

Tense in conditionals: Ins and Outs

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0.1 Setting the stage

Conditional constructions like (1) typically convey that their antecedents are false. Following terminology of von Stechow & Iatridou (2020), I will refer to these conditionals as *X-marked conditionals*.

- (1) If kangaroos **had** no tail, they would topple over. Lewis (1973)

Pinning down the meaning contribution of such conditional constructions has proven to be a difficult task, as they do not always imply falsity of their antecedents. A prominent proposal that captures intuitions about the meaning of X-marked conditionals, originally put forward by Stalnaker (1975), is that they signal ‘*that there is a domain of quantification which contains at least some worlds outside the context set*’ (von Stechow 1998).

Mapping the form of X-marked conditionals to the meaning they contribute has been an even harder task. Many unrelated languages use the same linguistic device (i.e. past tense) for X-marking. This raises a question about the link between the semantics of past tense and the interpretation of X-marked conditionals. Linguists have taken this question seriously. Most linguistic work on X-marked conditionals is focused on deriving the semantics and pragmatics of these conditionals from the semantic contribution of past tense. There are broadly two kinds of approaches to account for the semantic contribution of the past morpheme in X-marked conditionals: (i) *the ambiguous past approach* (Iatridou 2000; Schulz 2014; Karawani & Zeijlstra 2013, and Mackay 2019) which takes past tense morphemes to contribute either

temporal reference to a time different from the present time or modal reference to a set of worlds different from the worlds in the context set. (ii) *the uniform past approach* (Ippolito 2013; Arregui 2005; Grønn & Von Stechow 2009; Romero 2014, Khoo 2015) which takes the past tense morpheme to always have a uniform temporal meaning. Under the latter approach, the special interpretation of the past in X-marked conditionals is compositionally derived from the interaction of the past and the modal, as a result of the structural position of the past. But the issue is far from settled. In a recent paper, von Fintel & Iatridou (2020) examine X-marking in three different environments (conditionals, expressions of unattainable desire and weak necessity modals) across a wide range of languages, and reiterate that the Stalnakerian insight remains the best approximation to the meaning contribution of X-marking in all of its occurrences. However, they voice their skepticism over *'whether a formal implementation of this picture is in reasonable reach'* (von Fintel & Iatridou 2020). They are especially skeptical about whether this can be without assuming ambiguity in past morphemes.

In this dissertation, I provide data from Farsi that complicates the matter even further. Like English and many other languages, antecedents of X-marked conditionals in Farsi appear with past tense morphology. The antecedent falsity inference associated with Farsi X-marked conditionals, however, is not as easily cancellable. They are infelicitous in classic cases in which falsity of the antecedent is not implied (Future less vivid (Iatridou 2000; von Fintel & Iatridou 2020), Anderson-type example (Anderson 1951), Stanley Peter's case von Fintel (1998)). Antecedent falsity, however, is not hardwired into the semantics of Farsi X-marked conditionals. Farsi X-marked conditionals can be used to conduct a modus tollens argument. Moreover, there are cases where they do not imply falsity of their antecedent, but these are not the same cases that are familiar from the literature on English X-marked conditionals. Current theories of X-marking, as they stand now, are not

equipped with tools to account for cross-linguistic variations in the strength of antecedent falsity inference. Thus, the pattern of Farsi X-marked conditionals raises new challenges for the already difficult task of formulating the semantic contribution of past tense in X-marking.

- **Research questions:** *Is the semantic contribution of past tense to X-marking in Farsi and English the same or different? If different, why are these different meanings expressed via the same morphology? If the same, what accounts for differences between the two languages in cancellability of antecedent falsity inference associated with their X-marked conditionals?*

What makes Farsi an ideal testing ground to study these questions is that its morphologically rich TAM system lets the meaning contribution of temporal morphemes shine through despite the complexity of the structure they appear in. As such, Farsi presents a unique opportunity to shape theoretical debates on the role of tense and aspect in X-marking.

