In this article, I propose a semantic account of temporally mismatched past subjunctive counterfactuals. The proposal consists of the following parts. First, I show that in cases of temporal mismatch, \([\text{past}]\) cannot be interpreted inside the proposition where it occurs at surface structure. Instead, it must be interpreted as constraining the time argument of the accessibility relation. This has the effect of shifting the time of the evaluation of the conditional to some contextually salient past time. Second, I will propose specific felicity conditions (presuppositions) for subjunctive conditionals and I will argue that there is a strict correspondence between the time of evaluation in the truth conditions of a conditional and the time relevant for the felicity conditions. In other words, if the time relevant for the accessibility relation has been shifted to the past, then the conditional’s presupposition will make reference to a past context. On the other hand, if no past is constraining the time argument of the accessibility relation, the conditional’s felicity will make reference to the current (main) context. Third, I will argue that the intuition that the antecedent of mismatched counterfactuals is not true is a scalar implicature arising from a competition not between assertions but between presuppositions. Finally, I will investigate the repercussions of my proposal for the general theory of modality.

1. **Introduction**

The conditional statements that we will consider in this paper have been traditionally labeled *subjunctive conditionals*. What these conditionals have in common is one layer of past morphology which is not interpreted temporally. Examples (1a, b) illustrate the two kinds we will be concerned with, and the labels that I will use throughout this paper.

\begin{align}
(1) \quad & \text{a. \textit{Non-past subjunctive conditional (NPSC)}} \\
& \quad \text{If Lucy played with Charlie tomorrow, she would make him happy.} \\
& \text{b. \textit{Standard past subjunctive conditional (SPSC)}} \\
& \quad \text{If Lucy had played with Charlie yesterday, she would have made him happy.}
\end{align}

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* The development of the ideas presented in this article has benefited greatly from discussions with Irene Heim, to whom I am very grateful. I would also like to thank Noam Chomsky, Kai von Fintel, Sabine Iatridou, Robert Stalnaker, and two anonymous reviewers for extensive comments on previous drafts of the paper. For challenging and interesting discussions, many thanks to Sylvain Bromberger, Bridget Copley, Jason Stanley, and Richmond Thomason. Naturally, I am the only one responsible for any mistakes that remain.

The label *non-past subjunctive* refers to the fact that the type of conditional in (1a) cannot be about a supposition about the past but can only be either about the present or the future. The label *past subjunctive conditional* is meant to indicate that the conditional in (1b) – where a past perfect (pluperfect) occurs – typically is about a past supposition. In languages like Italian where subjunctive mood can be used in conditionals, subjunctive is used in these types of constructions, in addition to the extra layer of past. Conditionals like those in (1) are different from their indicative counterparts precisely because they are marked by the occurrence of subjunctive mood. This explains the label *subjunctive conditionals*. In this paper I remain agnostic about what exactly the subjunctive mood contributes, if anything. Iatridou (2000) argues that mood is not a necessary ingredient in building up counterfactuality and that language-specific rules are responsible for its occurrence. Going back to the English case, as the following example shows, the difference between indicative and ‘subjunctive’ conditionals in English is marked by the presence in the latter, and the absence in the former, of past morphology.

(2) If Lucy plays with Charlie tomorrow, she will make him happy.

The partition of subjunctive conditionals into non-past and past is, however, challenged by the fact that past subjunctive conditionals of the (1b) type do not always talk about the past. Sometimes they talk about the future, despite their overt past verbal morphology. This paper is a study of such cases, which have been left unaccounted for by most theories of conditionals or have been given incorrect analyses. I will call past subjunctive conditionals that talk about the future *mismatched past counterfactuals (MPSCs)*, because their verbal morphology does not match the meaning of the temporal adverb. This is shown in (3), where the future adverb *tomorrow* conflicts with the past verbal morphology in both the antecedent and the consequent.

(3) If Charlie had taken his Advanced Italian test tomorrow, he would have passed.

Imagine the following scenario. Students who registered for the Advanced Italian class had to choose when to take their final test, either last Monday or tomorrow (but not both). Charlie took his final exam last Monday and didn’t pass. He would have benefited a lot from extra study and practice, and if he could have taken the exam a few days later, he would have passed. In this scenario, (3) is felicitous. Actually, not only *can* (3) be uttered,
but it must be uttered. Since in our scenario Charlie cannot take the test tomorrow (he has already taken it), the non-past subjunctive conditional in (4) cannot be uttered.

(4) If Charlie had took his Advanced Italian test tomorrow, he would pass.

Descriptively, a mismatched past counterfactual must be uttered when the speaker regards the hypothetical event described by the antecedent as unrealizable (impossible). The counterfactuality of mismatched subjunctive conditionals was already noticed and discussed in Dudman (1983, 1984) and Ogihara (2000).

Typically, past subjunctive conditionals talk about past hypothetical eventualities, as in the example below.

(5) If Charlie had taken his Advanced Italian test last Monday, he would have passed.

However, whether or not a temporal mismatch occurs in the antecedent of a past subjunctive conditional will affect the meaning of the whole statement. (3) suggests more strongly than (5) that the proposition expressed by the antecedent is false. The falsity of the antecedent in standard past subjunctive conditionals has been studied and analyzed intensively and, after Anderson (1951), most agree that the falsity of the antecedent is merely an implicature and that, as such, it can be canceled.

(6) If Jones had taken arsenic, he would have shown just exactly those symptoms which he does in fact show. So, it’s likely that he took arsenic.

This example shows that the speaker cannot assume the falsity of the antecedent because, if he did, he would defeat the purpose of the argument, which is to show that the antecedent is actually true. Hence, the past subjunctive conditional cannot entail or presuppose the falsity of the antecedent. Now, if we try to construct an Anderson-type example based on a mismatched past counterfactual, we do not get a coherent discourse.

(7) #If Charlie had gone to Boston by train tomorrow, Lucy would have found in his pocket the ticket that she in fact found. So he must be going to Boston tomorrow.

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1 Stalnaker (1975), von Fintel (1998), and references cited there.
The deviance of (7) points towards a difference between standard past subjunctive counterfactuals and mismatched past subjunctive counterfactuals. Is this difference real? And if it is, how can we capture it?

It may be suggested that the reason why the sentence above is infelicitous is that the time of the consequent precedes the time of the antecedent, and that like other cases of backwards causation, this is disallowed. If this were the case, the sentence above would be odd for the same reason that Lewis’s sentence *If Jim asked Jack for help today, there would have been no quarrel yesterday* is (Lewis 1979, p. 33). However, I don’t think that this is the reason for the deviance of the example in (7). There are felicitous mismatched subjunctive conditionals where the time of the consequent precedes the time of the antecedent. For example, I can say *If Charlie had gotten married to Sally tomorrow, he would have had his bachelor party tonight*, meaning that Charlie will not get married tomorrow and he will not have his bachelor party tonight. Therefore, I claim that what makes in (7) infelicitous is the attempt to cancel its counterfactuality.

In section 2 I shall discuss two current proposals about past subjunctive counterfactuals and show how neither of them can account for mismatched past counterfactuals. In sections 3 and 4 I shall present my proposal and its repercussion. In section 5 I shall extend it to mismatched simple sentences and, finally, in section 6 I shall conclude and sketch where this work may lead us in the future.

### 2. Mismatched Past Counterfactuals

#### 2.1. The Standard View of Past Counterfactuals

It has been suggested in informal treatments of subjunctive conditionals that the past tense in the antecedent of (8) is not a real past, but a ‘modal past’ (Palmer 1986, 2001).

(8) If Mary came, John would stay. [Palmer 2001, p. 14]

The intuition behind the label ‘modal past’ is that the past tense in the antecedent does not locate the event in the past, but removes the speaker from the actual situation and places him in an unreal one. Now consider (9), where the past tense is marked twice.

(9) If John had come, Bill might have left. [Palmer 2001, p. 208]

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2 Thanks to Bob Stalnaker and an anonymous reviewer for raising this point.
The proponents of the ‘modal past’ theory analyze the pluperfect as being composed by two layers of past (Palmer 1986, 2001; Iatridou 2000 and references cited there) and suggest that past is marked once for unreality, once for past time, since “have functions in English as both a marker of perfect aspect and of past time” (Palmer 2002, p. 208).

Iatridou (2000) exploits this intuition further. In her proposal, the past tense morphology instantiates what she calls the exclusion feature. This feature can either be interpreted in the domain of time or in the domain of worlds. In the former case, a sentence with past will be interpreted as talking about a time different from the time of the utterance; in the latter case, a sentence with past will be interpreted as talking about worlds different from the actual world. In a simple sentence such as *John left*, the past is interpreted temporally: the sentence talks about a past time at which an event of John’s leaving took place. The possibility of interpreting past modally (i.e., as excluding the actual world) is exploited in conditionals like (8) or (9). The difference between (8) and (9) is that, in the latter, two layers of past occur, the one instantiated by the auxiliary *have* and the one instantiated by the past -*ed*. While making the relation between the modal and the temporal uses of the past more explicit, Iatridou’s proposal is similar in spirit to Palmer’s: one layer of past is interpreted modally, thus contributing to the modal interpretation of the structure; the other layer of past is interpreted temporally, i.e., as expressing a relation of anteriority between the hypothetical event and the utterance time. Notice that this has an important consequence. The layer of past that is interpreted temporally locates the hypothetical event in time and, as such, is required to be interpreted inside the proposition expressed by the antecedent. This is exactly parallel to what happens in a simple sentence with the past tense: in (10), the past tense locates the event of playing in the past, which is the reason why it is compatible with the past adverb *yesterday* but not with *tomorrow*.

(10) Charlie played with Lucy (yesterday/#tomorrow).

Informally, the conditional in (9) is true iff the consequent is true in all the accessible possible worlds where the proposition that John *came* is true.

