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TENSE IN CONDITIONALS: INS AND OUTS

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TENSE IN CONDITIONALS: INS AND OUTS

A Dissertation Presented

by

ZAHRA MIRRAZI

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TENSE IN CONDITIONALS: INS AND OUTS

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To my brother, Mostafa, who had a theory for everything—

I miss you every day.

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ABSTRACT

TENSE IN CONDITIONALS: INS AND OUTS

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This dissertation is concerned with the role of tense in bringing about the se-
mantic and pragmatic differences in conditionals. Investigating the contribution
of tense and aspect in Farsi conditionals, this dissertation expands the typology of
temporal morphology in antecedents of conditionals.

First, I make a novel observation that Farsi morphologically distinguishes be-
tween 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
set, and they yield factual interpretation.

Second, I explore the pattern of Farsi X-marked conditionals (a.k.a., subjunc-
tive or counterfactual conditionals). Like English and many other languages, the
antecedent of X-marked conditionals in Farsi appears with past tense morphology.

There are, however, two properties in which X-marked conditionals in Farsi and English differ: (i) the temporal orientation of antecedents, and (ii) the strength of antecedent falsity.

After discussing the challenges such cross-linguistic variations raise for for mapping the form of X-marked conditionals to the meaning they contribute, I present 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 propose that there are two tenses in conditional constructions that contribute to 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). Although in many languages the information carried by the two tenses are indistinguishably packed into the temporal morphology in conditional antecedents, Farsi teaches us that they independently contribute to the semantics and pragmatics of conditionals. The main contribution of this dissertation is to show how the cross-linguistic variations in X-marked conditionals can be explained by different properties of tense associated with the temporal location of antecedents, while positing that the semantic contribution of past tense in X-marked conditionals is the same across languages.

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CHAPTER 1

Introduction

This chapter has three sections. First, I will introduce the main questions this dissertation addresses. In the second section of this chapter, I give a preview of my main proposal and the main findings of each chapter. Finally, before I end this chapter, I lay out my theoretical assumptions about the semantics of tense and aspect within situation semantics.

1.1   Setting the stage

Conditional constructions like (1) typically convey that their antecedents are false. Following terminology of von Fintel & 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 Fintel 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 2019a) 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 cancellabilty 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.

1.2 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

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conditionals with deictice 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.

1.2.1 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 $\varnothing$ 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 tense[1] (represented with $\varnothing$ 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.

---

[1]Zero 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.

1.2.2 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 3.1.2 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**.3sɢ Italy Sara happy
             mi-šod
             ɪᴍᴘꜰ-become-ᴘsᴛ.3sɢ
             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**.3sɢ Italy Sara happy
             mi-šod
             ɪᴍᴘꜰ-become-ᴘsᴛ.3sɢ
             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**

(iia) 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-**d**e 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-1*sg*
'*If I won the lottery, I would get a green card.*'

b. agar latary ro be-bar-am,   green card mi-gir-∅-am
  if   lottery RA IMPF-win-∅-1SG green card IMPF-get.PRES-1*sg*
'*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-∅-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 symp-*

toms 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 3.3.2 for more examples and in-depth discussion.

1.2.3 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.

1.3 Theoretical Assumptions

In this section, I overview the framework of situation semantics (Kratzer 2021, 2012), which I adopt in this dissertation. Let us start with the ingredients of Kratzer's situation semantics:

S : The set of possible situations.

A: The set of Individuals.

$\leq$: A partial ordering on $S \cup A$, representing the '*part of*' relation and satisfying the following condition:

- For all $s \in S$ there is a unique $s' \in S$ such that $s \leq s'$ and for all $s'' \in S$, if $s' \leq s''$, then $s'' = s$.

$P(S)$: The power set of S; the set of propositions.

W: The set of maximal elements with respect to $\leq$; the set of possible worlds.

(Kratzer 2012: p.117)

Situations can be related to each other by the 'part of' ($\leq$) relation: situations can have other situations as parts, and be themselves part of other situations. Situations can differ in size. Some situations are maximally big and are not proper parts of other situations (a possible world). The condition on the 'part of' relation says that every situation s is related to a unique maximal element, i.e. the world of s. Therefore, situations cannot be part of more than one possible world. Just like Lewis-style individuals, they can be identified across possible world via counterpart relations.

Propositions in this framework can be defined as the characteristic function of a set of situations, i.e. properties of situation. Some situations contain nothing that does not contribute to the truth of a given proposition. These are *exemplifying* situations of a proposition (Kratzer 2021). The notion of *Exemplification* is defined below.

(10) *Exemplification*

A situation s exemplifies a proposition p if whenever there is a part of s in which p is not true, then s is a minimal situation in which p is true.

(Kratzer 2021: p.23)

There are two ways for a situation *s* to exemplify p: (i) Either *p* is true in all subsituations of *s*, or (ii) *s* is a *minimal* situation in which p is true.

(11)   *Minimal situations*

A situation *s* is a minimal situation in which a proposition *p* is true ($p(s) = 1$) iff it has no proper parts in which *p* is true. This is represented with the notation $\downarrow p(s)$.

<div align="right">(Kratzer 2021: p.24)</div>

To see the difference between these two different ways, Kratzer (2021) gives the examples in (12).

(12)   a.   There are three teapots.

b.   There is mud.

<div align="right">(Kratzer 2021)</div>

Situations exemplifying the proposition *there are three teapots* are situations containing three teapot and nothing else. These are *minimal situations* in the sense that they do not have any proper part where this proposition is true. The situation Teapots gives an illustration of a minimal exemplifying situation for the proposition in (12a).

(13)   'Teapots' is a situation that has three teapots and nothing else in it.
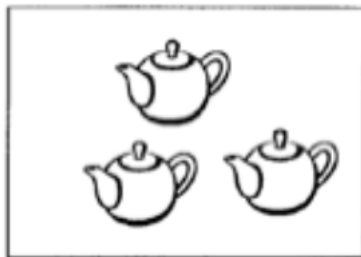
<div align="right">(Kratzer 2021: p.25)</div>

In contrast, the situations exemplifying the proposition *there is mud* are situations that contain mud and nothing else, but they are not necessarily minimal situations. The situation Mud gives an illustration of an exemplifying situation for the proposition in (12b).

(14)   'Mud' is a situation that consists of mud and only mud.

(Kratzer 2021: p.24)

Kratzer (2021) mentions that there is an important caveat to keep in mind while counting teapots. According to a fundamental principle of counting (Counting Principle), a domain for counting cannot contain non-identical overlapping individuals (Casati & Varzi 1999). *'With spatiotemporal objects like teapots, humans seem to rely on counting criteria that privilege maximal self-connected entities (Spelke 1990; Casati & Varzi 1999). A self-connected teapot is one that cannot be split into two parts that are not connected. The maximality requirement prevents counting teapots that are proper parts of other teapots, and the self-connectedness requirement disqualifies sums of parts from different teapots'.*

Situations are involved in the semantics of a wide variety of phenomena in natural languages, including tense, aspect and modals. Situation semantics provides a machinery that can unify temporal categories (times and events), and modality (worlds). *'Situations are not to be reduced to spatio-temporal locations within a world (indeed, there can be more than one situation in a single spatio-temporal region, and a single situation can include disconnected spatio-temporal parts). However, as parts of what is going on, they have both temporal and spatial coordinates within a world. This is what*

makes them particularly interesting to us: situations are at the same time temporal (i.e. they are part of some temporal slice within a world), and modal (i.e. they are part of some world and not others)' (Arregui et al. 2014: p.311).

In the rest of this chapter, I will present a situation-based semantics of tense, aspect and modals.

1.3.1 Aspect

While tense provides information about the temporal location of an situation, aspect is concerned with the structural properties of the situation under discussion. One major account of aspectual categories that is easily translatable into a situations framework is to define them in terms of mereological notions like whole and part (e.g. Verkuyl 1972; Krifka 1992; Filip 1999).

According to Kratzer (2021), Davidsonian events and situations are the same kinds of things. They are both built from relations and individuals involved those relations. She argues that *'we don't seem to need both situation semantics and Davidsonian event semantics'*. Within a situation semantics, Davidsonian events are defined in terms of exemplifying situations. Given the definition of exemplification in (10), the set of exemplifying situations of a proposition must be either homogeneous or quantized (minimal).

(15) A set of situations is homogeneous iff it is closed under the parthood relation. That is, whenever it contains a situation s, it also contains all (relevant) proper parts of s.

(16) A set of situations is quantized iff it doesn't contain both a situation s and a proper part of s. (Kratzer 2021: p.29)

The algebraic notions of homogeneity and quantization have been argued to capture grammatical and lexical aspectual distinctions (Krifka 1992). Kratzer (2021)

illustrates this with the examples below.

(17)   a.   Josephine built an airplane.

     b.   Josephine flew an airplane.   (Kratzer 2021: p.29)

Kratzer (2021) argues that the proposition expressed by (17a) is exemplified by *minimal* past situations in which Josephine built an airplane. This set of situations is quantized. The proposition expressed by (17b), on the other hand, is exemplified by all past situations that contain airplane flying by Josephine and nothing else. This set of situations is homogeneous (Kratzer 2021: p.29). It should be noted that (17b) is true only of situations exemplifying the proposition expressed by Josephine flew an airplane that do not lead to a violation of the Counting Principle. That is, it is true of maximal self-connected situations exemplifying the proposition expressed by Josephine flew an airplane.

In this dissertation, I will follow Cipria & Roberts (2000) in adopting a situation semantic without explicit quantification over events in the object language. Taking events to be exemplifying situations (Kratzer 2021), aspect will combine with a property of situations expressed by VP and introduces structural constraints on its exemplifying situations. Perfective aspect restricts the set of situations exemplifying the proposition expressed by its embedded VP to quantizated minimal situations. Imperfective aspect, on the other hand, specifies that the set of situations exemplifying the proposition expressed by its embedded VP is a homogeneous set. A similar idea has been proposed by Deo (2020). She proposes that sentences with imperfective aspect denote temporal predicates with the subinterval property. In contrast, perfective aspect is taken to mark the presence of anti-subinterval property.

