For example, David Lewis in *Counterfactuals* suggests that they should be lumped with indicatives.

> [T]here are subjunctive conditionals pertaining to the future, like *If our ground troops entered Laos next year, there would be trouble* that appear to have the truth conditions of indicative conditionals, rather than of the counterfactual conditionals I shall be considering. (Lewis 1973, p. 4)

Lewis does not give an empirical argument to back his claim, but the subsequent literature has provided several examples. Here is one.

> *Dead Plants*. My mom is visiting this weekend, and she's fond of plants. I have been trying to keep some plants alive, but failed.

6 For simplicity, I assume that WOLL is a universal quantifier, though this assumption is most likely false. See Cariani & Santorio 2018 and Cariani 2021 for discussion.

(16) My plants just died. That's a shame. # If they died next week [instead], my mom would see them. (adapted from Arregui 2007)

The discourse is infelicitous. Intuitively, the reason is clear: the conditional in (16) cannot express a contrary-to-fact supposition. In fact, the discourse becomes fine if we make the conditional doubly-X-marked, as in (17).

(17) My plants just died. That's a shame. If they had died next week [instead], I would have shown them to my mom.

The phenomenon is systematic. As a first-pass generalization: FLVs seem unable to express a supposition that contradicts information known to be true. Below are a few more illustrations.

(18) The game just ended and Real Madrid lost. # If the game ended in 5 minutes [instead]...

(19) Ada got married yesterday. # If she got married tomorrow [instead]...

(20) Ben saw NYC for the first time last spring. # If he saw it for the first time next winter [instead]...

On the strength of these data, many theorists have suggested that FLVs are subject to a compatibility constraint. This constraint can be spelled out either in epistemic, or metaphysical terms. The epistemic version is the following:

> **Common Ground Compatibility (CGC).** The antecedent of a FLV uttered at $c$ cannot be false in the common ground of $c$.

By 'common ground' here I mean the set of possibilities that are jointly regarded as live options by the participants in conversation (see, a.o., Stalnaker 1978, 2002). One theorist that clearly endorses CGC is Arregui (2007). On a plausible reading, Iatridou (2000) also endorses it.[7]

The metaphysical version of the constraint is spelled out by appealing to a notion of metaphysical openness. This version says:

> **Metaphysical Compatibility (MC).** The antecedent of a FLV uttered at $c$ must be open at $c$.

To my knowledge, no one explicitly endorses the letter of MC. But Ippolito's (2013) theory comes close, and her predictions for a great majority of cases are analogous

7 Iatridou explicitly claims that FLVs have the same semantics as *will*-conditionals, and this includes the compatibility constraint. So FLVs are subject to CGC just in case indicatives are subject to an epistemic compatibility constraint (see below).

to those of MC.[8]

CGC and MC are not equivalent. The exact extent of the divergence will depend on what we assume about the relation between epistemic and historical possibilities. But it is uncontroversial that speakers can be ignorant about issues that are settled. This fact alone generates differences in predictions. This said, the difference between CGC and MC won't matter here: I will argue that both principles are incorrect.

CGC and MC mirror a well-known constraint on indicative conditionals, first pointed out in Stalnaker's classical paper on indicatives (1975). For indicatives with epistemic flavor, the constraint amounts to CGC: the antecedent of an indicative conditional must be compatible with the common ground. This explains the infelicity of discourses like the following:

(21) Ada is taking semantics. # If she's not taking semantics, she's taking logic.

*will*-conditionals are also subject to a compatibility constraint. Here is a *will*-variant of the plants example:

(22) Sadly, my plants died yesterday. #If they die/will die tomorrow…

Since *will* is a metaphysical modal, we might ask whether conditionals where *will* is the main modal are subject to an epistemic or to a metaphysical constraint. I will not try to answer this question now.[9] But there seems to be consensus about the following: *will*-conditionals and FLVs are subject to the same compatibility constraint, whether it is CGC or MC.

More generally, the received view is that, given the compatibility constraint, FLVs and *will*-conditionals are almost analogous in meaning. The only difference is that FLVs somehow convey a 'remoteness' inference. Consider:

(23) a. If Ada takes semantics this term, she will take logic next term.

b. If Ada took semantics this term, she would take logic next term.

