Modal past is past: evidence from non-sot languages

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1. Introduction

Languages very often distinguish two kinds of conditionals. Take the case of English where a conditional supposition can be expressed as in (1) or as in (2).

(1)   If Oswald **didn't kill** Kennedy, someone else **did**.

(2)   If Oswald **hadn't killed** Kennedy, someone else **would have**.

The conditional in (1) is traditionally known as an *indicative conditional*. There is nothing unusual in the morphology we see in the antecedent and the consequent clauses. Conditionals like (1) have recently been labelled *O-marked* conditionals, where *O* stands for 'ordinary' (von Fintel & Iatridou 2022).

The conditional in (2) is traditionally known as a *subjunctive conditional*. Unlike what we saw in (1), the morphology in both the antecedent and consequent clauses is not ordinary: a pluperfect (or past perfect) in the antecedent and the modal *would* in the consequent. In contraposition to conditionals like (1), conditionals like (2) have been labelled *X-marked* conditionals, where *X* stands for 'extra' or 'extraordinary'. Though many languages mark X-marked conditionals with specialized morphemes, it is common for languages to mark X-marked conditionals with the past tense, just like we saw in English.

The distinction that we saw between O-marked and X-marked conditionals in (1) and (2) is important because it reflects a truth-conditional difference. We know that Kennedy was killed on November 22, 1963, by a lone assassin, believed to be Lee Harvey Oswald. However, there are still people who have doubts about the identity of the killer. Given this situation, everyone agrees that the O-marked conditional in (1) is true. However, given the facts we just assumed, our intuition is that the X-marked conditional in (2) is not. Both conditionals have past morphology in their antecedents but this morphology is different in each kind: a plain past in the O-marked conditional, a past perfect in the X-marked conditional. As we pointed out above, the presence of the simple past in (1) is expected since, informally, the antecedent instructs us to consider worlds where Oswald did not kill Kennedy when he actually did, that is, in the past of the utterance time. More generally, since in O-marked conditionals the tense is interpreted as locating the event in time, a past tense is incompatible with a future adverb as shown in (3).

(3)   If Stefi **lost** (yesterday/*tomorrow), someone else **won**.

In contrast, the X-marked counterpart of this conditional, given in (4), is incompatible with a past adverb.

(4)   If Stefi **lost** (*yesterday/tomorrow), someone else **would win**.

Moreover, X-marked conditionals with past or past perfect antecedents are compatible with future adverbs.

(5)   a.   If Stefi **sold** her house next summer, Sam **would buy** it.
        b.   *Context: Stefi sold her house last summer. Sam was interested in buying it but didn't have enough for a down payment at that time. By next summer he will have enough for a down payment.*
               If Stefi **had sold** her house next summer, Sam **would have bought** it.

Thus, the past tense in X-marked conditionals cannot be interpreted as locating the eventuality in the antecedent in time, and its occurrence marks the special semantics that characterizes these conditionals.

Much research on conditionals in the last twenty years (and before) has been devoted to understanding what role the past tense plays in the construction of the semantics of X-marked conditionals. Researchers are divided mostly into two camps: the camp defending the so-called past-as-past view, and the camp defending the so-called past-as-modal view. In the former camp we have Dudman 1983, Ippolito 2003, Ippolito 2006, Ippolito 2013, Arregui 2005, Arregui 2007, Arregui 2009, Romero 2014, Khoo 2015, Khoo 2022, and Mirrazi 2022. In the past-as-modal view, broadly construed, we have von Fintel 1998, Stalnaker 1975, Iatridou 2000, Leahy 2011, Schulz 2014, Mackay 2019, among others.

1.1. Past-as-past

The essential idea of the past-as-past approach to X-marked conditionals is that, just like familiar occurrences of the past tense, the past tense we see in X-marked conditionals reflects the presence of a past tense interpreted temporally. Under this approach, the perceived deviance from the usual interpretation of past tense arises because, unlike standard occurrences of the past tense, the past in X-marked conditionals has a structural position that allows it to manipulate the time argument of the modal operator.[1] The bare logical form of an X-marked conditional employing the past tense is shown in (6).