0.2 Preview of Proposal

In this dissertation, I provide novel arguments in favor of the view that both tense and aspect in the antecedent of X-marked conditionals contribute their typical semantic contribution (reiterating the position of Arregui (2005, 2007, 2009)). I ground my arguments on two main empirical observations from Farsi:

- X-marked conditionals with only one instance of past tense morphology can simultaneously express counterfactuality and pastness of their antecedent.
- Aspectual restrictions that hold outside of conditional environments also hold in the antecedent of X-marked conditionals.

This dissertation advances a uniform past approach that can derive the interpretation of X-marked conditionals from the contribution of past tense to determining the domain of quantification (following the Stalnakerian insight), while keeping a unified semantics for past tense morphology. I will argue for a version of Arregui's account of X-marked conditionals that is coupled with an accompanying account of O-marked conditionals (*a.k.a., indicative conditionals*) in Anchor Semantics (Kratzer 2020). According to this proposal, the structure of modals and conditionals contains a situation variable from which possibilities project (anchor situation). The role of this situation is to '*anchor the interpretation of conditionals on particular actual world facts*' (Arregui 2020). Past tense in the structure of X-marked modals and conditionals specifies the temporal location of the anchor situation.

I posit that the semantic contribution of past tense in X-marked conditionals is the same across-languages. However, properties of tense associated with the temporal location of antecedents can affect felicity conditions of X-marked conditionals in a given language. I will provide evidence showing that the antecedent of Farsi X-marked conditionals contains a deictic tense which I independently argue comes with a settledness presupposition. Due to this settledness presupposition, Farsi conditionals with deictic tenses in their antecedent are only felicitous in contexts where the truth or falsity of their antecedent is settled in the projected context set (in the sense of Farkas & Bruce (2010)). Antecedents of English X-marked conditionals do not carry any presupposition, and thus are felicitous in agnostic contexts.

In the following, I give a preview of the key observations and the issues they raise as well as how the proposal in this dissertation enables us to address these issues. The following sections correspond to individual chapters in this dissertation.

0.2.1 Chapter 2: Tense, Aspect, and Mood in Farsi

In this chapter, I present an overview of tense, aspect and mood in Farsi that will be relevant for the discussion of conditionals in the subsequent chapters. Here, I briefly introduce the main facts about Farsi TAM system that will be discussed in this chapter.

Farsi has two deictic tenses (past and present). Only past tense has an overt morphological realization, shown in (2a). I will use \emptyset within Farsi sentences to illustrate the morphologically null present tense (2b) In addition to the two deictic tenses, Farsi also has specialized forms for zero tense¹ (represented with \emptyset in glosses) whose occurrences in matrix clauses are restricted to the expression of wishes, desire, and suggestions, as the translation of (2c) shows. The morphological difference between deictic and zero tense forms of verbs is identified via aspectual markers. Imperfective, for instance, has two morphological realizations depending on whether the tense it combines with is deictic (*mi-*) or zero tense (*be-*). This morphological distinction will be important in the discussion of X-marked conditionals as a tensed imperfective is used in the antecedent of X-marked conditionals.

¹Zero tense clauses in Farsi are finite but have a defective tense head (Darzi & Kwak 2015).

- (2) a. **mi-xor-d-im** b. **mi-xor-∅-im** c. **be-xor-im**
IMPF-eat-PST-1PL **IMPF-eat-PRES-1PL** **IMPF-eat.∅-1PL**
we ate. *we eat.* *let's eat.*

In addition to the descriptive presentation of TAM morphology in Farsi, Chapter Two also provides a formal analysis of tense and aspect in Farsi. I argue that while present tense is shiftable with a non-past semantics, past tense is non-shiftable. Showing that past tense in embedded clauses can only yield *de re* interpretations, I will also argue that there is no SOT rule in Farsi.

0.2.2 Chapter 3: Tense in Conditionals

Chapter Three has two main objectives. First, it presents novel data from Farsi regarding semantics and pragmatics of conditionals. It will be shown that morphologically rich TAM system of Farsi expands the typology of temporal morphology in antecedents of conditionals and thus provides us with a unique opportunity to further our understanding of the role of temporal elements in bringing about semantic and pragmatic differences in conditionals. Secondly, this chapter also engages with the literature on X-marked conditionals. I will discuss the strength and shortcomings of each approach in light of Farsi data. The data and discussion in this chapter points to an account of conditionals under which both tense and aspect contribute their typical semantics in the antecedent of X-marked conditionals.