The proposal is intrinsically unable to account for mismatched past counterfactuals. This is why: the analysis requires one layer of past to be

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3 I take a proposition \( p \) to be a function from worlds to truth values, i.e., the set of worlds \( w \) such that \( p \) is true in \( w \).
interpreted inside the antecedent, but because of the future adverb tomorrow, the result is nonsensical. In recognizing this we have taken a step forward: at least in the case of mismatched past counterfactuals, we know that the past tense cannot be interpreted inside the antecedent. These counterfactuals are beyond the reach of the theories I sketched above.


Unlike the proposal in Iatridou (2000), Ogihara’s (2000) proposal directly addresses mismatched counterfactuals. Ogihara’s example is reported in (11). The relevant scenario is one in which tomorrow is Mary’s birthday, but John, who is her boyfriend, mistakenly gave her flowers yesterday, thus making her very upset. The fact that he could give her flowers tomorrow too is not relevant, because the flowers he gave her yesterday were meant as a birthday gift (as such unique) and he wrongly thought that her birthday was yesterday. In this scenario I can felicitously utter (11).

(11) If John had given flowers to Mary TOMORROW, she would have been happy.

In this section, I shall present Ogihara’s proposal and show that it does not fully account for the set of data he considers. Moreover, I will present a set of data that Ogihara does not discuss and I will argue that this new evidence refutes his theory.

In Ogihara’s proposal focus is essential to the interpretation of mismatched past counterfactuals such as (11). According to Rooth (1985, 1992) and subsequent work, focus is associated with a focus operator and a variable that gets introduced as a sister node to an expression that contains a focused constituent in the syntactic representation. So, the antecedent of (11) has the structure in (12).

(12)

The focus semantic value of John gives flowers to Mary TOMORROW, is the set of (temporally indeterminate) propositions of the form ‘John give flowers to Mary at x’, where x is a variable ranging over times. Notice
that the relevant propositions are “temporally indeterminate,” that is to say, they are tenseless. This is because the tense in the antecedent of the conditional is employed to constrain C by making a past time contextually salient. As a result, only past alternatives are relevant, i.e., only propositions where x is assigned a past time as its value (e.g., “John gave flowers to Mary yesterday,” “John gave flowers to Mary two days ago”). In sum, according to Ogihara’s proposal, the perfect tense in a mismatched past counterfactual does not locate the hypothetical event in time but indicates the time at which some similar event took place in the actual world, with the relevant proposition that is contrasted with the hypothetical one being obtained via focus. His proposal does solve the past puzzle, because the second layer of past is not interpreted in the proposition expressed by the antecedent but as the restriction of the focus variable. Unfortunately, as we will see in a moment, Ogihara’s proposal does not solve the felicity puzzle.

Ogihara’s proposal is that in MPSCs the past restricts the focus variable C and, consequently, makes some relevant (past) proposition salient. Moreover, he claims that for a MPSC to be true one proposition in the set of alternatives must be true. However, in the case of MPSCs (as well as in the case of any other subjunctive conditionals), there needs to be no true past proposition contrasted with the antecedent. Suppose Charlie died a month ago before ever going to Boston and both Lucy and Sally know it. Lucy and Sally are not talking about Charlie, and Lucy says that she believes that if Charlie had gone to Boston tomorrow, he would have seen the Red Sox play. Sally, who knows that the Red Sox are not playing tomorrow but the day after, disagrees and can felicitously utter the following MPSC.

(13) No. If Charlie had gone to Boston THE DAY AFTER TOMORROW, he would have seen the Red Sox play.

By hypothesis, no proposition of the form ‘Charlie goes to Boston at x’ is true because he never went to Boston. A fortiori, there is no past proposition of the form ‘Charlie goes to Boston at x’, where x ranges over past times. The alternatives that are considered are themselves hypothetical and do not have to hold in the actual world.

Notice that the requirement that there be a true proposition in the set of past alternatives made salient by the focus on the temporal adverb does not follow from Ogihara’s proposal, since, in general, focus on any element of a conditional does not force any of the alternatives to be true. For example, suppose that Lucy and Sally know that Charlie suffers from some
food allergy, and that he did not eat anything at the party because he did not want to fall sick. They are now arguing about what would have made Charlie sick, had he eaten it. Lucy has just said that she thinks that Charlie would have gotten sick if he had eaten strawberries. Sally disagrees and say If Charlie had eaten CHOCOLATE, he would have gotten sick. Here, it is by hypothesis not true that something made Charlie sick, i.e., there is no true proposition of the form ‘Charlie ate x’, where x ranges over kinds of food. Yet, the sentence is felicitous.

However, even if in light of examples such as (13) above and what we know in general about focus in conditionals, we drop the requirement that some past proposition among the relevant alternatives is true, Ogihara’s proposal runs into problems. In particular, it cannot account for the difference we began with, namely, the difference between a MPSC and a one-past subjunctive conditional. Without that requirement, Ogihara’s theory predicts that the MPSC and the one-past subjunctive conditional below should both be felicitous in the situation imagined above – a situation in which John mistakenly thought that May’s birthday was yesterday instead of tomorrow, and gave her flowers yesterday. However, we know this is not true.

(14) If John had given flowers to Mary TOMORROW, she would not have left him.

(15) If John gave flowers to Mary TOMORROW, she would not leave him.

The variable C introduced by the focus on the temporal adverb will be the set of alternative propositions of the form ‘John gives flowers to Mary at x’, where x ranges over times. Now, because there is no second layer of past in the NPSC, the set of alternatives will contain both propositions where x is replaced by a past time as well as propositions where x is replaced by non-past (future or present) times. Still, this set will contain past alternatives and one of them – ‘John gives flowers to Mary yesterday’ – is true. The NPSC should be felicitous, but it is not. Why? The difference between (14) and (15) would have to be that the MPSC in (14) requires a past alternative to be true, but we saw above that this requirement does not stem from the semantics of focus (cf. (13) and also (16) below). Furthermore, we still would not have any explanation for why (15) is infelicitous if a past alternative is true, unless we stipulated that if a past alternative is true, then you must have a second layer of past. But this is precisely what the analysis is supposed to account for.
A further argument against Ogihara’s proposal is that a MPSC is felicitous even when no relevant alternative is past. This is an argument that focus should not play an essential role in the theory of MPSCs. Imagine that Lucy has just told me that Charlie is going to Rome to meet my sister, who actually lives in Milan. He has already bought a ticket and there is no way to reach him to make him change his plans. There is nothing I can do: Charlie will go to Rome.

\[(16) \text{ If he had gone to MILAN tomorrow, he would have met my sister.}\]

Suppose I utter the conditional in (16). All the alternatives are propositions of the form ‘Charlie goes to } x \text{ tomorrow’, that is to say, propositions that will only vary depending on the value assigned to the variable } x, \text{ which ranges over places and not over times. Therefore, it cannot be true that the perfect tense is interpreted as constraining the set of alternatives, because the alternative propositions all talk about tomorrow.}

To conclude, Ogihara’s proposal cannot be maintained for the following reasons. First, it claims that some proposition in the set of the relevant alternatives has to be true in the actual world. We saw that this is incorrect for MPSCs. Without the claim that a past proposition in the set of relevant alternatives must be true, though, his theory cannot account for why MPSCs are counterfactuals. Second, since the focus story does not seem to be correct, the role of the (second layer of) past in a MPSC is also left unaccounted for: it cannot be interpreted within the proposition but neither is there a variable C to constrain.

Nonetheless, Ogihara’s underlying insight was correct. I take the idea that the (second layer of) past in a MPSC is not interpreted inside the proposition expressed by the antecedent but is constraining something else to be fundamentally correct. In this respect, Ogihara’s proposal and mine are similar in spirit. Below I will argue for a different answer to the question as to what the past constrains in a MPSC: what we see in MPSCs is a temporal mismatch, but what we understand is the impossibility of the antecedent. What is the mapping between the morphological pieces (what we see) and the semantic structure (what we understand)?

3. \textbf{Building My Proposal}

In what follows, I will present my own analysis of mismatched past counterfactuals, which will consist of an account of the role of past and a
proposal about the truth conditions and presuppositions of subjunctive conditionals.

Consider again the mismatched future counterfactual in (3), repeated in (17) below: despite the future adverb tomorrow, two layers of past occur in the antecedent (recall that the pluperfect is analyzed as composed of two layers of past).

(17) If Charlie had taken his Advanced Italian test tomorrow, he would have passed.

I now offer a proposal about what is contributed by the extra layer of past and about how to derive the falsity of the antecedent. The claims that I make here are meant to apply to all those languages where the past tense is employed in subjunctive conditionals.

3.1. The Contribution of Tense to the Accessibility Relation

Following my previous work, I suggest that the connection between the two layers of past and the impossibility of the antecedent is that the extra past tense in (17) is the source of the impossibility. I shall assume the possible world semantics and the theory of conditionals developed by Kratzer (1981, 1986, 1991). In the same vein as Lewis’s (1975) treatment of adverbs of quantification, Kratzer does not analyze the connective if as a two-place operator taking the antecedent and the consequent as its arguments. Instead, a conditional sentence is analyzed as a tripartite structure: the if-clause is interpreted in the restriction of a possibly covert modal operator, whereas the consequent is interpreted in the nuclear scope. Thus, the structure determined by a modal operator is similar to any other quantificational structure. Let us start, though, from simpler cases. Consider the modal sentence in (18).

(18) Charlie must be here.