I propose (18) as the denotation of perfective aspect, according to which perfective aspect combines with a property of situations and results in a property of situations. What perfective aspect adds is that situations exemplifying the proposi-

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tion denoted by the embedded VP are quantized or minimal situations (illustrated by $\downarrow$).

(18) $[\![\text{PERFECTIVE}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}. \ \lambda s. \ \& \ \downarrow P(s) = 1$

I follow Cipria & Roberts (2000); Arregui et al. (2014) in taking imperfective aspect to introduce a universal quantifier over situations. Under this analysis, the modal properties of imperfective aspect are organically derived. Arregui et al. (2014) argue that a modal analysis of imperfective aspect can account for cross-linguistic variations in the interpretation of imperfective in terms of variation in modal bases. In (19), I propose a modification to this modal analysis such that the universal quantifier comes from the homogeneity of exemplifying situations. The contextual relation R in (19) does the job of modal bases in the account proposed by Arregui et al. (2014). The set of situations s' that are proper part s, can further be restricted by contextually supplied modal restrictions.

(19) $[\![\text{IMPERFECTIVE}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}. \ \lambda s. \ \forall s' : s' \leq s \ \&$

$\underline{\text{there exists a contextually salient relation } R \text{ such that } R(s)(s')}. \ P(s') = 1$

According to (19), imperfective aspect combines with a property of situations and returns a property of situations. It adds that the proposition denoted by VP is exemplified by all the relevant sub-situations of the topic situation s specified by the contextual parameter R. In this sense, imperfective aspect marks that the set of exemplifying situations is homogeneous. The wide range of interpretations cross-linguistically associated with imperfective aspect such as ongoing, generic, and habitual readings can be captured via different values the contextual relation variable R can take. In the case of habitual sentences, for instance, the contextual relation R restricts the domain of quantification to characteristic sub-situations of the topic situation (Cipria & Roberts 2000; Arregui et al. 2014).

What about the perfect aspect? There is a huge body of literature on variation in the interpretation of perfect across and within languages (McCoard 1978; Iatridou et al. 2003; Pancheva & Von Stechow 2004; Portner 2003, among others). Addressing the complexities of perfect is outside of the scope of this dissertation, although I will say more about perfect aspect in Farsi in the next chapter. Here, inspired by Alonso-Ovalle (2002) and Arregui (2007), I provide a denotation of perfect in a situations framework.

(20) $[\![\text{PERFECT}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}. \lambda s. \exists s': \tau(s') \prec \tau(s) \ \& \ P(s') = 1$

Perfect aspect combines with a property of situations and results in a property of situations. It introduces a situation (result state) that holds after the proposition denoted by the c-commanded VP is exemplified. Whether the exemplifying situations for the embedded VP property are quantized or homogeneous is determined by the lower aspect head which can be either perfective or imperfective. This is represented in the structures below.

(21) a.

$$\text{AspP}$$
$$\lambda s.\exists s' : \tau(s') \prec \tau(s) \ \& \ \downarrow [\![p]\!](s')$$

PERFECT AspP
$$\lambda s. \ \downarrow [\![p]\!](s)$$

PERFECTIVE vP
|
P
$$\lambda s.[\![p]\!](s)$$

b.

$$\text{AspP}$$
$$\lambda s.\exists s' : \tau(s') \prec \tau(s) \ \& \ \forall s'' : s'' \leq s' \ \& \ [\![p]\!](s'')$$

PERFECT AspP
$$\lambda s.\forall s'' : s'' \leq s \ \& \ [\![p]\!](s'')$$

IMPERFECTIVE vP
|
P
$$\lambda s.[\![p]\!](s)$$
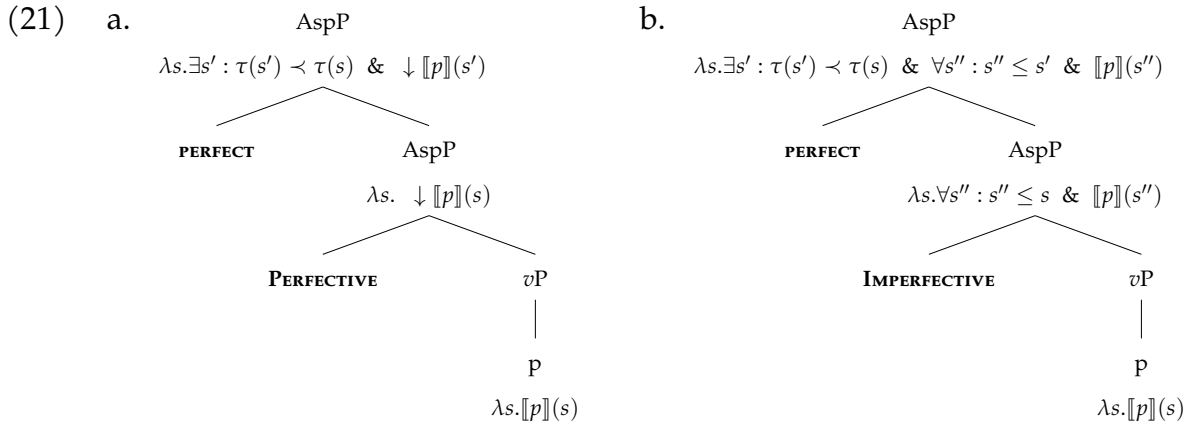
1.3.2 Tense

I will adopt a presuppositional theory of tense (Heim 1994) which takes tenses to introduce presuppositions about the value of a contextually specified parameter. In this approach, tenses are treated as pronouns (Partee 1973). In situation semantics,

we can treat tense as introducing a presupposition about the value of a variable that ranges over situations. Thus, tense operates on an aspectual phrase in its scope which contains some situation variable *s*, and introduces a presupposition about the value of *s*.

Although I will not adopt a referential theory of tense (Partee 1973), I will maintain its key insight: tenses carry presupposition about the value of a pronoun. Following Kratzer (1998a) and Arregui (2009), I take the inventory of individual pronouns to carry over to situation ones. Both individual and situation pronouns can carry deictic features (presuppositions) that put constraints on their semantic value. In the situation-based theory of tense I adopt, deictic tenses put temporal constraints on the value of situation variables (e.g., Arregui 2009).

There is another kind of pronoun that Kratzer (1998a, 2009) dubbed as *zero* pronouns (∅). Zero pronouns lack deictic features, and depend on an antecedent in order to get their semantic value. Following Kratzer (1998b) and Arregui (2009), I posit that zero tenses do not introduce any deictic constraint on the situation they refer to. The denotation of deictic tenses (present and past) and the zero tense is given bellow.

(22) $[\![\mathbf{present}_i]\!]^g = \lambda P_{\langle s,t \rangle}. \ \lambda s : \tau(s) \circ \tau(s_i). \ P(s) = 1$, where s_i is the speech situation by default.[2]

(23) $[\![\mathbf{past}_j]\!]^g = \lambda P_{\langle s,t \rangle}. \ \lambda s : \tau(s) \prec \tau(s_j). \ P(s) = 1$, where s_j and is the speech situation by default.

(24) $[\![\varnothing]\!]^g = \lambda P_{\langle s,t \rangle}. \ P$

According to the denotation of present tense in (22), present tense combines with a property of situations $\langle s, t \rangle$ and introduces a presupposition on the domain of the situation variable *s* such that the temporal slice of *s* (represented by $\tau(s)$) is

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[2]An alternative is to represent the index *i* as a variable in the syntax.

presupposed to *overlap with* (represented by ○) the temporal slice of a free variable s_i and is the speech situation by default. The denotation of past tense in (23) does a similar job, but the constraint it puts on the domain of the situation variable s is that the the temporal slice of s has to *precede* (represented by ≺) the temporal slice of s_i which is the speech situation by default. The denotation of zero tenses in (24) is simply an identity function. They do not introduce any presupposition.

1.4 Summary

This chapter has introduced the main questions this dissertation addresses. It has also provided a preview of my main proposal as well as an introduction to the semantic framework I adopt for tense and aspect. In the next chapter, I present an overview of tense, aspect and mood in Farsi.

CHAPTER 2

Tense, Aspect, and Mood in Farsi

This dissertation is concerned with the role of tense, aspect and mood (TAM) in the semantics and pragmatics of conditionals from the perspective of Farsi data. In this chapter, I present an overview of Farsi TAM system. In Section 2.1, I introduce the basics of the Farsi grammar with special focus on realization of tense, aspect and mood. I will also lay out my assumptions about their denotations. Section 2.2 provides a theoretical discussion about properties of tenses in Farsi that will be important in the subsequent chapters. In Section 2.3, I turn to the main topic of this dissertation,i.e. conditionals, and provide an outline of the contribution of tense and aspect in Farsi conditionals.

2.1 Basics of Farsi TAM system

Farsi is pro-drop, and predominantly head-initial. The following example shows a sequence of nested phrases in which each head precedes its complement.

(25) man mi-dan-∅-am ke Sara be yek doxtar-e ziba ketab
I IMPF-know-PRES-1SG that Sara to a girl-EZ beautiful book
dad.
give.PERF.PST.3SG
I know Sara gave a book to a beautiful girl.

   a. CP: [$_{CP}$ [$_C$ **ke**] [$_{TP}$ Sara be yek doxtar-e ziba ketab dad]]

   b. PP: [$_{PP}$ [$_P$ **be**] [$_{DP}$ yek doxtar-e ziba]]

c. DP/NP: [$_{DP}$ [$_{D}$ **yek**] [$_{NP}$ [$_{N}$ **doxtar**]-e [$_{AdjP}$ ziba]]]

However, Farsi has an SOV order (Taleghani 2008), as it is head-final in verbal projections (Darzi & Anosheh 2010). Verbs are inflected for person, number, tense, aspect, and mood. Like other Indo-Iranian languages, the verbal system of Farsi revolves around two *so-called verb stems*: (i) Stem I traditionally called the present stem and (ii) Stem II which is traditionally called the past stem and is regularly derived by the addition of the suffix *-id* (and other allomorphs) to Stem I (Windfuhr 1979; Windfuhr & Perry 2013).

root	Stem I	Stem II
buy: $\sqrt{\text{xar}}$	xar	xar-id
eat: $\sqrt{\text{xor}}$	xor	xor-d
kill: $\sqrt{\text{koš}}$	koš	koš-t

Table 2.1: Verbal stems in Farsi

These stems combine with agreement morphology, presented below. Notice that there is a difference in the third person singular morphology between these two stems.

root	1sg	2sg	3sg	1pl	2pl	3pl
Stem I	xar-**am**	xar-**i**	xar-**ad**	xar-im	xar-id	xar-and
Stem II	xar-id-**am**	xar-id-**i**	xar-id-∅	xar-id-**im**	xar-id-**id**	xar-id-**and**

Table 2.2: Agreement morphology in Farsi

Following Kalin & Atlamaz (2015) and Anoushe (2018), I posit that Farsi verb stems are decomposed into morphemes that encode semantic information about temporal relations.