The possibility that Ada takes semantics this term is presented as more 'remote', or 'less vivid', by (23b) than by (23a). It is controversial how to capture this precisely. My positive proposal will yield a natural suggestion about this.

8 According to Ippolito, it is not the semantic content, but rather the *presuppositions* of the antecedents of FLVs must be open at the time of utterance. In principle, this makes for a very different theory. But Ippolito adopts a very generous view of presupposition, building on Musan 1997, according to which virtually all predicates carry nontrivial semantic presuppositions. For example, on her view, *My plants will die tomorrow* carries the presupposition that my plants will still be alive at some point before tomorrow. As a result, she predicts the infelicity of all the examples we reviewed.

9 Though see Ciardelli & Ommundsen 2022 for convincing reasons in favor of the latter answer.

## 4 Contrary-to-fact FLVs

### 4.1 New data

Consider the following minimal variant of the plants scenario:

> *The Botanist*. My mom is visiting next week. I am trying to keep some plants alive, but am failing. In fact, a reliable botanist has told me that my plants have exactly one day left to live.

(24) My plants will die tomorrow. That's a shame.

a. # If they die/will die next week, my mom will see them.

b. If they died next week, my mom would see them.

(24a), in both versions, is infelicitous. This is not surprising, in light of the compatibility constraint for *will*-conditionals noted in §3. But it *is* surprising that (24b) is felicitous. After the assertion of the *will*-claim in (24), it is both common ground and known that it is settled that my plants will not die next week. So, whether we adopt CGC or MC, (24b) is in violation of the compatibility condition, and hence is expected to be infelicitous.

On these grounds, I suggest that both versions of the compatibility constraint are wrong. FLVs can, after all, be contrary-to-fact. This empirical claim is crucial to my argument, so let me provide further evidence for it.

First, the asymmetry is robust under embeddings, as the following pairs show.

(25) #If my plants die tomorrow and my mom will see them if they die next week, I will be upset.

(26) If my plants die tomorrow and my mom would see them if they died next week, I will be upset.

(26), though convoluted, is acceptable, and in any case clearly better than (25). This shows that the phenomenon is not just due to pragmatic factors. In particular, we cannot explain it away by saying that assertions of $\ulcorner \textit{will } p \urcorner$ produce only a weak update of the common ground, leaving some non-$p$ possibilities open.[10]

Second, we can by-pass worries about common ground update by adding a presupposition to the conditional antecedent. Consider the following contrast:

(27) a. # If the plants that will die tomorrow don't die, my mom would see them.

b. If the plants that will die tomorrow didn't die, my mom would see them.

10 See in particular Ninan 2022 for evidence that might be taken to support the claim that assertions about the future don't succeed in removing all incompatible possibilities from the common ground.

The pattern is the same: (27a) is infelicitous, while (27b) is perfectly acceptable. Incidentally, the data in (27) mirrors one of the standard tests for diagnosing rigidity, going back to Kripke 1980. Kripke discusses counterfactuals like (28b):

(28) a. # If the [actual] winner of the last election did not win...

b. If the winner of the last election had not won...

The fact that (28b), differently from (28a), is consistent, shows that the definite *the winner* and the verb *win* are evaluated at different worlds. The same moral holds for (27b). The VP in the relative clause and the main VP in the antecedent clause must be evaluated at different world parameters. So the domain of quantification of FLVs cannot coincide with the domain of quantification of *will*-claims.

Before moving on, let me consider an objection. The arguments of this section assume that *will* is veridical: ⌜*will p*⌝ entails its prejacent *p*. This assumption seems to me clearly correct, and is vindicated by my preferred semantics for *will* (see Cariani & Santorio 2018). But what if *will* is not veridical? If we abandon veridicality, the data I presented is strictly speaking compatible with the claim that FLVs are non-counterfactual. But the data still shows that *would* expands the domain of quantification beyond the domain of *will*. So, even if *will* were nonveridical, the point that *will*-conditionals and FLVs use different domains of quantification would still hold. This point is what is really crucial to the argument in §5.