According to a version of the standard treatment of modality, the structure of this sentence looks like (19). The quantification over worlds here

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4 Ippolito, forthcoming.
5 A quantificational theory of modality was developed in Carnap (1947), Hintikka (1961), and Kripke (1959, 1963), among others. Theories of conditionals as possible worlds conditionals were developed by Lewis (1968, 1973) and Stalnaker (1968).
6 The version adopted here comes from lecture notes distributed in 2000 by Kai von Fintel and Irene Heim, where world variables are assumed to be syntactically present at the level of logical form (LF).
is restricted by the accessibility relation $R$, a binary relation between worlds.⁷ If (18) is understood epistemically, $R$ will be interpreted as in (20). Notice that the accessibility relation is applied to the world of evaluation ($w_1$ in (19)). If this world variable remains unbound, then it will be interpreted as referring to the actual world.⁸

(19) $R = \lambda w.\lambda w'.w'$ is compatible with that the speaker knows in $w$.

The modal $\textit{must}$ will have the lexical entry in (21). Composing all the pieces in (21) by Functional Application, we get the truth conditions in (22).

(21) $[[\textit{must}]] = \lambda p \in D_{\alpha,i} \lambda q \in D_{\alpha,i} \forall w \in W[p(w) = 1 \rightarrow q(w) = 1]$.

(22) $[[\textit{Charlie must be here}]]^w = 1$ iff for all the worlds $w'$ compatible with what the speaker knows in $w$, Charlie is here in $w'$.

Knowledge, beliefs, plans, desires, and other human attitudes change over time. Therefore, the set of worlds over which modal operators quantify will depend not only on what the actual world is but also on what the time of evaluation is. What I know, believe, plan, or desire may be different from what I knew, believed, planned, desired in the past. Therefore, what was compatible with knowledge or beliefs or plans then may be incompatible with knowledge, beliefs, or plans now.

This is why accessibility relations cannot simply be binary relations between worlds. Accessibility relations must at least be binary relations between a world-time pair and a world. Their type must be $<s, <i, <s,t>>$.

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⁷ $s$ is the type of a world; $i$ the type of a time; $<s,t>$ is the type of a proposition (a function from possible worlds to truth values); $t$ is the type of a truth value.

⁸ If the whole sentence is embedded, then the world variable will be bound by some higher operator.
instead of the simple \(<s, <s, t>\). The possible worlds over which the modal operator quantifies will not only be relative to the world of evaluation but also to the time of evaluation. As in the case of worlds, the time of evaluation will by default be the time of the utterance, unless specified otherwise. The structure in (19) will then be replaced by (23), where \(w_1\) is the world of evaluation and \(t_2\) is the time of evaluation. As (18) is a matrix sentence, \(w_1\) and \(t_2\) will be assigned the actual world and the utterance time, respectively.

\[
(23) \quad R = \lambda w. \lambda t. \lambda w'. w'
\]

The time variable \(t_2\) gets as its value the utterance time, unless specified otherwise. What does “unless specified otherwise” mean?

I will make here the assumption that the future is modal, i.e., it’s not a tense. Consequently, the functional category under which temporal information is generally hosted, T, can be interpreted either as past or as present. We can further simplify this picture by suggesting that the only real tense is past and that present is the interpretation given to a T node marked as non-past, i.e. the default interpretation. We can implement this in two ways. We could assume a binary feature [±past] so that a T node will be interpreted as expressing temporal simultaneity if it hosts the feature [–past]. Alternatively, we could assume a unary feature [past] so that a T node will be interpreted as expressing simultaneity if it hosts no feature. I will not argue for either option here. For the time being I shall assume a unary feature [past].

Given a modal quantificational structure, the tense feature [past] can be interpreted either in the restriction of the operator or in the nuclear scope.
In (25) the past tense restricts the accessibility relation by constraining the range of possible values for the time variable $t_2$.

I will adopt the presuppositional variant of the referential analysis of tense developed by Partee (1973), Enç (1986), and Kratzer (1998). Heim (1994) suggests that the tense feature [past] is interpreted as a presupposition: the sentence will only be defined if there is a relevant past time in the context. Thus the analysis of tense closely parallels the analysis of gender features for pronouns (Heim and Kratzer 1998). The interpretation is given in (26).

(26) $[[t_2 \text{[past]}]]^{\xi \varepsilon} = \text{defined only if } g(2) < t_2$; if defined, then $[[t_2 \text{[past]}]]^{\xi \varepsilon} = g(2).$

If [past] occurs inside the restriction of the modal operator, the truth conditions for the sentence will be as in (27) ($S_{MP}$ stands for a sentence with a modal operator and a past temporal argument $t_2$ of $R$).

(27) $[[S_{MP}]]^{\xi \varepsilon} = 1 \iff \forall w' \in W[R(w', w_c, g(2)) \rightarrow q(w')] \text{defined if } g(2) < t_2.$

The semantics of [past] which I gave above is not only meant to represent the meaning of the past tense, but also that of (at least some instances of) the auxiliary have (and be, in language like Italian that have auxiliary alternation). The feature [past] can be interpreted in the modal domain (which means in the accessibility relation) or in the proposition embedded below the modal. To see this point in cases other than conditionals, consider the ambiguity of the sentence below.

(28) Charlie could have left.

On one reading of (28), the sentence asserts that at some point in the past it was possible that Charlie would leave (but maybe he did not). I will call this reading the ‘root reading’, because the possibility that Charlie would
leave is evaluated with respect to the way (some relevant aspect of) the actual world was at some past time; one instance of the root reading is the metaphysical reading, according to which it was consistent with the history of the actual world up to some past time (i.e., it was still possible then) that Charlie would leave. The other reading is one in which, in view of what the speaker knows now, it is possible that Charlie left. Because it talks about what is possible according to what the speaker knows, we shall call this reading the ‘epistemic reading’. As the paraphrases show, the difference between the two readings lies in whether the past tense is interpreted in the complement of the modal verb or not. In the epistemic reading, it is the eventuality of Charlie leaving that is located in the past, thus showing that the past is interpreted in the complement of the modal. In the metaphysical reading, by contrast, the past does not locate the eventuality of Charlie leaving but, instead, locates the time when there was a possibility that Charlie would leave. Because the past is interpreted in the complement of the modal only in the epistemic reading, we expect a future adverb such as tomorrow to force the metaphysical reading. Indeed, this is the case, as shown below.9

(29) Charlie could have left tomorrow.
   ✓ It was possible that Charlie would leave tomorrow.
   * It is possible that Charlie left tomorrow.

(30) a. Carlo sarebbe potuto [partire domani]. Root
    Carlo be-COND-PRES can-PAST PART [leave-INF tomorrow]
    ‘Carlo could have left tomorrow.’
    b.*Carlo potrebbe [essere partito domani]. Epistemic
    Carlo can-COND-PRES [be leave-PAST PART tomorrow]
    ‘Carlo could have left tomorrow.’ (*Epistemic)

The two Italian sentences in (30a, b) show unambiguously that in the root reading, the past tense is interpreted above the modal, and a future adverb can felicitously occur (the bracketed material is what occurs in the scope of the modal). However, in the epistemic reading, the past must be interpreted in the scope of the modal and the future adverb is not allowed to occur.

These remarks do not mean to be exhaustive, and more needs to be said about the structure of these modal sentences. However, this much is

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9 _COND_ = conditional mood; _PRES_ = present; _PAST_ = past; _PART_ = participle; _INF_ = infinitive.
clear: [past] spelled out by the past tense or have/be can be interpreted below or above a modal verb. If it is interpreted below, it will be part of the proposition that is expressed by the complement of the modal; if it is interpreted above the modal, our hypothesis is that it is interpreted as the argument of the accessibility relation.

Let me sum up the discussion so far. Given a modal quantificational structure, [past] can occur in the nuclear scope or in the restriction of the operator. Our familiar quantificational theory of modality naturally accounts for this phenomenon by letting [past] be interpreted inside the accessibility relation.

We saw that tense can affect overt modals. We have said nothing that would prevent tense from affecting covert modals too. In the next section, I will argue that tense does indeed affect covert modals. I will mainly focus on covert modal operators in conditional sentences (Kratzer 1981, 1991), but later in the paper I will also consider covert modals occurring in non-conditional sentences.

### 3.2. Mismatched Past Counterfactuals

I analyze a conditional sentence as a quantificational structure à la Kratzer, where the antecedent is interpreted in the restriction of the modal operator, and the consequent in the nuclear scope. Given that the modal operator will always be restricted by an accessibility relation $R$, the antecedent will actually have to compose with $R$. This is shown in (31), where $\sigma$ is the antecedent and $\delta$ the consequent.

(31)

Node $\varepsilon$ is the conjunction of $\beta$ and $\sigma$ and will be composed by some version of Predicate Modification (cf. Heim and Kratzer 1998). The truth conditions
for (17), repeated in (32), are given in (33). The nature of the modality is metaphysical, where by metaphysical I now mean that the worlds quantified over by the modal operator are worlds compatible with what is possible in the evaluation world at the evaluation time. I am assuming that given a world, at each time some things will be possible, whereas other things will not be possible: as times goes by, possibilities either get eliminated or actualized, i.e. the set of possibilities does not expand over time. To put it in a slightly different way, the worlds quantified over by the modal operator are possible futures of the actual world at a given time. In what follows, I will often use the shorter “accessible from the actual world” as shorthand for “compatible with what is possible in the actual world.” Finally, as a consequence of the fact that the tense is interpreted inside $\beta$, propositions $\sigma$ and $\delta$ are both interpreted as tenseless propositions.

(32) If Charlie had taken his Advanced Italian test tomorrow, he would have passed.

(33) $[\mathcal{S}]^{c} = 1$ iff $\forall w \in W[w$ is accessible from $w_c$ at $g(2)$ and Charlie takes his Advanced Italian test tomorrow in $w \rightarrow$ Charlie passes in $w]$ defined only if $g(2) < t_c$.