2.1.1 Aspect and Present Tense

Farsi lacks an overt present tense marker. The traditionally called 'present stem' consists of the verb root and a null suffix, as shown in (71).

(26) T[PRES] → −∅

In this section I explore the combination of present tense with imperfective, progressive and perfect aspect. I postpone the discussion of present perfective to Section 2.1.3.

2.1.1.1 Present imperfective and progressive

The morphological realization of imperfective aspect in Farsi is the prefix *mi-*.

(27) Asp[IMPF]→ *mi-*   *to be revised*

To refer to a present eventuality, the bare form of non-stative verbs is necessarily marked with imperfective aspect prefix *mi-*, as shown in (28).

(28) dar xiaban, ye sag pars *(**mi**)-kon-∅-ad
     in street, a dog bark IMPF-do-PRES-3SG
     A dog is barking in the street.[1]

The null copular verb *be* and the stative verb *have* are incompatible with the imperfective marker *mi-*.

(29) Anha alan xune ***mi**-∅-and
     they now home IMPF-be.PRES-3PL
     They are home now.

(30) Anha do-ta mašin ***mi**-dar-∅-and
     Anha two-CL car IMPF-have-PRES-3PL
     They have two cars.

---

[1]It is worth noting that the equivalent of the verb **bark** in Farsi is a complex predicate consisting of a nominal element '*pars: bark*' and a verbal element that carries inflectional morphemes. Folli et al. (2005) analyze the verbal elements (light verb) as an overt *v* head.

Instead, the null copular verb *be* and the bare form of stative verb *have*, as in (31) and (32), inflected for agreement, refers to a state that is held in the utterance time.

(31) Anha alan   xune ∅-and
      they tomorrow/now home be.PRES-3PL.
      they are home now.

(32) Anha do-ta   mašin dar-∅-and
      they two-CL car   have-PRES-3SPL
      They have two cars.

In addition to describing ongoing events and states, the imperfective verb also has the canonical generic and habitual interpretations, as shown in (33) and (34), respectively. Note that the presence of imperfective aspect with the present form of non-stative verbs is obligatory.

(33) sag-ha pars **(mi)**-kon-∅-and
      dog-PL bark IMPF-do-PRES-3PL
      Dogs bark.

(34) Ali footbal bazi **(mi)**-kon-∅-ad.
      Ali football play IMPF-do-PRES-3SG
      Ali plays football.

The present form of the copular verb in Farsi can also describe a future event, as shown in (35).

(35) Anha farda   xune ∅-and
      they tomorrow home be.PRES-3PL
      They will be home tomorrow.

The future-oriented interpretation of present tense verb in Farsi is different from the futurate reading in English, as shown in (36). Copley (2009) defines a futurate as a future-oriented reading of a sentence with no obvious means of future reference. The eventuality described in the sentence, however, must be *plannable*. An unplannable future event cannot be described without an overt future marker, as the infelicity of (37) and (38) shows.

(36) The Red Sox play the Yankees tomorrow.

(37) # The Red Sox defeat the Yankees tomorrow.

(38) *Before tossing the coin:* # The coin comes up heads.

In Farsi, however, present imperfective verbs not only can be used to describe a plannable future event, as shown in (39), but also to make a prediction about an unplannable future eventuality, as shown in (40) and (41).

(39) Farda   Esteqlal ba   Perspolis bazi mi-kon-∅-ad.
     tomorrow Esteqlal with Perspolis play IMPF-do-PRES-3SG
     Esteqlal plays Perspolis Tomorrow.

(40) Farda   Esteqlal Perspolis ro šekast mi-dah-∅-ad
     tomorrow Esteqlal Perspolis RA defeat IMPF-give-PRES-3SG
     Esteqlal defeats Perspolis tomorrow.

(41) Sekke šir   mi-ay-∅-ad
     coin   heads IMPF-come-PRES-3SG
     The coin will come up heads.

I should also note that the future interpretation of present imperfective verbs in Farsi is compatible with complete and incomplete telic eventualities.

(42) a. Ta do mah-e   dige xune mi-saz-∅-ad
         by two month-EZ other house IMPF-build-PRES-3SG
         He will be build a house until the next two months.

         ✓ *and then the house will be ready.*

         ✓ *Then he'll take a break and will continue building the house later.*[2]

      b. Ta do mah-e   dige xune ro mi-saz-∅-ad
         by two month-EZ other house RA IMPF-build-PRES-3SG
         He will build the house by the next two months.[3]

Although progressive aspect will not play a role in my dissertation, it is worth mentioning that imperfective form of the verb in Farsi can combine with an inflected

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[2]Thanks to Sabine Iatridou for bringing this to my attention.
[3]The DOM marker *ra* enforces a completed reading.

progressive auxiliary (*have*) to describe an ongoing event, as shown in (43). The presence of progressive aspect forces the ongoing reading of imperfective aspect, which can otherwise get a wider range of interpretations.

(43) dar xiaban, ye sag **dar**-∅-ad   pars **mi**-kon-∅-ad
       in street, a dog **PROG**-PRES-3SG bark **IMPF**-do-PRES-3SG
       A dog is barking in the street.

Progressive aspect is the preferred way of talking about an ongoing event, but the ongoing reading of imperfective aspect is still available.

Present progressive verbs in Farsi, as in (44), are compatible with future-oriented temporal adverbials. The presence of the progressive aspect here emphasizes the existence of a firm plan for the eventuality to happen.

(44) Farda   sa'at-e 5, man dar-∅-am   tu cinema film
       tomorrow clock-EZ 5 I   PROG-PRES-1SG at cinema movie
       mi-bin-∅-am.
       IMPF-see-PRES-1SG
       Tomorrow at 5 o'clock, I will be watching a movie at the cinema.

2.1.1.2 Present Perfect

The present perfect form of a verb is constructed with the past participle and the agreement inflected null auxiliary *be*.

(45) taze sandevich dorost karde ∅.am
       fresh sandwich made do.PPL AUX.PRES.1SG
        I've just made a sandwich.

As is the case with all Farsi verbs in present tense, present perfect verbs in Farsi are compatible with a future reference time.

> *Context: It's 5 PM right now. Sarah has just started making dinner and Mary has just left her office to go home. It takes Sarah 30 minutes to make dinner, and Mary an hour to get home.*

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(46) ta vaghti Mary be-res-ad,   Sarah šam   ra amade karde
      by when Mary IMPF-arrive-∅-3SG, Sarah dinner RA ready   do-PPL
      ast.
      AUX.PRES.3SG
      'By the time, Marry arrives, Sarah will have made dinner.'[4]

As I have have mentioned in the first chapter, perfect is a higher aspect head that can combine with either imperfective or perfective aspect. Since Farsi has an overt imperfective marker, the absence of this marker in present perfect forms indicates that the lower aspect is perfective. An argument in favor of this view comes from aspectual restrictions on some stative verbs like *know*. The verb *know* in Farsi always carries imperfective aspect.

(47) a. Ali javab-e   soal   ra mi-dan-∅-ad.
          Ali answer-EZ question RA IMPF-know-PRES-3SG
          Ali knows the answer to the question.

      b. # Ali javab-e   soal   ra dan-est/   dan-este ast.
            Ali answer-EZ question RA know.PST.PERF.3SG/ know-PP AUX-PRES.3SG
            Ali knew/has known the answer to the question.

Perfective and perfect forms of this verb can only mean *realize* or *consider*.

(48) a. man az   ro-id-an-e   xar-e   sar-e   divar danest-am
          I   from grow-PST-NOM-EZ thorn-EZ head-EZ wall   know.PERF.PST-1SG
          ke   nakas kas   ne-mi-gard-∅-ad   az in bala
          that nobody somebody NEG-IMPF-look-PRES-3SG from this top
          nešini-ha
          sitting-PL
          I realized from the thorn growing on the top of the wall that 'nobody' doesn't

          become 'somebody" by sitting on the top.   Saeb Tabrizi (Persian poet)

      b. raees   jomhor ejabr-e   mask ra yek tasmim-e   melli
          prseident republic manadate-EZ mask RA a   decision-EZ national
          dan-este ast.
          know-PP AUX-PRES.3SG
          The president has considered the mask mandate a national decision.

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[4]The third person form of the null copula *be* is morphologically realized as *ast*.

This aspectual restriction is removed when an imperfective marker is added to the perfect form of the verb.

(49) hame-ye in   moddat Ali javab-e   soal   ra mi-dan-este
     all-EZ   this duration Ali answer-EZ question RA IMPF-know-PP
     ast.
     AUX-PRES.3SG
     All this time, Ali has known the answer to the question.

In languages, like English, that do not morphologicallay distinguish between perfective and imperfective aspect, these two perfect forms have the same morphological representation. Evidence for this comes from the contrast in the availability of habitual and generic readings with present perfect in the two languages. While English present perfect can have habitual and generic readings, the presence of an imperfective marker is necessary to get these readings in Farsi.