### 4.2 Future counterfactuality

CGC and MC are incorrect. But this doesn't mean that the distribution of FLVs is entirely unconstrained. The data reported in §3 still shows that this distribution is limited. So we are in need of a new generalization.

My suggestion is simple: FLVs are counterfactuals about the future.[11] They can express contrary-to-fact hypotheses, as long as the facts that are being 'undone' are facts about the future, and not about the past. So the generalization that correctly captures the distribution of FLVs is:

> **Future counterfactuality (FC).** The antecedent of an FLV uttered at $c$ must be compatible with all facts in $w_c$, up to $t_c$, but can be incompatible with facts about the future.

11 In one passage, Iatridou (2000, p. 253) seems to anticipate this claim, and actually gives an example that parallels the ones in this section.

(i) He's not going to come. Too bad, because if he came, he would have a great time.

At the same time, she doesn't give a definitive answer to the question whether FLVs are truly counterfactual. The subsequent literature appears to have forgotten this example.

Notice that it's not trivial to specify, in a noncircular way, what facts are 'about the future'.[12] For current purposes, I just understand the notion at an intuitive level. Eventually, we might give a more precise characterization by considering the temporal dimension of the events described by conditionals antecedents.

FC allows us to make sense of the contrast between Arregui's original example (16) and its future variant, which here I report in compressed version in (29).

(16) My plants just died. That's a shame. # If they died next week [instead], my mom would see them.

(29) My plants will die tomorrow. That's a shame. If they died next week [instead], my mom would see them.

The very same FLV appears in (16) and (29). I suggest that it's unacceptable in (16), because the antecedents of FLVs cannot contradict past facts, and that it is acceptable in (29) because, conversely, they can contradict settled facts about the future.

## 5 The argument againt Past-as-Past

This section draws the theoretical consequences of the new generalization. The behavior of FLVs is challenging for all theories based on the branching worlds framework. This includes all Past-as-Past theories of X-marking.

### 5.1 Historical and metaphysical possibilities

As I mentioned in §2, the branching framework is used to characterize a particular modal flavor, historical modality. Now, possibilities that are accessible on this modal flavor—what we called 'historical alternatives'—don't exhaust possibilities that we might call 'metaphysical possibilities'. The key intuition behind the branching framework is that, at any given point, some possibilities are genuinely open, while others are not. For example, it is a genuinely open possibility that my next talk is in Germany, but not that Frege will be in attendance, since Frege is long dead.

At the same time, there is still a broader sense of possibility on which it is possible that Frege attends my next talk (coming back from the dead). Dub this notion of 'metaphysical possibility', following the traditional label in philosophy.Worlds that represent metaphysical, but not historical possibilities, are not standardly represented in branching diagrams. If we wanted to represent them, we could add some extra dashed lines, as in Figure 3.

12 Given the branching framework, one might try to say that two facts are (entirely) not about the future, relative to $w_c$ and $t_c$, just in case they hold at all historical alternatives of $w_c$ and $t_c$. But this won't work: we are assuming, plausibly, that some facts about the future are settled; but they are ruled in by this definition as being not about the future.

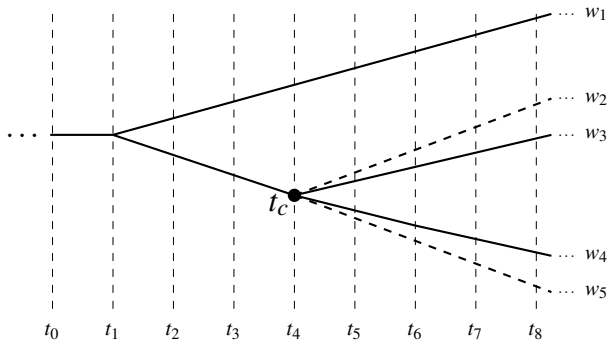


**Figure 3**. Non-historical possibilities do not appear as histories in branching diagrams.

For clarity: worlds $w_2$ and $w_5$ fully overlap with $w_3$ and $w_5$ up to the time of the context. But then they diverge from them in ways that are not compatible with the historical accessibility relation. For example, $w_2$ might be a world where my next talk is in Germany and Frege is in attendance.