Here, I give a brief sketch of the key data introduced in this chapter. I make a novel observation that Farsi morphologically distinguishes between hypothetical and factual conditionals. Conditionals with zero tense in their antecedent require the truth of their antecedent to be unsettled in the context, and they yield hypothetical interpretation. Conditionals with present tense in their antecedent require the truth of their antecedent to be settled in the projected context, and they yield factual interpretation. Aspect in the antecedent of these conditionals uniformly

puts restriction on the temporal orientation of the antecedent. Antecedents of zero tense and present tense conditionals that carry imperfective aspect cannot have a past interpretation, and antecedents with perfect aspect lack a present oriented interpretation.

This chapter also introduces new data about X-marked conditionals. Verbs in the antecedent of Farsi X-marked conditionals either carry past imperfective morphology or pluperfect. The consequent does not contain an overt modal. Following Kratzer (1979, 1981, 2012), I will assume that they are implicitly modalized. The verb in the consequent is past imperfective. I discuss in detail differences between Farsi and English X-marked conditionals. The key observations about Farsi X-marked conditionals are summarized below. I showcase some of these observations with data, but the reader can find more examples in Section ?? of Chapter Three.

(i) **The temporal orientation of the antecedent**

(ia) Both imperfective and pluperfect X-marked conditionals can refer to past events.

(3) *Due to Covid-related travel restrictions, John couldn't attend Sara's birthday in Italy yesterday.*

a. agar John dirooz mi-raf-t italia, Sara xošhal
 if John yesterday IMPF-go-PST.3SG Italy Sara happy
 mi-šod
 IMPF-become-PST.3SG
If John had gone to Italy yesterday, Sara would have been happy.

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

(ib) Farsi pluperfect X-marked conditionals cannot refer to present states or events.

(4) a. *agar Ava alan javaab ro daneste bud, barande-ye
if Ava now answer RA know-PP AUX-PST-3SG winner-EZ
mosabeghe mi-šod.
competition IMPF-become.PST-3SG
'If Ava had known the answer now, she would have won the competition.'

b. #agar alaan dars xun-de budi, man radio ro
if now lesson study-PP AUX.PST-2SG I radio RA
xamush mi-kard-am
off IMPF-do.PST-1SG
'If you had been studying now, I would turn off the radio.'

(ii) **Aspectual restrictions in the antecedent**

(ia) Aspectual restrictions that hold outside of conditional environments also hold in the antecedent of X-marked conditionals. One such restriction which is illustrated below is the incompatibility of the stative verb *know* with perfect aspect.

(5) a. agar Ava javaab ro mi-dunes-t, barande-ye
if Ava answer RA IMPF-know-PST-3SG winner-EZ
mosabeghe mi-šod.
competition IMPF-become.PST-3SG
'If Ava knew the answer, she would win/have won the competition.'

b. *agar Ava javaab ro daneste bud, barande-ye
if Ava answer RA know-PP AUX-PST-3SG winner-EZ
mosabeghe mi-šod.
competition IMPF-become.PST-3SG
'If Ava had known the answer, she would have won the competition.'

(iib) The presence of imperfective aspect in the antecedent of X-marked conditionals is necessary to make counterfactual generic claims.

- (6) a. Agar dainasur-ha-ye Dracorex gušt mi-xor-d-and,
 if dinosaur-PL-EZ Dracorex meat IMPF-eat-PST-3PL,
 dandun-ha-šun saf ne-mi-bud.
 tooth-PL-their flat NEG-IMPF-be-PST-3SG
If Dracorex dinosaurs ate meat, their teeth wouldn't have been flat.
- b. #Agar dainasur-ha-ye Dracorex gušt xor-de bud-and,
 if dinosaur-PL-EZ Dracorex meat eat-PP AUX-PST-3PL,
 dandun-ha-šun saf ne-mi-bud.
 tooth-PL-their flat NEG-IMPF-be-PST-3SG
If Dracorex dinosaurs ate meat, their teeth wouldn't have been flat.