(50) a. Since the beginning of existence, the Earth has revolved around the sun.

     b. Az   aqaz-e   hayat,   zamin dor-e   xoršid
        Since beginning-EZ existence, Earth around-EZ sun
        #(mi)-čarxide   ast.
        IMPF-revolve.PP AUX.PRES.3SG
        Since the beginning of existence, the Earth has revolved around the sun.

Moreover, it has been cross-linguistically observed that universal readings of perfect are only possible with perfects built out of statives (homogeneous predicates) (Dowty 1979; Mittwoch 1988; Vlach 1993; Portner 2003 and Iatridou et al. 2003). This can be seen in the contrast in (51). While the sentence with a stative predicate in (51a) can have a universal (continuative) interpretation, (51b) with a stage level eventive predicate can only have an existential interpretation.

(51) a. John has been sick (for several days).

     b. John has slept.   (Portner 2011)

In Farsi where perfect from embedding imperfective and perfective have distinct morphological realizations, universal perfect readings are only possible when the

lower aspect is imperfective. The sentence in (52a) can only have an existential perfect reading. When there is an imperfective aspect, as in (52c), the universal perfect reading becomes available.

(52)   a.   # Sara az   sa'at-e   3 ketab xande   ast.
              Sara since clock-ɛz 3 book read.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
              Sara has read a book since 3.

        b.   Sara az   sa'at-e   3 ta 4 ketab xande   ast.
              Sara since clock-ɛz 3 to 4 book read.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
              Sara has read a book from 3 to 4. (*listing things Sara did today*)

        c.   Sara az   sa'at-e   3 ketab mi-xande   ast.
              Sara since clock-ɛz 3 book ɪᴍᴘꜰ-read.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
              Sara has been reading a book since 3.

It should, however, be noted that (52c) does not actually entail that the reading event is still ongoing. (52c) is compatible with the continuation *"she got tired, and is now resting"*.

In languages like English, present perfect does not felicitously combine with 'specific' past time adverbials. This fact, which is known as the *present perfect puzzle* (Klein 1992), is illustrated in (53). The incompatibility of present perfect and specific temporal adverbials is not found in all languages. Pancheva & Von Stechow (2004) note that present perfect can felicitously combine with temporal adverbials in German (as shown in (54)), Dutch, French, Icelandic, or Italian. As the grammaticality of (55) shows, Farsi also lacks a ban against such combinations.

(53)   * John has arrived yesterday.

(54)   Hans ist gestern   um zehn weggegangen.
        Hans is yesterday at   10   left
        Hans has left yesterday at 10.   (Musan 2001)

(55)   Ali dirooz   reside   ast.
        Ali yesterday arrive.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
        Ali has arrived yesterday.

Another point of divergence among languages with respect to present perfect are so-called *life-time* effects. As the example in (56) shows, the present perfect in English cannot be felicitously used with dead persons or no longer existing objects (Portner 2003).

(56) # Einstein has visited Princeton.

In languages like French (57a) or German (57b), on the other hand, such *life-time* effects don't arise (Schaden 2009).

(57) a. Einstein a   visité Princeton.
         Einstein has visited Princeton

      b. Einstein hat Princeton besucht.
         Einstein has Princeton visited

                                                    (Schaden 2009)

The felicity of the example (58) shows that life-time effects do not obtain for the present perfect in Farsi.

(58) Ebn-e-sina be Ray safar karde ast.
      Avicenna   to Ray travel do.PP AUX.PRES.3SG
      Avicenna has travelled to Ray.

2.1.1.3   Denotations and LFs

We have seen that present tense in Farsi, unlike English, can freely refer to future events. Klein (1992); Giorgi et al. (1997); Pancheva & Von Stechow (2004) argue that there is cross-linguistic variation in the semantics of present tense. Pancheva & Von Stechow (2004) provide examples in (59) and (60) to illustrate this meaning difference. The ungrammaticality of sentences in (59) shows that English present is not compatible with future temporal adverbs. German present, like Farsi, is perfectly felicitous with future adverbials, as shown in (60).

(59) a. # Fred is sick in 10 days.

b. # It {rains/is raining} next week.　　　(Pancheva & Von Stechow 2004)

(60)　a. Fritz ist in 10 Tagen krank.
　　　　Fritz is　in 10 days　sick
　　　　'Fritz will be sick in 10 days.'

　　　b. Nächste Woche ist das Wetter　schlecht.
　　　　next　　　week　is　the　weather bad
　　　　'Next week the weather will be bad.'　　　(Pancheva & Von Stechow 2004)

Therefore, I take Farsi present tense to have the semantics given in (61), which is the denotation of the German present proposed by Pancheva & Von Stechow (2004), translated into situation semantics (Arregui 2009). Note that the denotation of the Farsi present tense is different from the English present, given in (22), in having a non-past meaning. Farsi present tense introduces the presupposition that the minimal temporal slice s belongs to (represented by $\tau(s)$) *overlaps with/follows* the minimal temporal slice that $(g(i) = s_i)$ belongs to (represented by $\tau(s_i)$).

(61)　$[\![\textsc{present}_i]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s : \tau(s_i) \preceq \tau(s).\ P(s) = 1.$

As I discussed in Chapter One, aspect in a situations framework where events are also defined in terms of exemplifying situations, can be thought of as providing structural specifications of exemplifying situations. I take imperfective aspect to denote a homogeneous set of situations, as shown in (19) repeated here in (62).

(62)　$[\![\textsc{imperfective}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ \forall s' : s' \leq s$ & there exists a contextually salient relation R such that $R(s)(s').\ P(s') = 1$[5]

As I mentioned, the semantics of progressive aspect does not concern us in this dissertation, but I want to sketch how its denotation is treated in a situations framework with no events. I take progressive aspect, which embeds an imperfective aspect in Farsi as shown in (43), to add a linguistically encoded modal restriction

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[5]To account for compatibility of imperfective aspect and completed telic eventualities as in (42), I follow Arregui et al. (2014) in taking R to be a *Result* relation: *s results from s'* iff *s* includes the consequences/results of the events in *s'*.

to the semantics of imperfective. The modal restriction encoded in the denotation of progressive is taken from the definition of *Event-inertia* modal base by Arregui et al. (2014).

(63) $[\![\textbf{PROGRESSIVE}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ \forall s' : s' \leq s.\ \&$

$\exists s'' : s' \leq s''.\ s'\ \text{continue in s'' as they would if there were no interruptions.}$

$\&\ P(s'') = 1$

The denotation given in (63) asserts that for every relevant sub-situation s' of the topic situation s there is a situation s'' in which s' continues as if there were no interruption, and the proposition P is exemplified by s''. The *Event-inertia* (or inertia-situations in terminology of Cipria & Roberts (2000)) serves to account for the *imperfective paradox*, illustrated by the example (64) in which an event of a dog crossing the street was in progress at a past topic situation but remains incomplete. The intuition is that there was something happening that, in normal circumstances, would lead to a situation that exemplifies the proposition *a dog crossed the street*.

(64) An sag dašt   az khiaban rad mi-shod   ke ba
     that dog AUX.PST.3SG from street pass IMPF-become.PST.3SG that with
     otobus tasadof kard.
     bus   accident do.PERF.PST-3SG
     As the dog was crossing the street, it was run over by a bus.

The denotation in (63) is similar to the semantics that Hallman (2009) has proposed for progressive. Like Hallman's proposal, the denotation proposed here is a version of Portner (2011) calls the *event structure theory* of the progressive (Hinrichs 1983, Ter Meulen 1985, 1987, Bach 1986, Link et al. (1987), Parsons 1990, and Krifka 1992), which also maintains aspects of the *modal theory* of progressive (Dowty 1977, 1979; Asher 1992; Landman 1992; Bonomi 1997, and Portner 1998).

The denotation of perfect aspect in Farsi is given in (65), repeated from (20).

(65) $[\![\textbf{PERFECT}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ \exists s' : \tau(s') \prec \tau(s)\ \&\ P(s') = 1$

Putting the semantics of tense and aspect together, we will have (66b) and (67) as the LF and truth conditions for the present imperfective sentence in (33), repeated here in (66a), are given below.

(66) a. sag-ha pars **mi**-kon-∅-and
          dog-PL bark **IMPF**-do-PRES-3PL
          Dogs bark.

      b. LF for (66a)
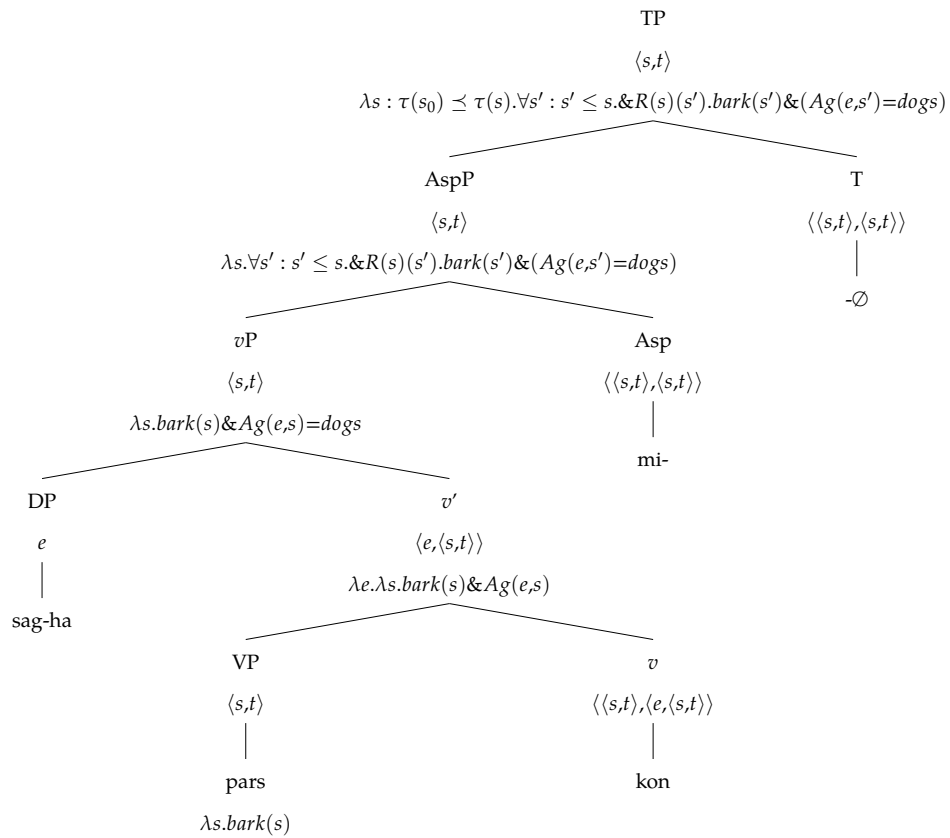
(67) $[_{TP}\text{PRESENT}_i \; [_{AspP} \text{IMPERFECTIVE} \; [_{vP} \quad p] \,] \,]$

      a. $[\![\text{dogs IMPF-bark-PRES}]\!]^{c,g} = \lambda s : \tau(s_0) \preceq \tau(s).\forall s' : s' \leq s.$

          & s' is a characteristic part of s. $bark(s')\&(Ag(e,s')=dogs)$

To achieve the order of morphemes, I follow Darzi & Anosheh (2010) to take Farsi to be head-final in verbal projections, and to posit that the verb undergoes

total head-movement, that is V moves through each functional head until it reaches the highest functional projection[6].