What exactly is the difference between historical and metaphysical possibilities? One common answer is that historical possibilities conform to laws of nature, while metaphysical possibilities don't have to. For current purposes, we don't need to settle this. What matters is that some possible worlds are not accessible on the modal flavor expressed by *will*. We can use linguistic judgments as a guide to what is accessible in this sense. For example, the fact that (30) is defective is evidence that it's not historically open that Frege will attend my next talk.

(30) ?? If Frege attends my next talk, I will be nervous.

## 5.2 Past-as-Past and temporal backshift

The data discussed in previous sections suggests that FLVs, differently from *will*-conditionals, can quantify exactly over worlds that are metaphysically, but not historically accessible.

Recall the crucial idea behind Past-as-Past theories: PAST affects the domain of quantification of WOLL by backshifting the time index of the modal base.

(31) $[\![\text{PAST [WOLL [A]]}]\!]^{t,w,f}$ = true iff
$\exists t' \prec t$ s.t. $\forall w' \in \text{BEST}(f_{t'}(w)), [\![\text{A}]\!]^{t',w',f}$ = true

On this picture, by evaluating WOLL under PAST we move backwards in a branching tree, to some point before the time of utterance. This has the effect of making more worlds accessible. In diagram form, the lines in orange represent worlds accessible via a backshift from the time of utterance $t_c$ to an earlier time $t^-$:

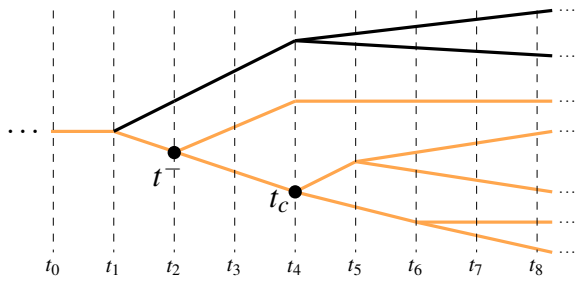


**Figure 4**. Worlds accessible via backshift of the time index of the modal base.

This model does not capture the empirical behavior described in §§3–4. FLVs cannot 'undo' any events previous to the time of utterance, while after the time of utterance they can diverge from the actual world in ways that are inconsistent with the historical accessibility relation. So they seem to quantify over all timelines that agree with the actual timeline up to $t_c$, including the dashed timelines.

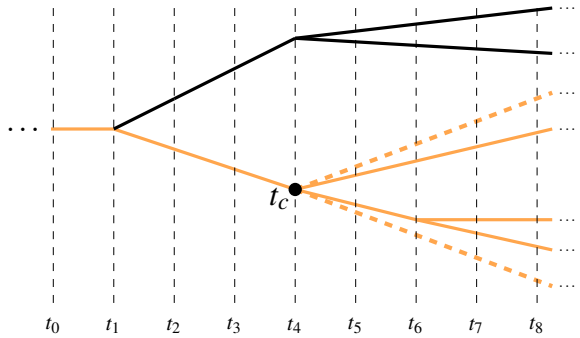


**Figure 5**. Worlds that an FLV seemingly quantifies over.

This is not a domain of quantification that we can obtain by backshifting the time index of a historical modal base. The dashed timelines are never historically possible.

The general moral is that FLVs are challenging for all theories based on temporal backshift. On this model, *would* is analogous to a '*will* in the past'. But this is not the way that *would* operates. *would* widens the domain of quantification of *will* in ways that go beyond historical accessibility.

### 5.3 An alternative: domain semantics

What is the alternative to temporal backshift? I sketch a general alternative here, and give a sample implementation in the next section.

To capture the behavior of FLVs, we need to allow that tense can affects the domain of quantification of WOLL *not* by affecting the time index of the modal base. One simple idea is to adopt a so-called 'domain semantics' for the general flavor of

modality expressed by *will* and *would*.[13] Here is a very simple version of the view. Suppose that WOLL doesn't exploit a modal base, but rather quantifies over a modal domain specified in an index parameter D. So the meaning for WOLL is:

(32) $[\![\text{WOLL } [\text{A}]]\!]^{t,w,\text{D}} = \text{true iff } \forall w' \in \text{D},\ [\![\text{A}]\!]^{t,w',\text{D}} = \text{true}$

The key idea is that PAST shifts directly the D parameter (in addition to doing its usual work of quantifying over times). In particular, PAST expands D to a set of metaphysically open worlds, including worlds that are not historically open at $t_c$. Call this set 'MET'.