(iii) **Strength of counterfactuality (defeasibility of antecedent falsity)**

(iiia) Farsi X-marked conditionals lack Future Less Vivid interpretations.

- (7) *The result of the DV-lottery will be announced tomorrow.*
- a. #agar latary ro mi-bord-am, green card
 if lottery RA IMPF-win-PST-1SG green card
 mi-gereft-am
 IMPF-get.PST-1sg
'If I won the lottery, I would get a green card.'
- b. agar latary ro be-bar-am, green card mi-gir-Ø-am
 if lottery RA IMPF-win-Ø-1SG green card IMPF-get.PRES-1sg
'If I won the lottery, I would get a green card.'

(iiib) Farsi X-marked conditionals are infelicitous in agnostic contexts (Anderson-type examples and Stanley Peter's case).

- (8) agar bimar sorxak gerefte bud, daghighan in
 if patient measles get-PP AUX.PST.3SG exactly this
 alayem-i ke alan neshan mi-dah-Ø-ad ra neshan
 symptoms-INDF that now show IMPF-give-PRES-3.SG RA show
 mi-daad.
 IMPF-give-PST-3.SG
'If the patient had the measles, he would have shown exactly the symptoms he shows now.'

✗We conclude, therefore, that the patient has the measles.

✓But we know that he doesn't have the measles.

(iiic) Past oriented imperfective X-marked conditionals in Farsi do not necessarily imply falsity of their antecedent.

(9) *Context: I ask Rodica why she went to the store yesterday and not any other day.*

(chon) agar dirooz mi-raf-t-am, taxfif
(because) if yesterday IMPF-GO-PST-1SG, discount
mi-gereft-am.
IMPF-get.PST-1SG
'Because if I went yesterday, I would get a discount.'

The issue of the strength of counterfactuality is particularly important for characterizing the meaning of X-marked conditionals. I refer the reader to Section ?? for more examples and in-depth discussion.

0.2.3 Chapter 4: An Anchor semantics for conditionals

Building on the data introduced in the Chapter 3, this chapter present the main proposal of this dissertation. I start this chapter by introducing Anchor Semantics (Kratzer 2020) and presenting my analysis of conditionals in this framework. I argue that there are two tenses in conditional constructions that contribute to the semantics and pragmatics of conditionals: the tense of the modal (the temporal specification of the situation variable which modals take as first argument), and the tense of the antecedent (the temporal specification of the situation denoted by the antecedent). I then demonstrate how this proposal accounts for the pattern of Farsi and English conditionals. I motivate a view in which Farsi and English differ with respect to properties of tense in the antecedents of conditionals associated with the expression of counterfactuality. I then frame the typological picture arising from the addition of Farsi data.

In sum, my proposal supports the hypothesis that X-marking has a uniform contribution in both Farsi and English. Under this account, the role of X-marking

past is to specify that the anchor situation of the modal is a past situation. The two languages, however, differ in presuppositions carried by the tense specifying the temporal location of the antecedent. While the antecedent of English X-marked conditionals contains zero tense Arregui (2009) and does not carry any presupposition, tense in the antecedent of Farsi X-marked conditionals is deictic and, hence, comes with a settledness presupposition.

I demonstrate how a uniform semantics for X-marking together with the presuppositions carried by the tense in the antecedent could account for the observed differences in the behavior of X-marked conditionals in Farsi and English. As for the observation about the temporal orientation of the antecedent, I argue that past tense in the structure of X-marked conditionals can shift the evaluation time of the shiftable present tense in the antecedent. The perceived strength in antecedent falsity inference associated with Farsi X-marked conditionals arises because the settledness presupposition of deictic tense in the antecedent of Farsi X-marked conditionals is not satisfied in agnostic contexts (Future Less Vivid, Anderson-type examples, Stanley Peter's case). Since settledness is the presupposition of deictic tenses, when the present tense in the antecedent of X-marked conditional is shifted to past and thus is not interpreted deictically, the conditional can be felicitously used in contexts where settledness is not satisfied, (9) is an example of this phenomenon.

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