(68)
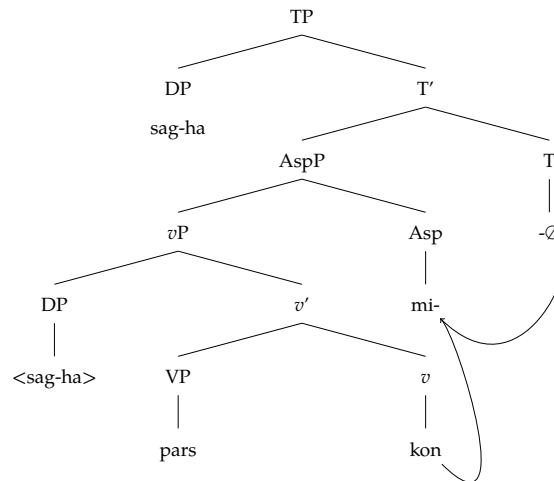
The LF and truth conditions of the present perfect sentence (69a) are given below. As I mentioned in Chapter One, perfect aspect is a higher aspectual head, and the whether the embedded proposition is exemplified by quantized or homogeneous situations is determined by the lower aspectual head. Since imperfective aspect has an overt morphological realization, its absence in (69a) implies the presence of perfective aspect.

(69) a. Ali reside   ast.
          Ali arrive.PP AUX.PRES.3SG
          Ali has arrived.

      b. LF for (69a)

---

[6]Farsi has both overt and null *v*. V-to-*v* movement only occurs when *v* is null (Darzi & Anosheh 2010)

$$TP$$
$$\langle s,t\rangle$$
$$\lambda s : \tau(s_0) \preceq \tau(s).\exists s' : \tau(s') \prec \tau(s)\&\downarrow arrive(Ali)(s')$$

- AspP
  - $\langle s,t\rangle$
  - $\lambda s.\exists s' : \tau(s') \prec \tau(s)\&\downarrow arrive(Ali)(s')$
    - AspP
      - $\langle s,t\rangle$
      - $\lambda s.\downarrow arrive(Ali)(s)$
        - vP
          - $\langle s,t\rangle$
          - $\lambda s.arrive(Ali)(s)$
            - v′
              - VP
                - $\langle s,t\rangle$
                - $\lambda s.arrive(Ali)(s)$
                  - V
                    - $\langle e,\langle s,t\rangle\rangle$
                    - res
                    - $\lambda e.\lambda s.arrive(e)(s)$
                  - DP
                    - e
                    - Ali
              - v
                - $\langle\langle s,t\rangle,\langle s,t\rangle\rangle$
                - $\varnothing$
    - Asp
      - $\langle\langle s,t\rangle,\langle s,t\rangle\rangle$
      - PERFECTIVE
  - Asp
    - $\langle\langle s,t\rangle,\langle s,t\rangle\rangle$
    - PERFECT
    - AUX:$\varnothing$
- T
  - $\langle\langle s,t\rangle,\langle s,t\rangle\rangle$
  - PRES
  - $\varnothing$
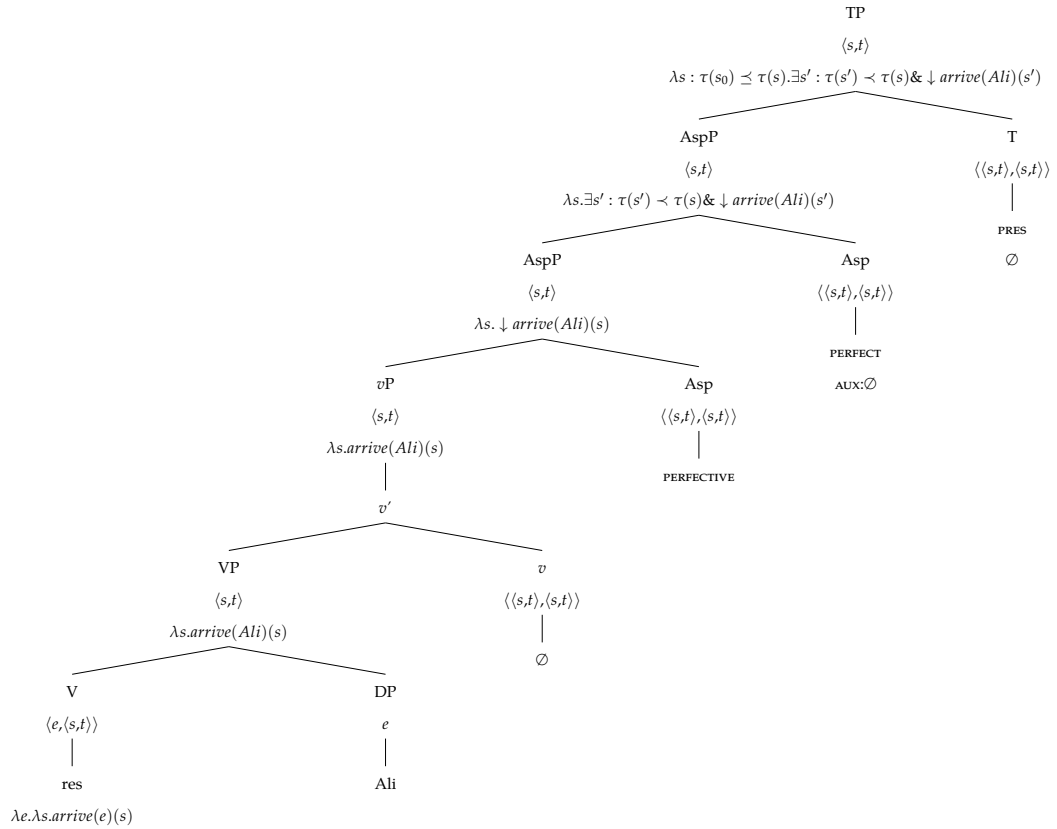
(70) $[\![(69a)]\!]^{c,g} = \lambda s : \tau(s_0) \preceq \tau(s).\exists s' : \tau(s') \prec \tau(s)\&\downarrow arrive(Ali)(s')$

2.1.2   Aspect and Past Tense

The traditionally called 'past stem' consists of the verb root and an allomoprh of the suffix *-id* which is ambiguous between past and perfective, as shown in (71). We will see examples where this morpheme appears in past imperfective (e.g., (75)) as well as in present perfective (e.g., (89)) and subjunctive perfective (e.g., (106) and (109)).

(71)   T[PST] $\to -id$

   Asp[PERFECTIVE] $\to -id$

35

2.1.2.1 Past perfective

To express a culminated past event, the verb must be marked with one of the al-
lomporhs of the suffix *-id*, as shown in (72) and (73).

(72) Zahra raf-t.
Zahra leave-PERF.PST.3SG
Zahra left.

(73) vaghti tu otaq bud-am,   Jyoti avaz xan-**d**
when in room be.PST-1SG, Jyoti song sing-**PERF.PST.**3SG
When I was in the room, Jyoti sang.

Although both past tense and perfective aspect have a morphological realization
as the suffix *-id*, there is only one occurrence of suffix *-id* to mark a past perfective
verb. The reason is that there is a restriction on the number of TAM affixes a verb
can bear in some Indo-Iranian languages like Farsi and Adiyaman Kurmanji (Kalin
& Atlamaz 2015). Verbs in these languages cannot bear more than one TAM suffix
or more than one TAM prefix. The co-occurrence of a TAM prefix and a TAM suffix,
however, is allowed. Therefore, I propose that *-id* can be morphological realiza-
tion of the past perfective in Farsi (see also Windfuhr & Perry (2013) for a similar
proposal), as shown in (74).

(74) T[PST] [Asp[PERFECTIVE]] $\rightarrow -id$

In 2.2.2 where I discuss the contrast between past perfective and present per-
fect, I show that past perfective in Farsi comes with an evidential inference. The
evidentiality of perfective aspect in Farsi will not play a role in this dissertation.

2.1.2.2 Past imperfective and progressive

The past imperfective form of the verb, which contains the past morpheme and the
imperfective prefix *mi-*, can describe an event that was ongoing in a past time, as

shown in (75a) and (75b). It can also describe a generic statement that held true in the past (75c), as well a past habit (75d).

(75) a. dar xiaban, ye sag pars **mi**-kar**d**.
in street, a dog bark **IMPF**-do.**PST**.3sG
A dog was barking in the street.

b. vaghti madar-am vared-e otaq-am shod, ba
when mother-my enter-**EZ** room-my become.**PERF**.**PST**-3sG, to
doost-am harf **mi**-za**d**-am.
friend-my talk **IMPF**-hit.**PST**-1sG
When my mother came into my room, I was talking with my friend.

c. dainasur-ha-ye Tirex gušt **mi**-xor-**d**-and.
dinosaur-**PL**-**EZ** T-Rex meat **IMPF**-eat-**PST**-3**PL**
T-Rex dinosaurs ate meat.

d. man qablan sigar **mi**-keš-**id**-am.
I before cigarette **IMPF**-smoke-**PST**-3sG
I used to smoke before.