(33) $[\![\text{PAST } [\text{WOLL } [\text{A}]]]\!]^{t,w,\text{D}} = \exists t' \prec t_c :\ [\![\text{WOLL } [\text{A}]]\!]^{t',w\text{MET}}$

Notice that, by itself, the mechanism of domain shift does not impose any constraint on what worlds have to be in MET. This allows us expand the domain to worlds that are not historically open.

## 6 Sketch of a formal system

In this section, I sketch a compositional theory that predicts Future Counterfactuality. For reasons of space, the theory is a substatially simplified version of the system developed in Santorio 2024. The theory is a version of the Past-as-Modal theory (see a.o. Iatridou 2000, Schulz 2014, Mackay 2019): PAST has a modal element in its meaning. At the same time, I do not assume that tense is ambiguous between a temporal and a modal interpretation. Rather, I take tenses to operate simultaneously on the time parameter and on a modal domain parameter.

I explain how LFs of X-marked conditionals work, sketch a semantics for tenses and modals, and then discuss an example.

**Logical Forms.** I assume that there are semantically interpreted PAST morphemes both in the antecedent and in the consequent of *would*-conditionals. Moreover, I assume that antecedents of *would*-conditionals invariably involve subjunctive mood. This subjunctive can be observed in languages like German and Portuguese, and is usually covert in languages like English.[14] So the LF of (34a) is in (34b).

(34) a. If Ada were in New York, Ben would be in New York.

b. [if PAST [SUBJ$_{f_i}$ [Ava be in NY]]] [PAST [WOLL$_{f_k}$ [Ben be in NY]]]

Notice that both SUBJ and WOLL come equipped with their own (potentially different) modal bases, which will be one of their syntactic arguments. For simplicity, I will assume an intensional treatment (hence, via the index) of both times and worlds.

13 For the label 'domain semantics', see Yalcin 2007.

14 For arguments for in defense of these assumptions, see Santorio 2024. See also Mendes 2024 for arguments that all WOLL-conditionals involve subjunctive in the antcedent.

**Tenses.** In addition to their usual job of shifting the time parameter, tenses manipulate a modal parameter D. PRES sets D to the set of open worlds at the time of $c$, $\text{HIST}_{t_c}$. PAST sets D to the set of all metaphysically accessible worlds, MET.

$$(35)\quad [\![\text{PRES } [p]]\!]^{c,t,w,\text{D}} = \begin{cases} \text{defined iff } [\![p]\!]^{c,t,w,\text{HIST}_{t_c}} \text{ is defined} \\ \text{true iff } [\![p]\!]^{c,t,w,f,\text{HIST}_{t_c}} \text{ is true} \end{cases}$$

$$(36)\quad [\![\text{PAST } [p]]\!]^{c,t,w,\text{D}} = \begin{cases} \text{defined iff } [\![p]\!]^{c,t,w,\text{MET}} \text{ is defined} \\ \text{true iff } \exists t' \prec t_c : \ [\![p]\!]^{c,t',w,\text{MET}} \text{ is true} \end{cases}$$

**The meaning of WOLL.** In classical domain semantics, modals directly quantify over the modal domain picked out by the dedicated parameter. In the current system, modals have a standard Kratzer-style semantics, but in addition they presuppose that the set of worlds $f(w)$ determined by the modal base and the world of evaluation is a subset of the domain D. This choice creates an appealing symmetry with a recent and important theory of epistemic modals (Mandelkern 2019, 2024), and also helps with the derivation of the remoteness effects.