Informally, (33) is true if and only if for all worlds $w$ such that $w$ is a possible future of the actual world at a certain (contextually salient) past time and such that Charlie takes his Advanced Italian test tomorrow in $w$, he passes in $w$.\footnote{In his 1983 and 1984 articles, Dudman seems to hold a proposal similar in spirit to the one that I am advocating in this paper, for he claims that when someone utters a mismatched past subjunctive conditional (not his terminology), she is “granting the course of history only up until some past point” (1984, p. 153). Although not spelled out in detail, Dudman’s idea is that what the past contributes in these and related cases is the same as what it contributes in a simple sentence, but that the difference lies in what is temporally located in the two cases.}

\footnotemark[11]

One further point needs to be discussed.\footnote{I am grateful to one of the reviewers for bringing this point to my attention.} Imagine that Charlie took the test last Monday (assume that last Monday was exactly a week ago), as in the scenario we set up at the beginning of this paper, and that after he took and failed the test last Monday, Charlie kept studying Italian and he is now much better at it. In this scenario, the mismatched past conditional below would be judged true.

(34) If Charlie had taken the Italian test tomorrow, he would have passed.
According to the analysis that I have argued for above, the worlds that are quantified over by the modal operator are worlds metaphysically accessible at some past time when a future in which Charlie would take the test tomorrow was still possible. It follows that this past time must precede the time at which Charlie actually took the test (last Monday), the time when the possibility that he would take the test tomorrow was foreclosed. However, among the worlds metaphysically accessible then, there are also going to be worlds where Charlie did not take the test last week but did not study any more Italian, so that if he had taken the test tomorrow, he would not have passed (as his knowledge of Italian would not have improved). In other words, it is not true that in all possible worlds accessible at that past time, if he takes the test tomorrow, he will pass. Why is it, then, that we accept (56)? The reason is that in evaluating a conditional sentence, some kind of overall similarity plays a role in further constraining the set of accessible worlds with respect to which the conditional is evaluated. The conditional If Charlie had taken his Advanced Italian test tomorrow, he would have passed is true because in all the worlds metaphysically accessible at a (contextually salient) past time and maximally similar to the actual world, it is true that if he takes the test tomorrow, he will pass. The time-relative accessibility relation will give us worlds where he did not take the test last Monday but, crucially, only those among the accessible worlds that are maximally similar to the actual world after this past time will be relevant for the evaluation of the conditional.

Let $p$ be the proposition that Charlie will study Italian (at least) until tomorrow, and $\neg p$ its negation. At the contextually salient past time (some time immediately before the time at which Charlie took the test last Monday), both $p$-worlds and $\neg p$-worlds were accessible. However, in the actual world, only $p$ is true, i.e., the actual world is a $p$-world. By requiring that the worlds selected be maximally similar to the actual world, we actually eliminate all $\neg p$-worlds, and are left only with $p$-worlds in which Charlie will take the test tomorrow. And in these worlds it is true that he will pass. In order to restrict the domain of the modal operator to worlds maximally similar to the actual world, I will make use of a similarity akin to the one that Heim (1992) employs. Which worlds are to be regarded as most similar to the actual world is relative to some proposition; thus, we will say that a world $w$ is maximally similar to the actual world with respect to a proposition $p$ just in case there is no $p$-world more similar to the actual world than $w$.

\[
[[\text{Sim}]](w)(p) = \lambda w'. \omega(p) \Rightarrow \omega(w') \wedge w' \in p \text{ and } w' \text{ resembles } w \text{ no less than any other world in } p.
\]
In our case, we need the set of worlds which are maximally similar to the actual world to be among those worlds that are accessible at some past time and where the antecedent is true. The structure of the conditional sentence in question will be as follows.

$$\text{(36)}$$

The proposition that $Sim$ takes in the structure above is a complex proposition: $\lambda w. w \text{ is accessible from } w_c \text{ at (some contextually salient past time) } t_2 \text{ and } \phi \text{ is true in } w$. This is all that the semantics gives you. We naturally achieve an important result: the mismatched past subjunctive counterfactual in (32) is like the non-past subjunctive conditional in (37), but without the contribution of the past tense.

$$\text{(37)} \text{ If Charlie took his Advanced Italian test tomorrow, he would pass.}$$

The truth conditions for (37) are like those for (32), except for the lack of [past] constraining the time variable $t_2$. The set of worlds quantified over is the set of worlds compatible with the actual world at the time of the utterance (the default time).

$$\text{(38)} \quad [[S]]_{t^*} = 1 \iff \forall w \in W[w \text{ is accessible from } w_c \text{ at } t_c \text{ and Charlie takes his Advanced Italian test tomorrow in } w, \text{ and } w \text{ resembles } w_c \text{ no less than any other accessible world in which Charlie takes his Advanced Italian test tomorrow } \rightarrow \text{ Charlie passes in } w].$$

If the truth conditions in (33) are all the semantics gives us, where does the intuition that the antecedent cannot be true come from? This question is addressed in section 4.
4. Presuppositions and Gricean Scalar Implicatures

The semantics for (32) only gives us half of the story: it requires that in all the possible worlds which are accessible from the actual world at some past time and in which the antecedent is true, the consequent is true too. This is not enough, though: we must account for the intuition that, for (32) to be felicitous, the antecedent must not be true. My proposal is that the other half of the story belongs to pragmatics: the impossibility of the antecedent is a scalar implicature.

A Gricean implicature results from a competition between two propositions, $\alpha$ and $\beta$, in a relation of asymmetric entailment ($\alpha \subset \beta$, where $\alpha$ and $\beta$ are sets of worlds). If the speaker chooses to utter $\beta$ (the entailed, or ‘weaker’, proposition), his interlocutors will reason as follows: If the speaker was in the position to utter $\alpha$, he would have done so; instead, he said something weaker (less informative). Thus, it must be the case that he was not in position to utter $\alpha$, i.e., either he did not know that $\alpha$ or he knew that $\neg \alpha$.

In order to explain the falsity of the antecedent in a mismatched past subjunctive counterfactual as a Gricean implicature, there have to be two propositions in an asymmetric entailment relation. In the next two sections, I propose that the implicature of falsity derives from competition between the presuppositions of conditionals. Thus, we have a new application of Gricean theory: not only can two assertions compete in a relation of asymmetric entailment, but two presuppositions in that relation can compete too. We shall see how this proposal is in accordance with other research in the domain of presuppositions.

In section 4.1 I’ll propose new felicity conditions for subjunctive conditionals on the basis of the discovery of new facts about their presuppositions. In 4.1 I’ll show that the new proposal gives us the right ingredients for the pragmatic account to work.

4.1. The Presuppositions of Subjunctive Conditionals

(‘Felicity Conditions’)

I shall use a simplified version of the notion of context set, first introduced in Stalnaker (1975). Context sets are states of information, technically sets of worlds where what the speaker presupposes to be true in the actual world is indeed true.

(39) context set $c = \{ w \in W : w \in p \text{ for all } p \text{ that the speaker presupposes to be true}\}$. 
Because states of information change over time, context sets too will be time sensitive. For any time $t$, and the speaker’s background assumptions at $t$, $c_t$ is defined as the set of possible worlds where all the background assumptions at $t$ are true.

\[(40)\text{ context set } c_t = \{ w \in W: w \in p \text{ for all } p \text{ that the speaker presupposes at } t \}.\]

Now consider the non-past subjunctive conditional in (41).

\[(41) \# \text{ Charlie is dead. If he came to the party tomorrow, he would meet Sally.}\]

Charlie cannot come to the party because he is dead. Intuitively, the deviance of (41) is due to the fact that coming to the party tomorrow presupposes being alive and this is inconsistent with Charlie being dead. In different terms: the deviance of this sentence is due to the fact that the presupposition of the antecedent will have to hold in that context, thus causing the context to be inconsistent. Therefore, there must be a condition on the felicity of a non-past subjunctive conditional: the presuppositions of the antecedent must not be inconsistent with the context of the utterance.\(^\text{12}\)

More formally, let $P$ be the set of all worlds $w$ such that the conjunction of all the presuppositions of the antecedent $p$ of the conditional is true in $w$. (42) says that a non-past subjunctive conditional presupposes that the intersection of $P$ and $c_t$ is not empty. In other words, there must be worlds in the context set where the conjunction of all the presuppositions of $p$ is true – that is, what the antecedent presupposes must be consistent with what is presupposed at utterance time.

\(^{12}\) At the end of this section, I shall address two questions raised by the preceding discussion about the presuppositions of the antecedents of subjunctive conditionals. The first question is about my choice to focus on the presuppositions in the antecedents of subjunctive conditionals, rather than on the antecedents themselves. The second question is related to the first one and has to do with cases where the antecedent does not seem to have presuppositions. Recall our initial example (4), for instance:

\[(i) \text{ If Charlie took his Advanced Italian test tomorrow, he would pass.}\]

In a context in which it is not possible to take the same test twice, this example is infelicitous if Charlie already took the test. However, the mismatched counterpart of (i) is felicitous:

\[(ii) \text{ If Charlie had taken the Advanced Italian test tomorrow, he would not have passed.}\]

For my account of the difference between non-past and mismatched past conditionals to work, it must be the case that the antecedents in (i) and (ii) have presuppositions, even though they do not seem to.
Felicity condition for non-past conditionals

\[ P \cap c_t \neq \emptyset \]

Recall the truth conditions for a non-past subjunctive conditional in (38), repeated below in (43). (To keep the truth conditions simple, I am ignoring the contribution of the similarity relation; see (38) above for a more detailed version.)

\[ [[S]]^c = 1 \text{ iff } \forall w \in W \text{ [w is accessible from } w_c \text{ at } t, \text{ and Charlie takes his Advanced Italian test tomorrow in } w \rightarrow \text{Charlie passes in } w]. \]

Notice that the time of the evaluation \( t_c \) in the truth conditions corresponds to the time of \( c \) in the felicity condition. I’ll make the hypothesis that, in general, the time relevant for the felicity condition is identical to the time of the evaluation.