(6) $[\text{PAST}_X \ [[\text{WOLL} \ [\phi]]\psi]]$

Following the basic idea in Ippolito 2002 and Ippolito 2013 (but abstracting away from unnecessary details), the conditional in (7-a) has the truth-conditions in (7-b): the X-marked conditional is true just in case there is a time t' before the utterance time such that all worlds w' historically accessible from the actual world w at t' where it is true that Leo leaves tomorrow and that are most similar to the actual world are worlds where Leo is able to attend the ceremony.

(7)   a.   If Leo left tomorrow, he would be able to attend the ceremony.
        b. $= 1$ iff $\exists t' < t_c [\forall w'[w' \in sim_w(hist_{w,t'}(\lambda w''. \text{ Leo leaves tomorrow in } w''))] \to [\lambda w'' : \text{Leo}$
               is able to attend the ceremony in $w''](w') = 1]$

O-marked conditionals, on the other hand, have no past operator above the modal and, as a result, the time argument of the accessibility relation is set to the time of utterance t_c, as shown in (8).

(8)   a.   If Leo leaves tomorrow, he will be able to attend the ceremony.
        b. $= 1$ iff $[\forall w'[w' \in sim_w(hist_{w,t_c}(\lambda w''.\text{Leo leaves tomorrow in } w''))] \to [\lambda w'' : \text{Leo is able}$
               to attend the ceremony in $w''](w') = 1]$

1.2. Past-as-modal

The core idea of a past-as-modal theory is that whatever linguistic tool a language uses to distinguish X-marked conditionals has a purely modal function: thus, if X is past, this past is not interpreted temporally. As an illustration of this type of view, consider Mackay 2019. According to this proposal, the past signals that the modal base is a proper subset of the factive common ground, where the factive common ground is the set of propositions that are presupposed and true in the world of the context. This is shown in (9).

(9) $[[\text{PAST}(\Box_{f,o}: \text{if p, q})]]^{c,w,g}$ is defined iff $[[f]]^g(w) \subset C^T$, where C^T is the set of propositions true in w_c and presupposed in c.

Requiring the modal base to be a proper subset of the factive common ground amounts to requiring that some of the propositions that are true and that are taken to be true in the context of utterance be abandoned, allowing the possibility of a counterfactual antecedent.

The evidence has been inconclusive in adjudicating between these two main approaches. Both types of theories appear to have advantages and disadvantages. On the one hand, past-as-past theories seem to

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[1] Crucially, the *past-as-past* does not deny the observed '*modal*' interpretation of the past tense in X-marked conditional but they derive this modal interpretation from the structural position of a uniformly temporal past tense.

provide a principled explanation for why languages employ the past in X-marked conditionals. On the other hand, these theories seem to have the disadvantage of not being able to straightforward account for languages that have a past tense but do not employ it in X-marked conditionals (e.g. Hungarian). Similarly, past-as-modal theories appear to have the potential to apply to all types of X-marking, but do not have anything to say about why the past is used in so many unrelated languages. We are at a stalemate.

This paper argues that the two approaches make different predictions regarding the interaction between the antecedent tense and X. Providing evidence from the temporal orientation of antecedents of X-marked conditionals in non-SOT languages, we show that cross-linguistic data support the past-as-past approach.

2. Sequence of Tense

We have seen that the occurrence of the past tense on the antecedent predicate of X-marked conditionals is not interpreted as a temporal constraint on the antecedent proposition. For this reason, the past morphology in X-marked conditionals has often been referred to as *fake* (Iatridou 2000, Arregui 2009). There is at least one known phenomenon in natural language where there exists a mismatch between the morphological shape of tense morphemes and their interpretation, bearing an intriguing similarity to the phenomenon of "fake past" in X-marked conditionals. This phenomenon, known as SEQUENCE OF TENSE (SOT) characterizes the possible interpretation of tense in clauses embedded under attitude verbs and verbs of saying.[2] Based on cross-linguistic work on the behavior of embedded tenses, Ogihara & Sharvit 2012 shows that languages are divided in two groups: (i) SOT languages, and (ii) non-SOT languages.

2.1. SOT languages

In SOT languages, past tense can receive a simultaneous reading when embedded under past attitude verbs. For example, the sentence in (10) is ambiguous between the anteriority and the simultaneity reading.