The meaning for WOLL is in (37). For simplicity, I assume that WOLL is a universal quantifiers, even though there is evidence both from work on *will* and on *would* that a selection semantics is to be preferred.[15]

$$(37)\quad [\![[\text{if } p] \, [\text{WOLL}_f \, [q]]]\!]^{c,t,w,\text{D}} = \begin{cases} \text{defined iff } f(w) \subseteq \text{D} \\ \text{if def., true iff } \forall w' \in \text{BEST}_{(f_w \cap \mathbf{p})}, [\![q]\!]^{c,t_c,w',\text{D}} \text{ is true} \end{cases}$$

Notice one more thing: WOLL sets the time of evaluation of the complement clause to the time of the context $t_c$. This means that, among other things, WOLL is a temporal indexical. Hence, when PAST scopes over WOLL, it ends up having no effects on the time at which the prejacent of *will* is evaluated. (Though, notice, it still has effects on the modal parameter D.)

***If*-clauses and subjunctive.** The meaning of X-marked *if*-clauses emerges out of four elements: (i) PAST and its effects on the modal parameter D; (ii) subjunctive; (iii) the telicity of the verb phrase; (iv) the lexical meaning of *if*. Giving a detailed treatment of how these elements interact would require much more space than I have here. So here I simply give a syncategorematic treatment, and moreover I focus only on the case of FLVs.[16]

15 For *will*, see Cariani & Santorio 2018 and Cariani 2021. For *would*, see (among many) Marty, Romoli & Santorio 2020, Ramotowska, Marty, Romoli & Santorio 2024.

16 Let me just mention two of my assumptions in the background: (i) semantically, mood is realized simply as a world variable, and in particular subjunctive mood is a variable that is presupposed to range over metaphysical possibilities; (ii) *if* is a set-forming operator.

I assume that an *if*-clauses denotes a set of worlds. In particular, *if*-clauses that have metaphysical flavor denote a set of worlds that have an identical history to the actual world, up to a point in time. For the case of FLVs, this point is the time of utterance. Let $\text{MET}_{t_c}$ be this set. So, schematically, the meaning of an *if*-clause for an FLV is the following:

(38) $[\![\text{if PAST [SUBJ}_f\ [p]]]\!]^{c,t,w,\text{D}} = \begin{cases} \text{defined iff } f(w) \subseteq \text{MET}_{t_c} \\ \text{if def: } \{w :\ w \in f(w) \cap [\![p]\!]^{c,t_c,w,\text{D}}\} \end{cases}$

Notice that, as it happens for WOLL, the time of evaluation of the VP is set to the time of utterance. This comes from the fact that the subjunctive, like *woll*, also works as a kind of temporal indexical.

**Example.** Consider again our paradigm example of an FLV conditional, (39), with the LF in (40). This system predicts the truth conditions in (41).

(39) If my plants died next week, my mom would see them.

(40) [if PAST [$\text{SUBJ}_{f_1}$ [my plants$_i$ die]]] [PAST [$\text{WOLL}_{f_2}$ [my mom see them$_i$] ]]

(41) $[\![(39)]\!]^{c,t,w,\text{D}} = \begin{cases} \text{defined iff } f_1(w) \subseteq \text{MET}_{t_c} \text{ and } f_2(w) \subseteq \text{MET} \\ \text{if def, true iff } \forall w' \in \text{BEST}_{(f_2(w) \cap f_1(w) \cap \textbf{my plants die})}, \\ \quad \text{my mom sees my plants in } w' \end{cases}$

The key point is the restriction on the domain of quantification. The conditional quantifies over (the 'best' worlds in) the intersection of the two sets $f_1(w)$ and $f_2(w)$ that are such that the speaker's plants die. In turn, the definedness condition requires that $f_1(w)$ be a set of metaphysical worlds that agree with the actual world up to $t_c$, and that $f_2(w)$ be simply a set of metaphysical worlds. (Given the restriction to antecedent world, the worlds quantified over by the whole conditional need to be included in $\text{MET}_{t_c}$.) This captures the requirement that the worlds quantified over by FLVs have to have the same history as the actual world up to $t_c$, but can diverge with respect to future events in ways that are incompatible with the relation of historical accessibility.

## 7 Deriving the remoteness inference

The current account yields a simple explanation of the 'remoteness' inference triggered by X-marked conditionals. The relevant effect, recall, is that a conditional like (23b) suggests that the possibility mentioned in the antecedent is somehow 'more remote', or 'less vivid', than what (23a) suggests.