**Hypothesis:**

The time relevant for the felicity condition of a subjunctive conditional is identical to the value of the time argument of the accessibility relation.

Thus, in a mismatched past subjunctive counterfactual too the time of \( c \) will depend on the time of evaluation, which in this case is a (contextually salient) past time. If the hypothesis is correct, the felicity condition for a mismatched past subjunctive counterfactual will be as in (45). In (46) I repeat the truth conditions for a mismatched past counterfactual.

**Felicity condition for mismatched past counterfactuals**

\[ P \cap c_t \neq \emptyset, \text{ where } t < t_c. \]

\[ [[S]]^c = 1 \text{ iff } \forall w \in W \text{ [w is accessible from } w_c \text{ at } g(2) \text{ and Charlie takes his Advanced Italian test tomorrow in } w \rightarrow \text{Charlie passes in } w] \text{ defined only if } g(2) < t_c. \]

Here \( c_t \) is the context set at \( t \) where \( t < t_c \), i.e., the set of worlds where all that the speaker at \( t \) assumes to be true is true.

\[ c_2 = \{ w \in W : w \in p \text{ for all } p \text{ that the speaker presupposes to be true at } t_2 \}, \text{ where } t_2 < t_c. \]

---

\[ 13 \] Just for clarification, let me address here a point raised by a reviewer. The time of evaluation of indicative sentences is always the utterance time. For example, in *Lucy’s cat was asleep*, the time of evaluation is the utterance time (it is true or false now that Lucy’s cat is asleep at some past time), and consequently, the felicity condition must also be evaluated with respect to the utterance time, that is to say, the presupposition that Lucy has a cat must be compatible with the current context.
The felicity condition in (45) says that a mismatched past counterfactual presupposes that the intersection between the set of worlds $w$ where the conjunction of the presuppositions of the antecedent is true and the set of worlds $w'$ where all the background assumptions at some (contextually salient) past time $t_2$ are true, is not empty. In other words, the presuppositions of the antecedent must be consistent with what the speaker took the actual world to be at some past time.\(^{14}\)

We predict that the current background assumptions should be irrelevant to the felicity of a mismatched past counterfactual. This is indeed correct. Suppose Charlie died last week. Following Musan (1997), I will assume that most predicates presuppose that their subject is alive or in existence. Thus, coming to the party tomorrow presupposes being alive tomorrow, and this is inconsistent with Charlie being dead at the utterance time. Nevertheless, the mismatched past counterfactual in (48) is acceptable. Notice the contrast with (41) above.

(48) Charlie is dead. If he had come to the party tomorrow, he would have met Sally.

The behavior of non-past and mismatched past subjunctive conditionals is consistent across a number of different presuppositions. Let us consider the presuppositions of to sell, to quit and the existence presupposition of a definite noun phrase.

The verb to sell presupposes that the object that is sold is owned by the seller immediately before the selling takes place. In other words, to

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\(^{14}\) It is not hard to come up with cases of mismatched past subjunctive conditionals that seem to raise a problem for the present proposal, i.e., conditionals where the past time at which the antecedent was still a possible future is too far back for the speaker to have been alive then and, consequently, for her to have made any assumptions then. To illustrate this kind of case, consider the following sentence and imagine a scenario in which it is known that next year the tallest skyscraper of all times will be built in New York:

(i) If dinosaurs had been in NY next year, they would have felt really small.

Clearly, the accessible worlds must be worlds that preceded the time at which dinosaurs became extinct (and worlds in which they survived until now and will still be alive next year). At this time, though, the speaker was not yet alive, so she could not have made assumptions then. Because in my story the felicity conditions of mismatched past subjunctive conditionals do make reference to the speaker’s past assumptions (states of information), examples like (i) seem to be troublesome. However, we might imagine that what is relevant in these cases is not the actual state of information the speaker was in sometime before dinosaurs became extinct, because there was no such thing. What is relevant is the state of information that the speaker believes she would have been in at that past time, had she been alive then.
sell something presupposes owning it at the time of the selling. Negation tests for presupposition in (49).

(49) a. Charlie sold the Ducati.
   \textsc{Presupposition:} Charlie owned the Ducati.

b. Charlie didn’t sell the Ducati.
   \textsc{Presupposition:} Charlie owned the Ducati.

Being a presupposition trigger, the verb \textit{to sell} can be used to test my hypothesis that whereas in non-past subjunctive conditionals the presuppositions of the antecedent have to be consistent with the speaker’s knowledge at utterance time, in mismatched past counterfactuals they have to be consistent instead with the speaker’s knowledge at some past time. The following examples support the hypothesis.

(50) Charlie used to own a lot of stocks but ten years ago, after a crisis in the stock market, he sold everything, and since then he’s never had any stocks.

a. #Too bad. If Charlie sold his stocks tomorrow, he would make a lot of money.

b. Too bad. If Charlie had sold his stocks tomorrow, he would have made a lot of money.

In example (50a), the presupposition required by the counterfactual event is that Charlie will own his stocks until tomorrow, which is inconsistent with the presupposition in the utterance context. No accommodation is possible and the sentence is deviant. Interestingly, the mismatched past counterfactual in (b) is felicitous, despite its inconsistency with the presupposition in the utterance context that Charlie hasn’t owned stocks for the past ten years.\footnote{Incidentally, notice that past subjunctive conditionals with no mismatch behave like mismatched past subjunctive conditionals, even though no mismatch arises. I do not have much to say about these cases, but see section 6 for more details on this point.}

According to the hypothesis I am arguing for, the felicity condition for (50b) is (45): $P \cap c_t \neq \emptyset$, where $t < t_c$. The intersection between the set of worlds $w$ such that the conjunction of all the presuppositions of the antecedent is true in $w$ and the set of worlds where all the propositions the speakers presupposes at some past time are true, must not be empty. In other words, the felicity condition for a mismatched past counterfactual is that the presuppositions of the antecedent not be inconsistent with some past information state of the speaker. Of course, this allows for the
possibility that they could be inconsistent with the speaker’s current knowledge, which is a welcome result, given the acceptability of (48a) and (50b).

In addition, consider the following case. To quit an activity $x$ requires that $x$ goes on at the time of the quitting. Thus, we say that to quit smoking presupposes that one smokes immediately before the quitting time. Negation, again, tests for the presupposition.

(51) a. Lucy quit smoking.
    **Presupposition:** Lucy smoked.

    b. Lucy didn’t quit smoking.
    **Presupposition:** Lucy smoked.

Again, the counterfactuals behave exactly as predicted by our hypothesis.

(52) Lucy was a heavy smoker but she quit smoking ten years ago, after she had pneumonia. A new law was passed last week that says that if you quit smoking from now on, you have to undergo a new medical test which is quite painful, even if very useful for detecting lung problems in ex-smokers. Thinking about Lucy, I say:

    a. #Good for her! If she quit smoking tomorrow, she would have to take the new painful test.

    b. Good for her! If she had quit smoking tomorrow, she would have had to take the new painful test.

Again, the presupposition that Lucy’s smoking will stretch up until tomorrow is not available in (52a), but it is in (52b), the only difference between the two being the extra layer of past in the antecedent (and in the consequent).

Lastly, let me consider the case of an existence presupposition. In (53a) the presupposition required by the antecedent – that there is a guitar and that Lucy will own it until tomorrow – is not available; in (53b), it is.

(53) Lucy’s unique guitar burned in the fire that destroyed her home six months ago.

    a. #Too bad. If Lucy played her guitar tomorrow, she would make a lot of money.

    b. Too bad. If Lucy had played her guitar tomorrow, she would have made a lot of money.

The conclusion is that the restriction that the presuppositions of the antecedent must not be inconsistent with the speaker’s presuppositions at utterance time only holds for non-past subjunctive conditionals. Pluperfect
subjunctive conditionals do not obey this restriction. In other words, a non-past subjunctive conditional cannot presuppose something that is inconsistent with the speaker’s background assumptions at utterance time. A pluperfect subjunctive conditional can.¹⁶

Before I proceed to derive the relevant implicatures, let me suggest possible answers to two questions that the preceding discussion raises. The first question is why I take the presuppositions in the antecedents of subjunctive conditionals, rather than the antecedents themselves, to play an essential role in the felicity conditions. Notice that the antecedent of a subjunctive conditional can be inconsistent with the speaker’s presuppositions and, in fact, if the antecedent presupposes something inconsistent with one of the background assumptions, one strategy to resolve the clash is to make the presupposition part of the antecedent itself. This is shown in the example below.

(54) a. #Charlie is dead. If he came to the party tomorrow, he would meet Sally.
   b. Charlie is dead. If he were alive and came to the party tomorrow, he would meet Sally.

The contrast between (54a) and (54b) shows that if the antecedent presupposes something that is incompatible with the background assumptions, then the conditional is infelicitous. However, if the supposition itself is incompatible with the background assumptions, then the conditional is felicitous. This shows that the right felicity condition for subjunctive conditionals cannot be formulated in terms of a compatibility relation between the speaker’s presuppositions and the antecedent itself. Furthermore, a compatibility relation between the speaker’s presuppositions and the antecedent

¹⁶ Exceptions are the presuppositions triggered by items like too, or again. The presuppositions triggered by these particles must always be consistent with the context; consequently, there is no contrast between NPSCs and MPSCs. Consider the following pair, where too is constructed with Charlie:

(i) If Charlie arrived tomorrow too, Lucy would throw a party.
(ii) If Charlie had arrived tomorrow too, I would have thrown a party.