(10)   **past-under-past:** Leo **said** a week ago that he **was** happy.
                    ✓happiness < saying (anteriority)
                    ✓happiness ≈ saying (simultaneity)

According to the anteriority reading, the time of Leo's happiness precedes the time of saying: in this reading, the past tense on the embedded auxiliary is interpreted as it would be if it occurred in an unembedded clause, i.e. as a real past (anchored to the higher past, rather than the utterance time as it would be in an unembedded sentence). According to the simultaneity reading, on the other hand, the time of Leo's happiness overlaps the time of saying: in this reading, the past tense is not interpreted as expressing anteriority and, therefore, seems to be semantically vacuous. The picture becomes even more intricate when a present tense is embedded under a past tense. In SOT languages, the present can never be interpreted as simultaneous with the matrix past event only. Rather, an embedded present tense forces what is known as the "double-access" reading, where the situation described by the embedded clause holds at both the past time introduced by the matrix clause and the speech time (Ogihara 1995).

(11)   **present-under-past:** Leo **said** a week ago that he **is** happy.
                    ✓happiness > saying and happiness ≈ t_c (double-access)
                    ✗happiness ≈ saying (simultaneity)

Having seen the relevant facts in SOT languages, we turn to non-SOT languages in the next section.

2.2. Non-SOT languages

In non-SOT languages, past-under-past constructions receive the anteriority reading[3], and present-under-past constructions can receive a past interpretation. Japanese is a non-SOT language: the pair in (12)

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[2] There is a large body of the literature on the behavior of embedded tenses in SOT and non-SOT languages. See Abusch 1997, Sharvit 2003, Ogihara 1994, Grønn & Von Stechow 2010, and Kauf & Zeijlstra 2018, to name a few.

[3] Simultaneous readings of past-under-past constructions in non-SOT languages are possible when the embedded past tense is interpreted *de re* (Bar-Lev 2015, Mirrazi 2022).

and (13), where the past tense is embedded under a past tense, shows that the only possible interpretation is that Joseph believed at some time t that Mary loved him at some time t' before t.

(12) 2005-nen ni Joseph-wa Mary-wa 1999-nen-ni zibun-o aisi-te i-ta-to sinzi-te i-ta
2005-year in joseph-TOP mary-NOM 1999-year-in self-ACC love-PROG-**PST** that believe-PROG-**PST**
Joseph believed in 2005 that Mary loved him in 1999. (✓ anteriority reading)

(13) #2005-nen ni Joseph-wa Mary-ga sono-toki zibun-o aisi-te i-ta-to sinzi-te i-ta
2005-year at joseph-TOP mary-NOM that-time self-ACC love-PROG-**PST**-that believe-PROG-**PST**
Joseph believed in 2005 that Mary loved him then. (× simultaneous reading)

The Japanese sentence in (14), where a present tense is embedded under a past tense, shows that, unlike what happens in an SOT language, present-under-past in non-SOT languages receives a simultaneous reading according to which what Taro said two years ago is "Tanako is going to Italy".

(14) Taroo-wa ni-nen-mae-ni [Hanako-ga Italia-ni ik-u]-to it-ta
taro-TOP 2-year-before-at hanako-NOM Italy-DAT go-**PRES**-that say-**PST**
Two years ago, Taro said Hanako was going to Italy. (✓ simultaneous)

Hebrew, another non-SOT language, shows the same behavior as Japanese for present-under-past sequences.

(15) lifney Snatayim, sara amra Se dan nosea le-talia.
before year-DUAL Sara say-**PST**-FEM COMP Dan go-MASC.**PRES** to-Italy
Two years ago, Sara said that Dan went to Italy. (✓ simultaneous)[4]

Farsi, also a non-SOT language, patterns accordingly, as shown in (16).

(16) do sal-e piš, Sara gof-t ke John be Italia mi-rav.∅-ad.
two year-EZ before, Sara say-PERF.**PST**.3SG that John to Italy IMPF-go-**PRES**-3SG
Two years ago, Sara said that John went to Italy. (✓ simultaneous)[5]

In sum, the SOT facts show us that a tense in the scope of a higher tense is interpreted differently depending on whether the language is SOT or not. Since according to past-as-past theories, X-marked conditionals provide an environment in which a tense occurs in the scope of an allegedly higher past tense, these theories predict that whether a language is SOT or non-SOT determines the temporal interpretation in the antecedents of X-marked conditionals. We articulate this prediction in the next section.