The past imperfective form of the verb can also combine with the past form of the progressive auxiliary to describe an ongoing event in the past. This is shown (76) and (77).

(76) dar xiaban, ye sag **dašt** pars **mi**-kard.
in street, a dog **PROG**.3sG bark **IMPF**-do.**PST**.3sG
A dog was barking in the street.

(77) vaghti madar-am vared-e otaq-am shod, dašt-am ba
when mother-my enter-**EZ** room-my become.**PERF**.**PST**-3sG, have.**PST**-1sG to
doost-am harf **mi**-za**d**-am.
friend-my talk **IMPF**-hit.**PST**-1sG
When my mother came into my room, I was talking with my friend.

As stative verbs are incompatible with the imperfective prefix, as was shown in (29) and (29), the past form of stative verbs *be* and *have* in (78a) and (78b), refers to a state that was held in the past.

(78) a. Sa'at-e 3 Ali xune bud.
clock-**EZ** 3 Ali home be.**PST**.3sG.

Ali was home at 3 o'clock.

    b. Ali do-ta   mašin dašt.
         Ali two-CL car   have.PST.3SG
         Ali had two cars.

2.1.2.3 Past perfect

The past perfect form of a verb is constructed with the past participle and the past

form of auxiliary *be* which is inflected for agreement.

(79)   vaqti Bill vared-e otaq sho**d**,   John taze yek sandewich
        when Bill enter-EZ room become-**PERF.PST**.3SG, John fresh a   sandwich
        dorost karde bu**d**
        made do.PP AUX.**PST**.3SG

        When Bill walked into the room, John had just made a sandwich.

2.1.2.4 Taking stock

Having discussed the properties of past tense in Farsi, I can now provide truth

conditions of past sentences in Farsi. (80) illustrates the denotation of past tense.

(80) $[\![\mathbf{past}_j]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s : \tau(s) \prec \tau(s_j).\ P(s) = 1$, where s_j and is the speech

     situation by default.

As I discussed in the first chapter, I take perfective aspect to specify that situa-

tions exemplifying the embedded proposition are minimal situations (represented

by ↓). The denotation of perfective aspect is given in (81).

(81) $[\![\text{PERFECTIVE}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ \downarrow P(s) = 1$

Putting the semantics of past tense and perfective aspect together, we will have

(82) as the semantics of past peferctive in Farsi.

(82) $[_{\text{TP}}\text{PAST}_j\ [_{\text{AspP}}\ \text{PERFECTIVE}\ [_{\text{vP}}\ \ p]\,]\,]$

     $[\![(82)]\!]^{c,g} = \lambda s.\tau(s) \prec \tau(s_j).\ \downarrow [\![p]\!](s)$

(83) illustrates the semantics of past imperfective in Farsi.

(83) $[_{\text{TP}}\text{P\textsc{ast}}_j \ [_{\text{A\textsc{sp}P}} \text{I\textsc{mperfective}} \ [_{\text{vP}} \quad p] \ ] \ ]$

$\llbracket (83) \rrbracket^{c,g} = \lambda s.\tau(s) \prec \tau(s_j). \ \forall s' : s' \leq s.$

& <u>there exists a contextually salient relation R such that $R(s)(s')$.</u> $\llbracket p \rrbracket (s')$

Finally, the semantics of past perfect (pluperfect) in Farsi is given in (84). I assume a case where the embedded aspect is perfective.

(84) $[_{\text{TP}}\text{P\textsc{ast}}_j \ [_{\text{A\textsc{sp}P}} \text{P\textsc{erfect}} \ [_{\text{A\textsc{sp}P}} \text{P\textsc{erfective}} \ [_{\text{vP}} \quad p] \ ] \ ] \ ]$

$\llbracket (84) \rrbracket^{c,g} = \lambda s.\tau(s) \prec \tau(s_j). \ \exists s': \tau(s') \prec \tau(s) \ \& \downarrow \llbracket p \rrbracket (s') = 1$

2.1.3 Future

There are four strategies in Farsi to describe a future event. The most common way of describing a future eventuality in colloquial Farsi is to use present imperfective[7], as in (85). As we saw in the section 2.1.1, present tense in Farsi has a non-past semantics and thus it can freely take a future time reference.

(85) Farda   be bimarestan mi-rav-∅-am.
tomorrow to hospital   **impf**-go-**pres**-1**sg**
I will go to the hospital tomorrow.

The second strategy is to use the agreement inflected future auxiliary *want* followed by the perfective form of the verb with default third person agreement, as in (86). This form is mainly used in formal contexts.

(86) Farda   be bimarestan **xah**-∅-am   raf**t**.
tomorrow to hospital   **aux-pres**-1**sg** go.**perf**.∅.3**sg**
I am going to the hospital tomorrow.[8]

---

[7]As I mentioned earlier, the present perfect in Farsi is compatible with a future reference time, as in (46)

[8]∅ in glosses represents zero tense.

An interesting property of this construction is the use of what seems to be the *past* form of the verb (Bjorkman & Halpert 2017). In descriptive grammars of Farsi, however, this form has been analyzed as a short infinitival form (Khanlari (1988); Anvari & Ahmadi Givi (1995)).[9] It is important to note that this future form is only compatible with perfective interpretations, and is incompatible with an imperfective reading. The infelicity of (87b) in the following context illustrates this fact. Therefor, I take the verb in the future construction (86) to bear perfective morphology (with zero tense).

(87) *Context: Sarah has terminal cancer. She has just started writing a long novel. Doctors think she will only live few more days and will die prior to the completion of her book.*

    a. moghe-ye marg, Sarah (dar-∅-ad) ketab mi-nevis-∅-ad.
       time-EZ death, sarah **AUX**-PRES-3SG book IMPF-write-PRES-3SG
       Sarah will be writing a book at the time of her death.

    b. #moghe-ye marg, Sarah ketab xah-∅-ad neveš**t**.
       time-EZ death, sarah ketab AUX-PRES-3SG write-**PERF**.∅.3SG
       Sarah will be writing a book at the time of her death.

The third strategy is to to use the present imperfective form of *want* and the so-called *'subjunctive'* form of the verb, as in (88). This form has a volitional future reading.

(88) Farda Sarah **mi-xah**-∅-ad be bimarestan be-rav-ad.
    tomorrow Sarah **IMPF-want**-PRES-3SG to hospital **IMPF**-go.∅-3SG
    Sarah will go to the hospital tomorrow.

Lastly, the perfective form of *eventive* verbs inflected with agreement morphology can be used to refer a future event. The future use of this form is limited to event that are going to be completed in the imminent future, and is not felicitous with a future adverbials.

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[9]Farsi does not have infinitive clauses.

(89)   *Ali's mom talking to him on the phone: "Everyone is waiting for you to come home."*

    Ali:

    a. uma**d**.∅-am
        come.**PERF**-PRES-1SG
        I'm coming (right away).

    b. # farda   umа**d**.∅-am
          tomorrow come.**PERF**-PRES-1SG
        I'm coming tomorrow.

The perfective form of stative verbs doesn't lend itself to a future interpretation.

(90)   *Ali's friend is waiting outside Ali's house. They are going to a concert. Ali:*

    a. # ama**d**e bu**d**.∅-am
          ready   be.**PERF**-PRES-1SG
        intensed meaning: I'll be ready (right away).

    b. ama**d**e sho**d**.∅-am
        ready   get.**PERF**-PRES-1SG
        I'll get ready (right away).

Unlike the general trend in descriptive grammars of Iranian languages that takes verbs bearing *-id* morpheme to encode pastness (hence the term *past stem*), Windfuhr & Perry (2013) take them to be an unmarked form which only encode a perfective meaning. However, the fact that verbs bearing *-id* morpheme can combine with imperfective prefix *mi-* to describe a past imperfective event suggests that *-id* is ambiguous between past and perfective readings. Given that imperfective aspect has an overt morphological realization, we can deduce the existence of perfective aspect in (89a) and (90b) from the absence of an imperfective marker. What is tense in these sentences? There are three logical possibilities: past, present and zero tense. As there is no past meaning involved, we can put aside this option. Zero tense is also ruled out because its occurrence in matrix clauses is limited to expression of wishes and desires (I will discuss this in the next section). The sentences under consideration are clearly not about wishes and desire. The only

option left is present tense. We have independently seen that present tense in Farsi has a non-past semantics, and compatible with future reference. Therefore, I will take the verbs in (89a) and (90b) to be the morphological realization of present perfective in Farsi, as shown below.

(91)   T[PRES] [Asp [PERFECTIVE]] → ∅-id

It has been cross-linguistically observed that perfective aspect appears to be incompatible with present tense. De Wit (2016) refers to this observation as the *'present perfective paradox'*. The structure I have proposed in (91) raises the question as to whether Farsi lacks the *"present perfective paradox"*. There seems to be variations among languages with respect to the acceptability of the combination of present tense and perfective aspect, as well as the interpretations such a combination can get. The present perfective paradox is reported to be absent in French, Dutch and German. De Wit (2016) shows that the sentence (92) can be felicitously used by French speakers to convey that they are going home.

(92)   Ne t' inquiète   pas, j' arrive   à toute suite
       REFL 2SG worry.PRES.2SG NEG 1SG arrive.PRES.1SG at right away
       'Don't worry, I'm arriving–see you right away!'

De Wit (2016), however, argues that the incompatibility between present tense and perfective aspect is rooted in cognition, and thus it is universal. The present form of verbs in languages that appear to lack such an incompatibility has properties that make it difficult to draw a conclusion about the status of the present perfective paradox. Following Smith (1997), she argues that imperfective and perfective aspects don't have a morphological realization in French, Dutch and German. Thus, the present form of the verb is ambiguous between perfective and imperfective readings. This has been illustrated with the example (93) by Smith (1997). As the translation shows, (93) allows for two interpretations. The events of *Mary smiling*

and *Paul arriving* can either be overlapping (i.e., imperfective) or sequential (i.e., perfective). [10]

(93) Marie sourit   toujours quand Paul arrive   à   la
      Mary smile.PRES.3SG always   when Paul arrive.PRES.3SG LOC DEF.SG.F
      maison.
      house
      Mary always smiles / is always smiling, when Paul gets home.