If nobody is going to arrive tomorrow, both (i) and (ii) are infelicitous. I believe that this is explained by the anaphoric nature of these items. Take the sentence Charlie played too. As argued in Kripke (undated), too means something like in addition to x, where x is anaphoric to some appropriate antecedent in the context. If there is no antecedent in the context (i.e., if nobody else is known to have played in the context), the anaphora cannot be resolved and the presuppositions of Charlie played too cannot be computed. See Ippolito (2002a, b) for a detailed analysis of these cases.
of a conditional seems to be what *indicative conditionals* require. Indeed, in the case of an indicative conditional, removing the presupposition of the antecedent by making it part of the antecedent itself does not help.

(55) a. #Charlie is dead. If he comes to the party tomorrow, he'll meet Sally.
    b. #Charlie is dead. If he is alive and comes to the party tomorrow, he’ll meet Sally.

The antecedent in (55b) no longer presupposes that Charlie is alive because it *supposes* it. However, the conditional is still infelicitous.

The second question that is raised by the preceding discussion is about subjunctive conditionals like the one we began with, where the antecedent does not seem to presuppose anything at all. Imagine that Charlie already took the test and that you cannot take the same test twice. In this scenario, (56a) is infelicitous, (56b) is not.

(56) a. If Charlie took the Advanced Italian test tomorrow, he would pass.
    b. If Charlie had taken the Advanced Italian test tomorrow, he would not have passed.

According to my proposal, the deviance of (56a) is due to the fact that the antecedent presupposes something that is inconsistent with the background assumptions. But what could the antecedent possibly presuppose? I do not have a fully worked-out answer to this question and refer the reader to Ippolito (2002b) for more on this problem. What follows is a promissory note. The idea is that in a context in which it is known that you cannot take the same test twice, i.e., when it is known that the event talked about by a given sentence is unique, the sentence must be interpreted as making use of a *definite description* of the event, and it must presuppose that the contextually salient event to which the definite description refers has not occurred yet. This is reminiscent of what Heim (1992) suggested in order to explain the infelicity of the sentence below.

(57) # I interviewed a father of the victim.

I will explain Heim’s case in more detail in the next section, but let me just advertise Heim’s suggestion here: in contexts where it is known that there exists only one object that can satisfy a certain description (‘father of the victim’), the definite article – which in her analysis carries a *uniqueness* presupposition – must be used. To go back to our example, because it is known that there can be at most one event of taking the test (per person), the sentence will have to be interpreted as supposing that *the* event of
Charlie taking the test will take place tomorrow, and as presupposing that the unique event of Charlie taking the test has not yet occurred. Because this presupposition is inconsistent with the background assumption that that event already occurred last Monday, sentence (56a) is infelicitous.

4.2. Gricean Scalar Implicatures

The felicity conditions in (42) and (45) talk about the relation between the presuppositions of the antecedent of a conditional and the background assumptions at the time at which the conditional is evaluated. My proposal is that it is at the level of the felicity conditions (presuppositions) that the Gricean competition occurs.

The felicity conditions given above require that the presuppositions of the antecedent be compatible with the background assumptions at some specific time. Presuppositions can be presumed knowledge. Whereas knowledge is always true (factive), presumed knowledge may turn out to be false. But in the dynamics of a conversation, this distinction turns out to be irrelevant: if the participants in a conversation believe that what they assume to be true is true (i.e., is knowledge), then the inferences that they will draw are the same as those that they would draw if what they assume to be true were in fact true. Consequently, for the sake of simplicity, we will be simply talking about knowledge.

Knowledge is factive. When you know that \( p \), you believe that \( p \), you have good evidence that \( p \), and \( p \) is true. I cannot discover that what I knew at some past time is no longer true now, because if I now know that it is not true, then I didn’t know it, I merely believed it.\(^{17}\) Hence, being a proposition compatible with my knowledge at the utterance time entails being compatible with my knowledge at any time \( t \) earlier than the utterance time. But not vice versa: being compatible with what I knew at some past time does not entail being compatible with what I know now because, for example, I may have learned that the proposition in question is false. Thus, we have what we needed: two propositions in a relation of asymmetric entailment. Because the notion of presupposition is built on knowledge, we can conclude that being compatible with the common ground at utter-

\(^{17}\) Knowledge is generally defined in terms of belief; indeed it is a belief that has the property of being true. That knowledge cannot just be justified true belief was shown by E. Gettier in his 1963 article “Is justified true belief knowledge?” (Analysis). Philosophically, important epistemological questions arise with respect to a satisfactory definition of knowledge. For our purposes, though, the discussion above is sufficient.
ance time entails being compatible with the background assumptions at any time before utterance time. Therefore, we obtain the asymmetric entailment in (58).

\[(58) \quad P \cap c_t \neq \emptyset \text{ entails } P \cap c_{t < t_c} \neq \emptyset \]
\[\quad P \cap c_{t < t_c} \neq \emptyset \text{ does not entail } P \cap c_t \neq \emptyset \]

The asymmetric entailment in (58) draws a distinction between beliefs, on the one hand, and knowledge (and presumed knowledge) on the other. It is neither the case that if I believe a proposition \( p \) at some time \( t' \), I believe it at any time \( t'' \) later than \( t' \), nor that if I believe \( p \) now, then \( p \) must have been consistent with my beliefs at any time \( t' \) earlier than now. Beliefs change over time: I may believe now that what I believed yesterday is false; or I may now believe true some proposition that yesterday I believed to be false. The same is true for other kinds of human attitudes (desires, plans, and wishes constantly change) and for the way the world is (states of affairs constantly change). Thus, none of these modalities makes the asymmetric entailment in (58) above true.

A natural objection is that we do in fact seem to lose knowledge: suppose that I knew yesterday that the 2006 Soccer World Cup will be in Germany (it is true, I believed it, and I had justification, i.e., I read it in a reliable newspaper), but that today, during an interview, the President of Fifa mistakenly said that the next World Cup will be in Portugal. I may then stop believing that the World Cup will be in Germany. Therefore, I have lost knowledge. (The same argument can be construed for the case of forgetting some proposition that was known.) My response to this worry is that, from the point of view of the subject, when she stops believing that Germany will host the next World Cup, she starts believing that she never knew that Germany will be the host, i.e., that she had been wrong to believe so all along. Therefore, from her perspective, she never knew it. In other words, someone is in a position to say that she knew that \( p \) only if she is in a position to say that she knows that \( p \). I cannot say that I knew that Germany will host the 2006 World Cup because now (having been misled by false information) I cannot say that I know that Germany will host the 2006 World Cup (in fact, I now believe falsely that it is false that Germany will host that cup). The set of beliefs, on the contrary, can shrink in that in the circumstances just described, I can still say that I believed that Germany would host the World Cup.

Let us return to the point where we were before this digression. I had constructed the asymmetric entailment between the presupposition of MPSCs and the presupposition of non-past subjunctive conditionals. We can now turn to the task of generating the correct implicature. The Gricean com-
petition between (42) and (45) goes like this (I use $K$ as a notation for *knowing that*, in particular for *you know that*):

(59)  **Gricean competition**

a. You presupposed: $P \cap \text{ct}_c \neq \emptyset$

b. You didn’t presuppose: $P \cap \text{ct}_c \neq \emptyset$

c. Thus: $\neg K (P \cap \text{ct}_c \neq \emptyset)$

d. $K \neg (P \cap \text{ct}_c \neq \emptyset)$

e. $\equiv K (P \cap \text{ct}_c \neq \emptyset)$

Line (59c) is the step we are familiar with from classical examples of scalar implicatures: because the speaker appealed to the less informative presupposition, the interlocutor will implicate that the speaker does not know that $P$ is incompatible with the common ground at the utterance time. Because it is assumed that the speaker knows what she presupposes, step (d) and (e) follow: the speaker knows that $P$ is incompatible with the common ground at utterance time. For this to be true, it is sufficient that one of the presuppositions of the antecedent is false. If (at least) one presupposition of the antecedent is inconsistent with the context, then the antecedent is not true.18 As I said in section 4, the result of a Gricean competition is that the speaker is not in a position to assert the strong proposition $p$. This is consistent with two possibilities: that she does not know that $p$ or that she knows that $\neg p$. In most cases of scalar implicatures, the stronger result (that she knows that $\neg p$) has to be stipulated. On the contrary, in our competition the stronger result (i.e. line (59d)) follows naturally. The weaker option is discarded because it is assumed that the speaker knows what she is presupposing. In other words, if the presuppositions of her utterance are not compatible with what she in fact presupposes, then the speaker knows that they are not.

That the Gricean Maxim of Quantity (“Make your contribution as informative as necessary given the purpose of the conversation”; Grice 1975) can have application in the domain of presuppositions has already been suggested by Heim (1991).19 In her discussion of indefinites, Heim argues that, assuming the $\exists$-analysis of the indefinite article, the definite and indef-
inite articles stand in an asymmetric entailment relation – \([a \xi]_\zeta\) follows from \([the \xi]_\zeta\), under the classical analysis – and, consequently, we expect the phenomenon of a Gricean scalar implicature to arise: the use of \([a \xi]_\zeta\) should conversationally implicate that the speaker is not in a position to utter \([the \xi]_\zeta\). However, in a context in which it is known that one can only have one father, the requirement that your assertion be as informative as possible does not explain why (60a) is not acceptable: since it is known that each person has only one father, (60a) conveys the same amount of information as (60b) with the definite article.

(60) a.#I interviewed a father of the victim.
    b. I interviewed the father of the victim.

Heim suggests that we could still distinguish between (60a) and (60b) if we postulated a new principle, according to which a speaker is required to presuppose as much as possible: “Maximize presupposition!” If this principle were postulated, then (60b) would have to be uttered because it presupposes uniqueness.

Now, let me give an overview of the next sections. In section 4.3, I will provide a further argument for my analysis. In section 4.4, I will show that, contra what has been claimed in the literature, the falsity of a mismatched past counterfactual is cancelable, as predicted by my pragmatic account.