3. SOT & X-marking

The connection between X-marked conditionals and sequence of tense has been alluded to before in the linguistics literature on the topic (Iatridou 2000, 2009, Arregui 2009, Ippolito 2006, Romero 2014, Bjorkman 2015). However, the fact that not all languages that mark X-marking via past tense morphology exhibit the SOT phenomenon has been taken to be an argument against relating the two phenomena in a meaningful way (Crowley 2022). To be sure, the two phenomena are different. Although the morphological shape of 'fake' tenses in SOT phenomenon does not match their interpretation, they are nonetheless interpreted temporally and do not exhibit any 'modal' interpretation. In contrast, the 'fake' past in X-marking does not exhibit an obvious temporal interpretation and seems to contribute a counterfactual interpretation. We argue, however, that exploring the interaction between the two phenomena opens an illuminating window into the semantic contribution of past in X-marking, and that this is a unique testing ground to tease apart past-as-past and past-as modal theories.

Abstracting away from the differences between the two approaches, the X-marker past is generally assumed to c-command the antecedent at logical form (Ippolito 2013, Arregui 2005 and Mackay 2019).

(17) $[\mathbf{X}_{past} \, [[\textbf{WOLL} \, [\, \phi]] \, \psi]]$

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[4] Some would gloss "nosea" as tenseless. In any event, "nosea" contrasts with "nasa", which is clearly marked for past tense (Yael Sharvit, p.c.).
[5] Present tense in Farsi is morphologically null.

Assuming the structure of X-marked conditionals in (17), the tense in the antecedent is in the scope of the X-marker past. Given that past-as-past theories treat the higher past in an X-marked conditional as a real tense, they predict that the interactions between the higher past tense and the tenses inside the antecedent will follow the general rules of tense interaction active in the language: this interaction is expected to be consistent with the sot or non-sot nature of the language. More specifically, a past-as-past approach predicts that in non-sot languages, X-marked conditionals whose antecedent contain a present tense can receive a shifted (past-oriented) interpretation; that is, in non-sot languages, the counterpart of X-marked conditionals in (4) and (5-a), which only have one occurrence of past morpheme, will be grammatical with past adverbials provided that their antecedent contains a present. The reason is that present-under-past in non-sot languages can receive a shifted interpretation, as we showed in (14)-(16).

On the other hand, since according to the past-as-modal approach, each occurrence of past tense morphology either contributes a modal or a temporal interpretation (but, crucially, not both), this type of theory predicts that a past tense used to mark an X-marked conditional is interpreted modally and therefore cannot affect the temporal orientation of relative tenses inside the antecedent. More specifically, under the past-as-modal approach, no difference between sot and non-sot languages is expected with respect to the temporal interpretation of present tense in the antecedent. In structures like (6), where the one and only occurrence of past tense has a modal function, the antecedent of X-marked conditionals in both sot and non-sot languages is expected to be incompatible with past adverbials.[6] The striking results of a survey of languages confirm the predictions of the past-as-past approach: sot languages do not allow a present in the antecedent to shift and therefore do not allow past adverbials; non-sot languages do.

Language	sot	shifted present in ϕ_{X-cond}
English	yes	no
French	yes	no
Italian	yes	no
Japanese	no	yes
Hebrew	no	yes
Farsi	no	yes

In the next section we will illustrate the conditional temporal facts more clearly by looking in more details at Hebrew, Farsi, and Japanese.

3.1. Temporal facts in Hebrew, Japanese, and Farsi X-marked conditionals

As we have seen earlier, in sot languages like English, X-marked conditionals whose antecedent carry one instance of past tense morphology cannot describe a counterfactual past event. The unacceptability of (18-a) in the given context illustrates this fact. To describe a counterfactual past event, the tense in the antecedent of English X-marked conditionals has to be the pluperfect, as shown in (18-b).