(23) a. If Ada takes semantics this term, she will take logic next term.

b. If Ada took semantics this term, she would take logic next term.

The remoteness inference has been characterized only intuitively. So a full account of it should include: (i) a precise characterization of the content of the inference; (ii) an explanation of how the inference is derived.

With regard to (i), I suggest that the remoteness inference is simply an exclusion inference. It is an inference to the effect that the worlds quantified over by a *would*-conditional like (23b) are metaphysically possible but not historically open. With regard to (ii), the inference can be derived via standard scalar mechanism, together with a principle of Maximize Presupposition.

Roughly, Maximize Presupposition (Heim 1991) says that speakers should presuppose as much as possible in their conversational contributions. More precisely, suppose that a speaker is in a position to utter two sentences $S_p$ and $S'_{p'}$ such that (i) $S$ presupposes $p$ and $S'$ presupposes $p'$, (ii) $p'$ entails $p$, and (iii) $S$ and $S'$ are otherwise equivalent in meaning. Then Maximize Presupposition mandates that speakers should utter $S'_{p'}$ rather than $S_p$. Hence, if a speaker utters $S_p$, this is evidence that they believe that the stronger presupposition is not true.[17]

Now, the theory sketched in §6 predicts that (23a) and (23b) are equivalent in meaning, aside from the following. (23a) presupposes that the set of worlds the conditional quantifies over are included in $\text{HIST}_{t_c}$. (23b) presupposes that it is included in $\text{MET}_{t_c}$. But $\text{MET}_{t_c}$ is a superset of $\text{HIST}_{t_c}$, so the latter presupposition is strictly weaker. Via Maximize Presupposition, the assertion of (23b) triggers the inference that the stronger presupposition is not satisfied, and hence that (23b) quantifies over worlds included in $\text{MET}_{t_c}$, but not $\text{HIST}_{t_c}$.

## 8 Conclusion

Since Lewis, the literature on conditionals has coalesced on a near-consensus that FLVs cannot be contrary-to-fact. In this paper, I have provided data showing that the near-consensus is wrong. FLVs can be genuinely counterfactual: in particular, FLVs can involve suppositions that contradict settled future events. This behavior is challenging for all theories that assume that *would*-conditionals work by backshifting the time of the modal base. This includes all Past-as-Past theories of X-marking. Conversely, it is compatible with Past-as-Modal theories. In the final sections, I have sketched a new Past-as-Modal theory that can accommodate the data, and can derive the 'remoteness inference' often associated to FLVs.

17 For simplicity, here I use Grice-style pragmatic reasoning, in combination with Maximize Presupposition, to derive the inference. Similar results can be obtained with a semantic account of exhaustification.

## References


Arregui, Ana. 2007. When aspect matters: The case of would-conditionals. *Natural Language Semantics* 15(3). 221–264. doi:10.1007/s11050-007-9019-6.

Arregui, Ana. 2009. On similarity in counterfactuals. *Linguistics and Philosophy* 32(3). 245–278. doi:10.1007/s10988-009-9060-7.

Cariani, Fabrizio. 2021. *The Modal Future: A Theory of Future-Directed Thought and Talk*. Cambridge, UK: Cambridge University Press.

Cariani, Fabrizio & Paolo Santorio. 2018. Will done better: Selection semantics, future credence, and indeterminacy. *Mind* 127(505). 129–165.

Ciardelli, Ivano & Adrian Ommundsen. 2022. Disambiguating *will*-conditionals. In *Amsterdam Colloquium* 23, 69–76.

Condoravdi, Cleo. 2002. Temporal interpretation of modals: Modals for the present and for the past. In Brady Clark David Beaver, Stefan Kaufmann & Luis Casillas (eds.), *The Construction of Meaning*, Palo Alto, CA: CSLI Publications.

Copley, Bridget. 2009. *The Semantics of the Future*. Routledge.

von Fintel, Kai & Sabine Iatridou. 2023. Prolegomena to a theory of X-marking. *Linguistics and Philosophy* 46(6). 1467–1510.