There is one issue having to do with the felicity conditions suggested above that needs to be mentioned here. Following Stalnaker (1973, 1974), Karttunen (1974), and Heim (1988, 1992), it is standard to assume that the presuppositions of a sentence \(\phi\) have to be entailed by the context in which \(\phi\) is uttered. However, I suggested above that a weaker requirement must hold between the presuppositions of the antecedent of a conditional and the context with respect to which the sentence is evaluated, i.e. that those presuppositions be compatible with such a context. Given the proposal in this paper, this weaker requirement is necessary to derive the impossibility of the antecedent as a scalar implicature. In Ippolito (2002a, b),

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(i) \(AvoidF\)

F-mark as little as possible, without violating Givenness.

(ii) \(GIVENness\)

If a constituent is not F-marked, it must be GIVEN.

Because the Given is the old information, and F marks new information, (i) requires sentences to have as much old information as possible, i.e. to presuppose as much as possible. See also Truckenbrodt (1995).
though, I offer an analysis of subjunctive conditionals where this implicature is derived but the stronger requirement that the presuppositions of the antecedent be entailed by the context is maintained, while keeping the spirit and essential ingredients of the present proposal. For lack of space, I cannot go into more details but I refer the reader to the aforementioned work.

4.3. Truth Conditions and Asymmetric Entailment

As argued in the previous sections of this paper, when past is interpreted as constraining the time argument of the accessibility relation, it has the consequence that it contributes to the truth conditions of the conditional (by shifting the time of evaluation to the past). Because the sets of worlds which the modal operator quantifies over in MPSCs and non-past NPSCs may be different, MPSCs and NPSCs are truth-conditionally different. However, because they compete with each other and are never felicitous in the same contexts, their truth-conditional difference cannot be tested. To illustrate this situation, consider the following example. Suppose Charlie got married yesterday. What we would like to say is that (61a) is true and (61b) is false.

(61) a. If Charlie got married tomorrow, he would be married twice.
   b. If Charlie had gotten married tomorrow, he would have been married twice.

Why is (61b) false? It is false because the worlds the modal quantifies over are those worlds accessible from the actual world (immediately) before the time when Charlie got married and where Charlie gets married tomorrow: it is not true that in these worlds he gets married twice. On the other hand, (61a) quantifies over worlds compatible with the actual world at the utterance time, i.e., worlds where Charlie got married yesterday. Consequently, if in those worlds the antecedent is true, it is true that he gets married twice. However, in the scenario in which Charlie already got married, (61a) cannot be felicitously uttered for the reason explained earlier in the paper; similarly, in the scenario in which Charlie has not gotten married yet, (61b) is not felicitous. Thus, there is no situation in which (61a, b) are equally felicitous, as expected given that part of their meaning is derived as a scalar implicature. Let me point out that insofar as (61a) is acceptable in a context in which Charlie already got married, the marriage that is supposed to take place tomorrow is understood to be another marriage, and the sentence is judged true. To go back to what I discussed at the end of section 4.1, notice that this means that the antecedent cannot
be interpreted as talking about the marriage, but instead as talking about a wedding. Indeed, (61a) greatly improves if the word again is added to the antecedent. This is precisely what happens when an indefinite noun phrase is used in contexts where there already is an object satisfying the noun.20

(62) [I already offered Charlie a coffee.]
   a. #Charlie, would you like a coffee?
   b. Charlie, would you like another coffee?

Another point worth making is that the asymmetric entailment could not be construed at the level of truth conditions. Not only do the truth conditions of a non-past subjunctive conditional not entail the truth conditions of a MPSC, but the truth conditions of a MPSC entail those of a non-past subjunctive conditional: the truth conditions for a non-past subjunctive conditional and a MPSC, repeated in (63) and (64) respectively, show that the set of worlds quantified over by the modal operator in a MPSC is (potentially) bigger than the set of worlds quantified over in a non-past subjunctive conditional. Thus, the Gricean competition cannot take place at this level. We need to move to the level of felicity conditions.

(63) \[ [S]^{c} = 1 \text{ iff } \forall w \in W [w \text{ is accessible from } w_c \text{ at } t_c \text{ and Charlie takes his Advanced Italian test tomorrow in } w \rightarrow \text{Charlie passes in } w]. \]

(64) \[ [S]^{c} = 1 \text{ iff } \forall w \in W [w \text{ is accessible from } w_c \text{ at } g(2) \text{ and Charlie takes his Advanced Italian test tomorrow in } w \rightarrow \text{Charlie passes in } w] \text{ defined only if } g(2) < t_c. \]

I have shown that the proposal I made above is correct in that the asymmetric entailment can only hold at the level of felicity conditions.

(65) # Charlie is dead. If he came to the party tomorrow, he would meet Sally.

(66) Charlie is dead. If he were alive and came to the party tomorrow, he would meet Sally.

4.4. Cancelability

I have argued above that the falsity of the antecedent of a mismatched past counterfactual is an implicature. Implicatures are cancelable. Therefore,

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20 Examples of this kind are from Pesetsky (2000), who attributes them to Irene Heim.
the falsity of the antecedent of a mismatched past counterfactual must be cancelable. I will show that, despite appearances, it is indeed.

It seems natural and harmless to assume the following pragmatic principle: in engaging in a conversation with other people, we are interested in what the epistemic state of these people is at the time at which the conversation takes place. Vice versa, they will be interested in what our current epistemic state is. My claim above has been that the implicature of falsity in mismatched past counterfactuals is drawn because the speaker’s presupposition makes reference to his past epistemic state rather than his current epistemic state, which would have been more informative given the principle above. Therefore, the circumstances in which the implicature will be canceled are those in which it would not have been more relevant for the speaker to inform his interlocutor about his current epistemic state. In other words, in those circumstances in which it is enough to inform his audience about his past epistemic states, the implicature won’t be drawn. I believe this is indeed the case. According to the judgments of the native speakers I have asked, the following mismatched past counterfactuals can be used even though the antecedent of one of them (the one referring to tomorrow) is actually true.

(67) Lucy wanted to visit her mother but she was afraid she would fight with her brother and sister, with whom she does not get along at all. I met Charlie this morning and I asked him whether he knew what Lucy has decided to do. Charlie said:
Yes, she decided to go tomorrow. When I saw her last she was deeply torn: she had to choose between tomorrow and the day after, because those are her only days off work. She didn’t know what to do: true, if she had gone to visit her mom tomorrow, she would have met her brother but, if she had gone the day after tomorrow, she would have met both her siblings, which is certainly worse. In the end she chose tomorrow so as to meet only one of them.

Canceling the implicature of falsity in (67) is possible because the relevant epistemic state here is not that of the speaker at utterance time but that of Lucy at the time she was making her decision. Charlie – the speaker – is reporting Lucy’s thinking: the thoughts she went through in order to decide between tomorrow and the day after.

This is exactly the same mechanism at work in other cases of implicature cancellation. Normally, if somebody says, “I own two cars,” his interlocutors will draw the implicature that he does not own three (or more) cars. But now, consider the following scenario: In order to get a
meal plan you must have at least two children. Suppose B has four children and he’s applying for a meal plan. The following exchange takes place between A – the meal plan’s administrator – and B.

(68)  A: Do you have two children?
     B: Yes, I do.

Here, A will correctly not draw the implicature that B only has two children. Why? Because the information about the exact number of children B has is not expected (it’s actually irrelevant). Hence, B’s not giving that piece of information will not have any significance whatsoever.21

5. **Covert Modality in Mismatched Matrix Sentences**

In this paper, I have discussed how temporal mismatches in conditionals are cases of [past] being interpreted outside the proposition where it occurs in surface structure. The proposal is that (at least in cases of temporal mismatches) [past] is interpreted in the domain of the modal operator (more precisely, it is interpreted inside the accessibility relation).22 Notice that in mismatched conditionals this is the only option available, as [past] cannot be interpreted inside the antecedent because of the future temporal adverb.

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21 A reviewer points out that there are some speakers for whom (67) is not felicitous, and that this is not unexpected since variation is common in this area. However, I have no explanation for why this is so.

22 This hypothesis is supported by further data, thorough discussion of which the reader can find in Ippolito (2001). The relation between modal operators and the complementizer’s domain has already been exploited, for example in Stowell (1982). More specifically, in the literature on the syntax of conditionals, it has been observed that there exists a kind of subjunctive conditional where (one layer of) past moves overtly to C (Pesetsky 1989; Iatridou and Embick 1994). Iatridou and others also observe that ‘inverted conditionals’ have a stronger “irrealis” flavor when compared with their non-inverted counterpart:

(i) Had Lucy met him for the first time yesterday, she would not have married him.
(ii) If Lucy had met him for the first time yesterday, she would not have married him.

The former sentence suggests more strongly that the antecedent is false and, consequently, would resist Anderson’s type of examples. Indeed, a future adverb can replace yesterday in (i): according to the speakers I have consulted, (iii) is the preferred way to talk about a future impossibility.

(iii) Had Lucy met him for the first time tomorrow, she would not have married him.

Turkish offers another case of overt movement of past to C and, interestingly, this movement is associated with the falsity of the antecedent (see Ippolito 2001 for a discussion of the Turkish data).
This can be generalized to all sentences with temporal mismatches. In no sentence with a temporal mismatch can [past] be interpreted inside the proposition where the future temporal adverb occurs. In other words, in every temporally mismatched sentence [past] must be interpreted in the restriction of a modal operator – more specifically, in the accessibility relation of the modal operator. Consequently, we predict that all sentences with a temporal mismatch will be interpreted modally. The goal of this section is to show that this is correct.

Sentence (69) has a special interpretation. It *only* has a special interpretation.

(69) Originally, Charlie left tomorrow.