(18)   *Due to Covid-related travel restrictions, John couldn't attend Sara's birthday in Italy yesterday.*
     a.   *If John **went** to Italy yesterday, Sara would be/have been happy.
     b.   If John **had gone** to Italy yesterday, Sara would have been happy.

In what follows we are going to look at the temporal orientation of the antecedent of X-marked conditionals in three non-sot languages: Hebrew, Farsi and Japanese. We will show that in these languages, X-marked conditionals whose antecedent carry only one instance of past tense morphology can simultaneously express both counterfactuality and pastness of the antecedent event. Let us start with Hebrew which provides us with a morphologically transparent case.

Hebrew uses its past morphology in X-marked conditionals. As the example (19) shows, the past tense appears on the auxiliary (*haya*) and the antecedent main verb occurs in the present form (*nosea*).

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[6] Note that the fact that the two theories make different predictions about the interaction of X-marking and sot holds irrespective of the exact syntactic position of past X-marker assumed under a given past-as-modal approach. This marker is not expected to affect the temporal orientation of the antecedent event.

Note that the latter is the same verb form that appeared in the present-under-past construction in (15).[7] In the same scenario as in (18), the Hebrew X-marked conditional (19), which crucially has only one layer of past in the antecedent, is acceptable.

(19)   im dan **haya**   **nosea**   le-italia etmol,   sara hayta   smexa.
         if   Dan be-MASC-PST go-MASC.PRES to-Italy yesterday Sara be-FEM-PST happy
         If Dan had gone to Italy yesterday, Sara would have been happy.

Note that the same X-marked conditional can also be used to describe a future event.

(20)   *It's Sara's birthday tomorrow. She lives in Italy. John lives in the US. Due to Covid-related travel restrictions, borders are closed. John can't attend Sara's birthday in Italy.*

         im dan **haya**   **nosea**   le-italia etmol,   sara hayta   smexa.
         if   Dan be-MASC-PST go-MASC.PRES to-Italy yesterday Sara be-FEM-PST happy
         If Dan had gone to Italy yesterday, Sara would have been happy.

A similar pattern can be observed in Farsi where X-marked conditionals with only one occurrence of a past morpheme can be used to describe a counterfactual past or future event. The conditional in (21) is felicitous in both contexts given in (18) and (20). Unlike what we saw in Hebrew, in Farsi both the embedded present tense and the X-marker past appear on the antecedent main verb. However, since the present tense in Farsi is a null morpheme, the antecedent verb is morphologically similar to the past form (See Mirrazi 2022 for independent arguments in favour of the presence of a null present tense in the antecedent of Farsi X-marked conditionals with one layer of past).

(21)   agar John dirooz/   farda   mi-rav.∅-**t**   italia, Sara xošhal mi-šod
         if   John yesterday/ tomorrow IMPF-go.PRES-PST.3SG Italy   Sara happy IMPF-become-PST.3SG
         If John had gone to Italy yesterday/tomorrow, Sara would have been happy.

     Finally, Japanese patterns with Farsi and Hebrew in allowing its X-marked conditionals with one layer of past morpheme in the antecedent to describe counterfactual past and future events, as shown in (22).

(22)   Taro-ga asita/   kinoo   it-**ta-ra**,   Hanako-wa uresika-**ta** daroo.
         Taro-NOM tomorrow/ yesterday go-PST-RA Hanako-   happy-PST MODAL
         If taro went to Italy tomorrow/yesterday, Hanako would have been happy.

     The correlation between being an SOT/non-SOT language on the one hand, the presence of a past tense in X-marked conditionals, and the temporal restrictions (or lack thereof) in the interpretation of the antecedent provides a strong argument in favor of the past-as-past approach, where the X-marker is interpreted as a true past tense (even though it occurs in a different structural position). As far as we can see, the past-as-modal approach has no way of accounting for this cross-linguistic generalization while holding to its two main ingredients: (i) past morphology **either** contributes temporal **or** modal meaning, (ii) X-marker past is modal. The logical corollary of (i) and (ii) is that the X-marker past is not expected to contribute to the temporal orientation of the antecedent, contrary to fact.