Heim, Irene. 1991. Artikel und definitheit. In *Semantik: Ein internationales Handbuch der zeitgenössischen Forschung*, 487–535.

Iatridou, Sabine. 2000. The grammatical ingredients of counterfactuality. *Linguistic inquiry* 31(2). 231–270.

Ippolito, Michela. 2013. *Subjunctive conditionals: A linguistic analysis*, vol. 65. MIT Press.

Kaufmann, Stefan. 2005. Conditional truth and future reference. *Journal of Semantics* 22(3). 231–280.

Klecha, Peter. 2011. Optional and obligatory modal subordination. In *Proceedings of Sinn und Bedeutung*, vol. 15, 365–379.

Kratzer, Angelika. 1977. What 'must' and 'can' must and can mean. *Linguistics and Philosophy* 1(3). 337–355. doi:10.1007/BF00353453.

Kratzer, Angelika. 1981. The notional category of modality. In H. J. Eikmeyer & H. Rieser (eds.), *Words, Worlds, and Contexts: New Approaches to Word Semantics*, Berlin: de Gruyter.

Kratzer, Angelika. 2012. *Modals and Conditionals: New and Revised Perspectives*, vol. 36. Oxford University Press.

Kripke, Saul. 1980. *Naming and Necessity (2nd edition)*. Cambridge, MA: Harvard University Press.

Lewis, David K. 1973. *Counterfactuals*. Cambridge, MA: Harvard University Press.

Mackay, John. 2019. Modal interpretation of tense in subjunctive conditionals. *Semantics & Pragmatics* 12(2). 1–29. doi:https://doi.org/10.3765/sp.12.2.

Mandelkern, Matthew. 2019. Bounded modality. *Philosophical Review* 128(1). 1–61. doi:10.1215/00318108-7213001.

Mandelkern, Matthew. 2024. *Bounded Meaning: The Dynamics of Interpretation*. Oxford University Press.

Marty, Paul, Jacopo Romoli & Paolo Santorio. 2020. Counterfactuals and undefinedness: Homogeneity vs supervaluations. In *Semantics and Linguistic Theory (SALT)*, vol. 30, 603–623.

Mendes, Jéssica. 2024. Indefiniteness in future reference. Draft, University of Göttingen.

Musan, Renate. 1997. Tense, predicates, and lifetime effects. *Natural language semantics* 5(3). 271–301.

Nevins, Andrew. 2002. Counterfactuality without past tense. In *Northeast Linguistic Society (NELS)*, vol. 32, 441–450.

Ninan, Dilip. 2022. Assertion, evidence, and the future. *Philosophical Review* 131(4). 405–451. doi:10.1215/00318108-10136817.

Ramotowska, Sonia, Paul Marty, Jacopo Romoli & Paolo Santorio. 2024. Undefined counterfactuals:
experimental evidence for selection semantics. Draft available at `https://lingbuzz.net/lingbuzz/007595/current.pdf`.

Santorio, Paolo. 2024. Modalizing the past: A theory of X-marking. Draft, University of Maryland, College Park.

Schulz, Katrin. 2014. Fake tense in conditional sentences: A modal approach. *Natural language semantics* 22(2). 117–144.

Stalnaker, Robert. 1975. Indicative conditionals. *Philosophia* 5.

Stalnaker, Robert. 1978. Assertion. *Syntax and Semantics* 9.

Stalnaker, Robert. 2002. Common ground. *Linguistics and Philosophy* 25(5-6). 701–21.

Thomason, Richmond & Anil Gupta. 1980. A theory of conditionals in the context of branching time. *Philosophical Review* 89(1). 65–90. doi:10.2307/2184864.

Thomason, Richmond H. 1970. Indeterminist time and truth-value gaps. *Theoria* 36(3). 264–281. doi:10.1111/j.1755-2567.1970.tb00427.x.

Yalcin, Seth. 2007. Epistemic modals. *Mind* 116(464). 983–1026.

Future-less-vivid conditionals and the modal past

Paolo Santorio
Department of Philosophy
University of Maryland, College Park
4300 Chapel Drive
College Park, MD 20742
United States of America
paolosantorio@gmail.com