Here [past] cannot be interpreted inside the proposition; this is to say, it cannot locate the event of leaving in the past. If it did, the event of Charlie’s leaving would be said to occur both tomorrow and in the past relative to the utterance time, and the sentence would be as nonsensical as (70).

(70) # Tomorrow, Charlie left.

The former sentence is acceptable, though. What does the past do? In order to answer this question, we need to ask what (69) intuitively means and in what circumstances it would be felicitously uttered. Suppose today is Monday and Charlie had scheduled to leave tomorrow (Tuesday). I meet Lucy and she tells me that Charlie is coming to dinner on Wednesday. I am surprised and I tell her that I thought he would have already gone by then. She can then felicitously utter (69). A similar example is (71).

(71) It is 10a.m. and Charlie has just told Sally that they will play the basketball game tomorrow. Sally was told last week that they would play tonight. So, she says:

  Didn’t we play tonight?

Returning to (69): intuitively the sentence talks about what should have been the case if some plans had been realized. The truth of the proposition

23 The same point can be duplicated using the past progressive:

(i) Charlie was leaving tomorrow.

I have chosen the simple past form so as to isolate the contribution of tense from the contribution of aspect. I am aware that some speakers reject the sentences with the simple past. However, speakers I have consulted did accept these sentences in the appropriate context. I found similar examples in Dudman (1983). For analysis of the interaction between progressive aspect and modality, see Dowty (1977) and Copley (2001, 2002). I don’t have an account of why there is variation in accepting these sentences.
expressed by a mismatched sentence such as this is evaluated in all those worlds compatible with some relevant aspect of the actual world: plans, beliefs, desires, etc. Sentence (69) is a modal sentence, even though its modality is hidden. The broader generalization I made above finds support: in every temporally mismatched sentence, [past] must be interpreted inside the accessibility relation, thus escaping the nonsensical interpretation. The structure and truth conditions for (69) will be as in (72) and (73) (ignoring the adverb originally).

\[(72)\]
\[
\begin{array}{c}
\text{modal} \\
\langle \text{st}, \langle \text{t}, \rangle \rangle \\
\langle \text{st} \rangle \\
\langle \text{i} \langle \text{st} \rangle \rangle \\
\langle \text{t} \rangle \quad \text{[past]} \\
\langle \text{w}_1 \rangle \\
\end{array}
\]

\[(73)\] \[
[S]^e = 1 \text{ iff } \forall w \in W \text{ [w is compatible with the plans in } w \text{ at } g(2) \rightarrow \text{Charlie leaves in } w] \text{ defined only if } g(2) < t_e.
\]

As mentioned above, the accessibility relation may be of different kinds: planning, epistemic, doxastic, etc. For example, whereas example (69) seems to involve a planning modality, the following example seems to involve mere evidence/knowledge.

\[(74)\] A gigantic meteor is threatening our planet and many mysterious phenomena have occurred in the last few days. The scientists are clueless and are afraid something terrible may happen to the Earth. Today on TV, they announced that a new series of strange events will happen. You haven’t watched TV today and now want me to update you. I say:

“You wouldn’t believe it! Originally, the sun rose at 5:32 tomorrow but, due to the meteor, it will actually have a delay of 5 minutes!”

That the sun will rise at a certain time is a reliable kind of assumption (if not knowledge), but this event cannot be planned. As in the case of conditionals, the semantics in (73) only talks about what was compatible with some aspect of the actual world at some past time. Where does the intuition come from that, when the speaker utters (69), he doubts or no longer
believes that Charlie will leave tomorrow? The answer should now be obvious: it is a scalar implicature.

5.1. Scalar Implicatures in Mismatched Matrix Clauses

Following the proposal I presented above, I suggest that the scalar implicature is derived through a competition between presuppositions (felicity conditions). Recall that the time of the context set $c$ in the felicity conditions discussed above is identical to the time of the evaluation of the modal sentence. Given the truth conditions in (73), the felicity condition of a mismatched matrix sentence will be (75).24

(75) $P \cap c_{<c_2} \neq \emptyset$

Condition (75) requires that the proposition expressed by the mismatched sentence be consistent with the speaker’s presuppositions at some past time $t_2$. Or, to put it differently, the intersection between the set of worlds $w$ where $p$ is true in $w$ and the context set at some past time $t_2$ is not empty.

In analogy with the reasoning I developed for conditionals, the presupposition in (75) will have to compete with (76), which will have to be the presupposition of a sentence whose truth conditions are those given in (77).

(76) $P \cap c_c \neq \emptyset$

(77) $[[S]]^{fc} = 1$ iff $\forall w \in W \left[w \text{ is compatible with what the speaker knows in } w_c \text{ at } t_c \rightarrow \text{Charlie leaves tomorrow in } w\right]$.

24 Notice that, whereas in the case of subjunctive conditionals it mattered whether the presupposition was about $P$ or $p$, in the case of a matrix sentence, it does not. This is because the strategy of overtly canceling one presupposition by turning it into a supposition (which is what we do in subjunctive conditionals) is not available for non-conditional sentences. The question whether (75) should be about $P$ or $p$ is still open, though, and finding a decisive answer will require further study. Notice, however, that the felicity condition in (75) may be interesting for conceptual reasons. Indeed, in my theory, felicity conditions are compatibility relations between past or present background assumptions, on the one hand, and $P$ (the presuppositions of $p$) or the proposition $p$ itself, on the other. Thus, there are four combinations in principle: (i) $P \cap c_{<c_2} \neq \emptyset$; (ii) $P \cap c_c \neq \emptyset$; (iii) $P \cap c_c \neq \emptyset$ and finally (iv) $P \cap c_{<c_2} \neq \emptyset$. In this article, I have argued that possibility (i) is instantiated by MPSCs (and potentially by standard past subjunctive conditionals); possibility (ii) is instantiated by non-past subjunctive conditionals; possibility (iii) is instantiated by indicative conditionals. If what I suggest in 5.1 is correct, then what instantiates possibility (iv) are matrix mismatched clauses.
Informally, (77) is true if and only if that Charlie leaves tomorrow is true in all those worlds in which the current plans are realized. This is indeed what (78) means.

(78) Charlie leaves tomorrow/is leaving tomorrow.

The felicity condition in (75) competes with (76) and the implicature is drawn as explained above.

Note that, according to what I am suggesting, (78) says that at the utterance time there is a plan for Charlie to leave tomorrow and presupposes that the speaker’s knowledge at the utterance time is consistent with the proposition expressed by the sentence. We can actually test this claim. Suppose I heard that Charlie is flying to New York tomorrow, but I know that tomorrow all airlines will be on strike and no plane will leave. It would then be inappropriate for me to utter (78). Given that (78) only says that there is a plan for Charlie to leave tomorrow and given that Charlie does have a plan, why is it inappropriate for me to utter (78)? Clearly, the deviance of (78) in the given scenario is due to its felicity condition in (76), according to which the common ground must be consistent with the presupposition of the sentence.

To sum up, the properties of complex and simple mismatched modal sentences can all be accounted for by (i) the proposal that the past tense is interpreted as restricting the time argument of the accessibility relation, (ii) the proposal for specific presuppositions for modal sentences, and (iii) the proposal that Gricean scalar implicatures can be drawn in the domain of presuppositions.

6. Future Direction and Conclusion

As observed in footnote 22, past subjunctive conditionals with no mismatch behave like mismatched ones in that the presuppositions of their antecedents are not required to be compatible with the speaker’s current assumptions. To illustrate this point consider the following examples.

(79) Charlie died last year.
If he had died yesterday, he would have seen his grandchild.

(80) Charlie sold his stocks last year.
If he had sold his stocks yesterday, he would have made a lot of money.

The pair below, however, suggests that the second layer of past in a standard past subjunctive conditional does not have to be interpreted in the accessibility relation.
(81) a. Had Lucy met him for the first time yesterday, she would not have married him.

b. If Lucy had met him for the first time yesterday, she would not have married him.

If [past] were always interpreted outside the proposition and within the accessibility relation as suggested above, we would not expect a difference in meaning between (81a) and (81b). In actuality, (81a) but not (81b) must be understood as impossible. The fact that the presuppositions of φ can be inconsistent with the main context suggests that, as with MPSCs, the second layer of past in a standard past subjunctive conditional can (but does not have to) shift the time of evaluation of the conditional to the past, i.e., the past can be interpreted as the value of the time argument of \( R \).

I have shown that there are cases where [past] in the antecedent of a past counterfactual cannot be interpreted inside the proposition expressed by the antecedent, but must be interpreted somewhere else. I suggested that accessibility relations take a time argument besides the standard world argument and that, whenever the past tense cannot be interpreted inside the proposition, it constrains the possible values for the time argument of the accessibility relation. Nevertheless, we do not have an argument that [past] must be interpreted that way. Given the existence of such a possibility for mismatched past counterfactuals, we cannot exclude that such a possibility is available for standard past counterfactuals as well. But we also must allow for the extra past tense to be interpreted inside the antecedent (no clash arises in the case of standard past counterfactuals). Do then standard past counterfactuals always have two logical forms, one where the extra past sits inside the antecedent and one where it is in the domain of the accessibility relation? These data seem to suggest that standard past subjunctive conditionals, where no temporal mismatch forces the past to be interpreted within \( R \), are in fact ambiguous. We are now left with the task of deriving the implicature of falsity generally associated with past counterfactuals and, consequently, finding the right competitor.\(^{25}\) In addition, we must also derive the fact that such an implicature is weaker than the one we find in mismatched past counterfactuals, as it can be more easily canceled (for example in Anderson-type examples). I began with the objective to solve the puzzle of mismatched past subjunctive conditionals and I hope to have contributed to understanding their semantics. However, new questions and puzzles were 

\(^{25}\) The competitor would have to be the indicative past conditional, because it is the only one that can talk about past events.
raised. I hope future research will provide thorough answers to the issues left open in this paper.

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