     The difference between SOT and non-SOT languages straightforwardly follows from the past-as-past approach. The present tense in non-SOT languages is a relative tense (Ogihara & Sharvit 2012). It thus contains a free temporal variable that either is bound by a c-commanding tense operator or gets its value from the context (speech time). Given that the present tense in the antecedent of an X-marked conditional is in the c-commanding domain of a real past tense, it can be interpreted as a bound tense. Therefore, it is allowed to co-occur with past or future adverbials.

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[7] Hebrew represents a non-SOT language that uses two strategies to express X-marking in conditionals. In addition to using its past morphology, it has a dedicated X-marker *if* (Nevins 2002, Karawani 2014), as shown in (i).

(i)   luu yadati,   hayiti   ofa   uga
        if.CF know.PFV be.PST.1SG bake.PTC.SF cake
        If I had known, I would have baked a cake.   (Karawani 2014)

(23) a. [**PAST** [[WOLL [$_\phi$... **pres**$_{\lambda t.\exists t'' \geq t}$ tomorrow/yesterday...]] ψ]]
     b. $\exists t' < t_c [\forall w'[w' \in sim_w(hist_{w,t'}(\lambda w''.\exists t'' \geq t'.[\![\phi]\!]$ at t'' in $w''))] \rightarrow [\lambda w'' : [\![\psi]\!]$ in $w''](w') = 1]$

In an SOT language like English, on the other hand, a present tense is always indexical (Ogihara & Sharvit 2012), and therefore compatible only with non-past adverbials.

(24) a. [**PAST** [[WOLL [$_\phi$... **pres**$_{\exists t'' \geq t_c}$ tomorrow/*yesterday...]] ψ]]
     b. $\exists t' < t_c [\forall w'[w' \in sim_w(hist_{w,t'}(\lambda w''.\exists t'' \geq t_c.[\![\phi]\!]$ at t'' in $w''))] \rightarrow [\lambda w'' : [\![\psi]\!]$ in $w''](w') = 1]$

3.2. Past tense deletion

Observing the past interpretation of Hebrew X-marked conditionals with only one occurrence of past tense morphology in the antecedent, Karawani 2014 presents an alternative account that is compatible with her past-as-modal approach. She proposes that underlyingly, there are two layers of past tense in the antecedent of all past oriented X-marked conditionals: one has a modal contribution and the other temporally locates the event described by the antecedent in the past. According to Karawani 2014, the reason why the antecedent of X-marked conditionals in Hebrew only contains one layer of past tense morpheme is that one layer of past tense can be deleted in this language. Thus, she takes the verbal form inside the antecedent of Hebrew X-marked conditionals with one past tense morphology (for instance, *haya nosea* in (20)) to be ambiguous between a present participle and a past participle. In its past orientation, the verbal form inside the antecedent is a past participle containing two layers of past, but it surfaces in the same shape as a present participle does, because one layer of past tense is phonologically deleted.

(25) [**X**$_{\mathbf{past}}$ [[WOLL [$_\phi$... { **pres** / **past**} ...]] ψ]]

The question arises as to whether instead of attributing the observed difference between SOT and non-SOT languages to the interaction between the present tense in the antecedent and a higher past tense, we could assume that non-SOT languages have a rule that deletes one occurrence of past tense morphology in the antecedent of past oriented X-marked conditionals. Can such an account capture the difference between SOT and non-SOT languages in the temporal orientations of antecedents in X-marked conditionals, in a way that overcomes the challenge for past-as-modal approaches? We think that the answer is no.

First, this analysis relies on an *ad hoc* tense deletion mechanism that does not apply outside of X-marking environments, and is mysteriously limited to non-SOT languages. Thus, it cannot derive the typological generalization that the availability of past orientated readings for the antecedent of X-marked conditionals with only one layer of past tense morphology correlates with SOT/non-SOT nature of languages. It is important to note that extending this tense deletion rule to explain the shifted reading of present tense in the sequence of tense environment in non-SOT languages would require that this rule be stated such that its application is conditioned on the presence of a real past tense. Consequently, the problem for past-as-modal approaches would remain. To maintain a past-as-modal approach, it is crucial that the tense deletion rule employed in X-marked conditionals should not rely on the presence of the real past tense, and thus has to be taken as different from what systematically happens in sequence of tense environments.