Based on this, she concludes that aspect in the sentence (92) is in fact imperfective. Given that imperfective aspect in Farsi has a distinct morphological realization, the same analysis cannot be entertained. As it was discussed in the section 2.1.1, present tense in Farsi patterns with present tense in German and Dutch in having a non-past semantics, and can freely refer to a future time (Pancheva & Von Stechow 2004). Unlike the case with present imperfective and present perfect aspect, however, the future reading of present perfective is limited to imminent events. The example (90b) also shows that present perfective is not compatible with future-oriented adverbs. Therefore, I take the restriction on the future interpretation of present perfective in Farsi to be the footprint of the present perfective paradox in Farsi.

2.1.4 Subjunctive

Farsi lacks infinitive clauses, and the subjunctive is used in environments where an infinitive form is expected. In this section, I show that the so-called *subjunctive* in Farsi lack deictic temporal features. That is, the distinction between indicative and subjunctive mood in Farsi is in the presence or the absence of deictic tense. There are three subjunctive forms in Farsi that vary in their aspectual properties: imperfective, perfect, and perfective.

---

[10]The issue is more complex. De Wit (2016) notes that northern Slavic languages that lack other dedicated future construction use present perfective to refer to future situations.

The embedded clause of certain predicates and modals as well as the antecedent of conditionals appear in the subjunctive form. The occurrence of subjunctive forms in matrix clauses is restricted to the expression of wishes (as in (94a)), and suggestions (as in (94b)) (Windfuhr & Perry 2013; Darzi & Kwak 2015). I show the subjunctive forms with ∅ in glosses, indicating that subjunctive forms lack deictic tense.

(94) a. xoda beh-et sabr   **be**-dah-ad.
          god to-you patience **IMPF**-give.∅-3.SG
          May god give you the patience.

      b. **be**-rim
          IMPF-go.∅-1PL
          let's go.

2.1.4.1 Subjunctive imperfective

Let us start with imperfective subjunctive, which is traditionally called simple subjunctive, which is made with adding the prefix *be-* to the verbal root.

(95) **be**-rav-ad
      IMPF-go-∅-3SG

Darzi & Kwak (2015) observe that subjunctive imperfective (*present subjunctive* in their terminology) locates the event of the embedded clause at a time interval *simultaneous or after* the reference time which is the matrix event time, as in (96a) and (96b).

(96) a. Reza fekr   mi-kard   ke Ali diruz/emruz/farda
          Rez thought IMPF-do.**PST**.3SG that Ali yesterday/today/tomorrow
          be-rav-ad   unja.
          IMPF-go-∅-3SG there
          'Reza thought that Ali would go there yesterday/today/tomorrow.'

      b. Reza fekr   mi-kon-∅-ad   ke Ali *diruz/emruz/farda
          Rez thought IMPF-do-**PRES**-3SG that Ali yesterday/today/tomorrow
          be-rav-ad   unja.
          IMPF-go-∅-3SG there

'Reza thinks that Ali is going there *yesterday/today/tomorrow.'

<div align="right">adapted from (Darzi & Kwak 2015)</div>

Counterparts of these sentences with matrix verb *'know'*, which only takes indicative complements, have an imperfective in their embedded clauses.

(97) a. Reza mi-dan-est   ke Ali diruz/emruz/farda
          Rez IMPF-know-PST.3SG that Ali yesterday/today/tomorrow
          mi-rav-∅-ad   unja.
          IMPF-go-PRES-3SG there
          'Reza knew that Ali would go there yesterday/today/tomorrow.'

    b. Reza mi-dan-∅-ad   ke Ali diruz/emruz/farda
          Rez IMPF-know-PRES-3SG that Ali yesterday/today/tomorrow
          mi-rav-∅-ad   unja.
          IMPF-go-PRES-3SG there
          'Reza knows that Ali is going there *yesterday/today/tomorrow.'

Another argument in favor of imperfectivity of subjunctive verb forms with *be-* is that they can express generic meaning, like its indicative counterpart *mi-*.

(98) a. man fekr   mi-kon-∅-am   ke zamin dor-e   xoršid
          I   thought IMPF-do-PRES-1SG that earth around-EZ sun
          be-čarx-ad
          IMPF-revolve.∅-3SG
          I think that earth revolves around the sun.

    b. man mi-dan-∅-am   ke zamin dor-e   xoršid
          I   IMPF-know-PRES-1SG that earth around-EZ sun
          mi-čarx-∅-ad
          IMPF-revolve-PRES-3SG
          I know that earth revolves around the sun.

2.1.4.2 Subjunctive perfect

The second subjunctive form is subjunctive perfect, traditionally called past subjunctive. It is made with the past participle and the subjunctive form of the auxiliary *be*.

(99) rafte **baš**-ad
go-PP **AUX**.∅-3SG

Darzi & Kwak (2015) also observe that subjunctive perfect locates the event of the embedded clause at a time interval *preceding* the reference time which can be the matrix event time (101a), a time denoted by a temporal adverbial in the embedded clause (101b).

(100) a. Reza fekr   mi-kon-∅-ad   ke Ali diruz   unja rafte
Reza thought IMPF-do.**PRES**.3SG that Ali yesterday there go-PP
baš-ad
AUX.∅-3SG
'*Reza thinks that Ali has gone there yesterday.*'

adapted from (Darzi & Kwak 2015)

b. Reza diruz   fekr   mi-kar**d**   ke Ali ta farda   unja
Rez yesterday thought IMPF-do.**PST**.3SG that Ali by tomorrow there
rafte **baš**-ad
go-PP **AUX**.∅-3SG
'*Yesterday, Reza thought that Ali would have gone there by tomorrow.*'

Counterparts of these sentences with matrix verb '*know*', which only takes indicative complements, have perfect aspect in their embedded clauses.

(101) a. Reza mi-dan-∅-ad   ke Ali diruz   unja rafte ast
Reza IMPF-know-PRES-3SG that Ali yesterday there go-PP **AUX**.PRES.3SG
'*Reza knows that Ali has gone there yesterday.*'

adapted from (Darzi & Kwak 2015)

b. Reza diruz   mi-dan-est   ke Ali ta farda   unja rafte
Rez yesterday IMPF-know-PST.3SG that Ali by tomorrow there go-PP
ast
AUX.PRES.3SG
'*Yesterday, Reza knew that Ali would have gone there by tomorrow.*'

Neither perfect subjunctive nor perfect indicative can express generic meaning.

(102) a. # man fekr   mi-kon-∅-am   ke zamin dor-e   xoršid
I   thought IMPF-do-PRES-1SG that earth   around-EZ sun
čarxide   **baš**-ad.
revolve.PP **AUX**.∅.3SG

I think that earth has revolved around the sun.

b. # man mi-dan-∅-am   ke zamin dor-e   xoršid čarxide
    I   IMPF-know-PRES-1SG that earth around-EZ sun   revolve.PP
    ast.
    AUX.PRES.3SG
    I know that earth has revolved around the sun.

Given the data presented above, and following Windfuhr & Perry (2013) and Darzi & Kwak (2015), I take subjunctive in Farsi to lack an autonomous time reference. More specifically, I follow the proposal by Ferreira (2017), and posit that subjunctive forms in Farsi are the morphological realizations of zero tense (See also Pica (1984); Picallo (1984); Johnson (1985); Landau (2004) for accounts of the subjunctive in terms of anaphoric tense). It is the higher tense that is responsible for manipulating the temporal location of the event. I propose that *be-* is the morphological realization of zero tense imperfective, as shown in (103a). I also take the prefix *mi-* to not only encode information about the aspectual property of the verb but also about the existence of a value for tense, as shown in (103b). In fact, some traditional grammarians have analyzed *mi-* to be the marker of the indicative mood (Anvari & Ahmadi Givi 1995; Khanlari 1988). The consensus in the literature, however, is that the marker always denotes imperfectivity (Windfuhr 1979; Taleghani 2008; Windfuhr & Perry 2013; Darzi & Kwak 2015). The entry in (103b) captures both of these intuitions.

(103)   a.   T[∅][Asp[IMPF]] → *be-*

                                 (*"imperfective subjunctive"*)

    b.   T[PRES/PST][Asp[IMPF]] → *mi-*

                                   (*"imperfective indicative"*)

Similarly, I take subjunctive perfect form to encode zero tense perfect, as shown in (104a).

(104) a. T[∅][Asp[PERFECT]] → verb.PP <u>AUX.∅</u>: *baš*

("perfect subjunctive")

b. T[**PRES**][Asp[PERFECT]] →verb.PP <u>AUX.**PRES**</u>: ∅

("perfect indicative": present perfect)

c. T[**PST**][Asp[PERFECT]] →verb.PP <u>AUX.**PST**</u>: *bud*

("perfect indicative": past perfect)

2.1.4.3 Subjunctive perfective

As Windfuhr & Perry (2013) note, the perfective form of verbs in Farsi can also have a subjunctive function, by which I mean it can lack a deictic temporal specification. That is, it neither patterns with present perfective nor with past perfective. Rather, it only contributes a perfective interpretation. Moreover, like other subjunctive forms in Farsi, it is used when the truth of the sentence bearing a perfective marker is an open issue.

In certain embedded contexts such as under certain modals, the antecedent of conditionals and adverbial clauses, perfective is used to refer to a *future* event or state that will necessarily have been completed by the time of the matrix event.

As we saw in (86), repeated here as (105), the perfective form of the verb appears under the future modal, in which case the modal bears the agreement morphology and the verb appears with perfective morphology and default third person agreement, which is morphologically null.

(105) Farda   be bimarestan **xah**-∅-am   raf**t**.
       tomorrow to hospital   **want**-PRES-1SG go.**PERF**.∅.3SG
       I am going to the hospital tomorrow.