Moreover, such a tense deletion rule cannot be maintained for at least one of these languages. Mirrazi 2022 shows that it is infelicitous to use past tense in the antecedent of Farsi O-marked conditionals to refer to a past event, as shown in (26). To refer to a past event in the antecedent of a conditional, Farsi uses either present perfect or zero tense (a.k.a subjunctive) perfect, as shown in (27).[8]

(26) *Agar John dirooz **raghs-id/**   **mi-raghs-id**,   Mary ham
      if   John yesterday dance-PERF.**PST**.3SG/ IMPF-dance-**PST**.3SG, Mary too
      raghs-id/raghs-ide   ast.
      dance-PERF.PST.3SG/dance-PP AUX.PRES.3SG

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[8] Mirrazi 2022 observes that the infelicity of past tense in the antecedent of conditionals seems to also exist in languages that pattern with Farsi when it comes to the competition between simple past tense and present perfect, like German, Dutch, and French.

If John danced yesterday, Mary danced too. (Mirrazi 2022)

(27) Agar John dirooz **raghs-ide** { **ast/** **bash-ad** }, Mary ham raghs-ide
    if John yesterday dance-PP AUX.**PRES**.3SG/ AUX.∅.3SG Mary too dance-PP
    ast.
    AUX.PRES.3SG
    If John danced yesterday, Mary danced too. (Mirrazi 2022)

Note that in Farsi, a counterfactual past event can also be described by using a pluperfect in the antecedent.[9]

(28) agar John dirooz **rafte bud** italia, Sara xošhal mi-šod
    if John yesterday go-**PP** AUX-**PST**.3SG Italy Sara happy IMPF-become-PST.3SG
    If John had gone to Italy yesterday, Sara would have been happy.

Upholding a past tense deletion rule for Farsi X-marked conditionals would require several unjustified assumptions. First, we would need to assume that the observed ban on LFs with a past tense inside the antecedent in Farsi conditionals, represented in (29-a), is lifted in X-marked conditionals. We would need to further stipulate that this exceptional occurrence of past tense inside the antecedent does not have a morphological reflection due to a past deletion rule, as shown in (29-b). But there is no independent evidence for such a deletion rule in the language.

(29)   a. [[WOLL [$_\phi$... { *$past$/✓PERFECT } yesterday...]] ψ]
      b. [**X$_{past}$** [[WOLL [$_\phi$... { ✓$past$/✓PERFECT } yesterday...]] ψ]]

For the reasons stated above, we conclude that a morphological past tense deletion rule cannot satisfactorily account for the cross-linguistic generalization that the possibility of simultaneously expressing counterfactuality and pastness of antecedent depends on whether or not a given language is non-SOT. Consequently, this cross-linguistic pattern remains a challenge for past-as-modal approaches.

4. Morphological restrictions: non-SOT languages with a specialized X-marker

Not all non-SOT languages use their present tense in the antecedent of X-marked conditionals, so the pattern discussed is only observed in a subset of non-SOT languages. Russian, for instance, uses a past subjunctive in X-marked conditionals: this is consistent with the cross-linguistically robust generalization that in languages that have a paradigm for past subjunctive, the antecedent of X-marked conditionals appears in past subjunctive (Iatridou 2000). Hungarian, another non-SOT language (Bartos 2006), has a designated X-maker morpheme *-nA*.

(30) Ha János tud**ná** a választ, Mari is tud**ná** a választ.
    if János know–NA the answer-ACC Mari too know–NA the answer-ACC
    If János knew the answer, Mari would know the answer. (von Fintel & Iatridou 2022)

The question that arises is why Hungarian doesn't use the same strategy as Hebrew, Farsi and Japanese. We believe that language specific morphological restrictions are what determines this choice. Past oriented X-marked conditionals in Hungarian are illuminating in this regard.

(31) Ha János tud-ta **volna** a választ, Mari is tudta volna a választ.
    if János know.PST.3SG be–NA the answer-ACC Mari too know.PST.3SG be–NA the answer-ACC
    If János had known the answer, Mari would have known the answer too.
    (von Fintel & Iatridou 2022)

As (31) shows, when past tense morphology is added to the antecedent verb, the X-marker *-nA* can no longer attach to the main predicate. This suggests that there is a ban against the co-occurrence of multiple TAM morphemes in Hungarian. The example in (32) shows that both present and past tense in Hungarian are

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[9] This is expected as Farsi generally uses the perfect aspect to mark the past orientation of events in the antecedent, as shown in (27). See (Mirrazi 2022) for more discussion.

morphologically overt. Putting these two facts together, it appears that Hungarian lacks a morphological way of simultaneously realizing both past X-marker and a present tense on the antecedent verb.

(32)   Péter azt   mondta,   hogy Mari { **alszik/**   **aludt**   }.
         Peter it.ACC say.PST.3SG that Marie   sleep.**PRES**.3SG/ sleep.**PST**.3SG
         Peter said that Marie was/ had been asleep.   (Bartos 2006)

Indeed, in situations where the morphology of the language allows it, past tense will appear as the X-marker in Hungarian too, as pointed out by Ippolito 2023. Consider (33) from Ippolito 2023.

(33)   *Context: Mary was considering waiting until next month to buy her house, but fortunately she bought it last month when the interest rates were still low. Now they have started to climb up and they are projected to be quite high by the end of next month.*

        a.   Ha Mari a jövő   hónapban **vette**   **volna**   a házát,   sokkal
           If mary the coming month-in buy-3SG-PST be-3SG-PRES-COND the house-ACC much-by
           magasabb kamatot   kellett   volna   fizetnie
           higher   interest-ACC be.necessary-3SG-PST be-3SG-PRES-COND pay-INF-3SG
           If Mary had bought her house next month, she would have had to pay much higher interest rates.   (Ippolito 2023)

Just like its English counterpart, conditionals like (33) are strongly counterfactual, and just like in English, the past tense that we see in the antecedent cannot be there to locate the antecedent eventuality since the event of selling the house is supposed to take place in the future.[10]

    While explaining the morpho-syntax of X-marked conditionals is outside the scope of this short paper, we would like to end this section by mentioning that the appearance of past tense in the antecedent of X-marked conditionals seems to follow from standard morpho-syntactic assumptions. It is well-established that deictic tense features have to be morphologically realized on the closest verb in their c-commanding domain. Assuming a past-as-past approach, the X-marker past is a deictic past tense, thus its features have to be pronounced on the closest verb in its c-commanding domain. In present-under-past constructions, the matrix verb is the closest verb to the past tense, as shown in (34) and morphologically hosts the deictic features of the c-commanding past tense. In the X-marked conditional, on the other hand, the antecedent verb and the consequent verb are not in a c-command relation, as shown in (35). So the features of the past tense c-commanding the whole conditional can be pronounced on both antecedent and consequent without violating any minimality constraint.

(34)   Present-under-past
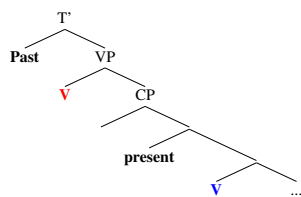
(35)   X-marked conditionals
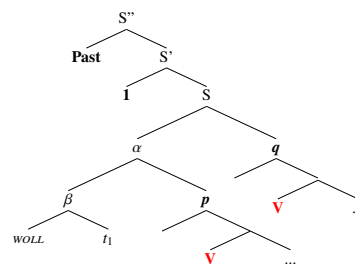
5. Conclusion

    We have seen that whether or not the past tense morphology in a language L can *simultaneously* express counterfactuality and pastness of their antecedent depends on whether L is a non-SOT language: that is, it depends on whether L's present tense can be shifted to the past under a past operator. The correlation between being an SOT language on the one hand, and allowing the past tense in the antecedent of subjunctive conditionals to be simultaneously an X-marker and an expression of temporal anteriority on the other hand, challenges past-as-modal theories: in the latter theories, as a modal operator, X-marker

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[10]See Ippolito 2023 for more discussion of this example.

past is not expected to enter in sequence-of-tense relations and, therefore, it is not expected to follow the pattern we see when we have an ordinary past tense. We conclude that the evidence we have presented here strongly favors past-as-past approaches to the semantic role of past morphology in X-marked conditionals: if it looks like past, and it behaves like past, it is past.

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