It can also appear under impersonal modals, bearing a default third person agreement. These modals can only have a deontic reading.

(106)　a. bayad　haqiqat ra go**t**.
　　　　　should truth　　RA say.**PERF**.∅.3SG
　　　　　It is necessary to tell the truth.

　　　 b. mi-tavan haqiqat ra go**t**.
　　　　　IMPF-can　truth　　RA say.**PERF**.∅.3SG
　　　　　It is possible to tell the truth.

　　　 c. mi-šav-∅-ad　　　　haqiqat ra goft.
　　　　　IMPF-become-**PRES**-3SG truth　RA say.**PERF**.∅.3SG
　　　　　It is possible to tell the truth.

　　　 d. mi-šod　　　　haqiqat ra go**t**.
　　　　　IMPF-become-**PST** truth　　RA say.**PERF**.∅.3SG
　　　　　It was possible to tell the truth.

It is important to note that these modals only take subjunctive complements and are incompatible with indicative complements.

(107)　a. bayad　haqiqat ra be-gu-yi/　　　*mi-gu-∅-yi.
　　　　　should truth　　RA **IMPF**-say.∅.2SG/ **IMPF**-say-**PRES**-2SG
　　　　　You should tell the truth.

　　　 b. mi-tavan-i haqiqat ra be-gu-yi/　　　mi-gu-∅-yi.
　　　　　IMPF-can　truth　　RA **IMPF**-say.∅.2SG/ **IMPF**-say-**PRES**-2SG
　　　　　You can tell the truth.

　　　 c. mi-šav-∅-ad　　　　haqiqat ra be-gu-yi/　　　*mi-gu-∅-yi.
　　　　　IMPF-become-**PRES**-3SG truth　RA **IMPF**-say.∅.2SG/ **IMPF**-say-**PRES**-2SG
　　　　　It is possible to tell the truth.

　　　 d. mi-šod　　　　haqiqat ra be-gu-yi/　　　*mi-gu-∅-yi.
　　　　　IMPF-become-**PST** truth　　RA **IMPF**-say.∅.2SG/ **IMPF**-say-**PRES**-2SG
　　　　　it was possible to tell the truth.

Another environment perfective subjunctive appears is under the modal adverbial *maybe*, in which case the perfective form of verbs bear agreement morphology. In the same environment, an imperfective subjunctive can also be used, but an imperfective indicative is not felicitous[11].

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[11]That is not to say that indicative forms are ungrammatical with *maybe*, but they are infelicitous in scenarios when the truth of the modal claim is an open issue.

(108) *The result of lottery will be announced tomorrow:*

    a. šayad barande šo**d**-i
       maybe winner become.PERF.∅.2SG
       maybe, you'll win.

    b. šayad barande be-š-i
       maybe winner IMPF-become-.∅.2SG
       maybe, you'll win.

    c. #šayad barande mi-š-∅-i
       maybe winner IMPF-become-PRES.2SG
       maybe, you'll win.

Subjunctive perfective can appear in the antecedent of conditionals, in which case it refers to a future event whose realization or completion is a precondition for the consequent. The aspectual contrast between subjunctive perfective and imperfective manifests itself when the antecedent contains a stative predicate. Stative predicates are known to be incompatible with perfective aspect, which requires bounded predicates. When perfective aspect combines with unbounded predicates like statives, an eventive interpretation is coerced (De Swart 1998; Bary 2009; Homer 2011). Stage-level stative predicates, like *being tired* in (109a), are coerced in perfective.

(109)   Stage-level statives:

    a. agar Ali xaste bud,   mozahem-sš ne-mi-š-∅-am
       if   Ali tired be.PERF.∅.3SG, bother-him NEG-IMPF-become-PRES-1SG
       If Ali is (found out to be) tired, I will not bother him.

    b. agar Ali xaste baš-ad,   mozahem-sš ne-mi-š-∅-am
       if   Ali tired be.∅-3SG, bother-him NEG-IMPF-become-PRES-1SG
       If Ali is tired, I will not bother him.

Individual-level statives need some contextual support for coercion. The presence of temporal adverbial *then* in (110a) facilitates an eventive interpretation.

(110)   Individual-level statives:

a. agar Ali #(un moghe)   mehrabun bud,   komak-et
   if   Ali (that moment) kind   be.PERF.∅.3SG, help-you
   mi-kon-∅-ad
   IMPF-do-PRES-3SG
   If Ali is being kind then (is in a good mood), he will help you.   This cannot

   mean *If Ali is kind, he will help you.*

b. agar Ali mehrabun baš-ad,   komak-et mi-kon-∅-ad
   if   Ali (that   moment) kind   be.∅-3SG,   help-you

   IMPF-do-PRES-3SG
   If Ali is being kind then (is in a good mood), he will help you.   and *If Ali is*

   kind, he will help you.

Certain individual-level predicates like *intelligent* cannot be coerced, and thus
are incompatible with perfective. The infelicity of (111a) illustrates this fact.

(111)   Individual-level statives:

a. #agar Ali bahuš   bud,   javab-e   in   soal   ra
   if   Ali intelligent be.PERF.∅.3SG, answer-EZ this question RA
   mi-dan-∅-ad
   IMPF-know-PRES-3SG
   If Ali is intelligent, he knows the answer to this question.

b. agar Ali bahuš   baš-ad, javab-e   in   soal   ra
   if   Ali intelligent be.∅.3SG, answer-EZ this question RA
   mi-dan-∅-ad
   IMPF-know-PRES-3SG
   If Ali is intelligent, he knows the answer to this question.

when clauses and *after* clauses are other contexts where subjunctive perfective
can appear, and refer to a future event that is required to be completed before the
matrix event.

(112)   a. vaghti res-id,   beh-et zang mi-zan-∅-am
         when   arrive-PERF.∅.3SG to-you call   IMPF-hit-PRES-1SG
         When she arrives, I will call you.

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b. bad-e   inke kelas-eš tamum shod,   beh-et zang
   after-ᴇᴢ that class-her end   become-**ᴘᴇʀꜰ**.∅.3ꜱɢ to-you call
   mi-zan-∅-am
   ɪᴍᴘꜰ-hit-ᴘʀᴇꜱ-1ꜱɢ
   After her class ends, I will call you.

In the same environments, imperfective indicative is infelicitous to refer to future events.

(113) a. vaghti be-res-ad/   #mi-res-∅-ad,   beh-et zang
          when ɪᴍᴘꜰ-arrive.∅.3ꜱɢ/ ɪᴍᴘꜰ-become-ᴘʀᴇꜱ-3ꜱɢ to-you call
          mi-zan-∅-am
          ɪᴍᴘꜰ-hit-ᴘʀᴇꜱ-1ꜱɢ
          When she arrives, I will call you.

       b. bad-e   inke kelas-eš tamum be-šav-ad/
          after-ᴇᴢ that class-her end   ɪᴍᴘꜰ-become.∅.3ꜱɢ/
          #mi-šav-∅-ad,   beh-et zang mi-zan-∅-am
          ɪᴍᴘꜰ-become-ᴘʀᴇꜱ-3ꜱɢ to-you call   ɪᴍᴘꜰ-hit-ᴘʀᴇꜱ-1ꜱɢ
          After her class ends, I will call you.

The time of the event in the matrix clause of a *when* clause that contains subjunctive perfective is understood to strictly follow the antecedent event. A progressive verb in the matrix clause is incompatible with subjunctive perfective matrix clauses, as shown in (114a). Only subjunctive imperfective can be used in such case, as in (114b).

(114) a. # vaqti Ali res-id,   dar-∅-im   šam   mi-xor-∅-im
            when Ali arrive.ᴘᴇʀꜰ.∅.3ꜱɢ, ᴘʀᴏɢ-ᴘʀᴇꜱ-1ᴘʟ dinner ɪᴍᴘꜰ-eat-ᴘʀᴇꜱ-1ᴘʟ
            When Ali arrives, we will be eating dinner.

       b. vaqti Ali be-res-ad,   dar-im   šam   mi-xor-∅-im
          when Ali ɪᴍᴘꜰ-arrive.∅.3ꜱɢ, ᴘʀᴏɢ-ᴘʀᴇꜱ-1ᴘʟ dinner ɪᴍᴘꜰ-eat-ᴘʀᴇꜱ-1ᴘʟ
          When Ali arrives, we will be eating dinner.

The table below summarizes morphological representations of past and present temporal relations in Farsi.

	"Indicative"		"Subjunctive"
	Present	**Past**	**∅-tense**
Perfective	raghs-**id**-∅-am verb-**PERF-PRES**-1SG	raghs-**id**-am verb-**PERF-PST**-1SG	raghs-**id**-am verb-**PERF**-∅-1SG
Imperfective	**mi**-raghs-∅-am **IMPF**-verb-**PRES**-1SG	**mi**-raghs-**id**-am **IMPF**-verb-**PST**-1SG	**be**-raghs-am **IMPF**-verb-∅-1SG
Perfect	raghs-ide ∅-am verb-**PP AUX.PRES**.1SG	raghs-ide **bud**-am verb-**PP AUX.PST**.1SG	raghs-ide **baš**-am verb-**PP AUX**.∅.1SG

Table 2.3: Morphological representations of tense and aspect in Farsi

2.2   Inventory of Tenses in Farsi

I adopt a presuppositional theory of tense (Heim 1994) within the situation-based framework. Following Kratzer (1998a), I argue for the existence of two different kinds of tenses in Farsi: (i) deictic tenses (past and present) which add a temporal constraint on the value of situation variable in their embedded aspectual phrase, and (ii) zero tense which is just an identity function and does not carry any temporal presupposition.

In this section, I will discuss the inventory of Farsi tenses. In the first part of this section, I argue that present tense in Farsi is shiftable (a.k.a. *'relative tense'*). That is, the time reference is construed as present relative to a time in its local or global context. I then argue that past tense in Farsi is unshiftable (a.k.a. *'absolute tense'*) and is always interpreted as past relative to the speech time. Lastly, I argue that so-called subjunctive forms in Farsi are morphological realization of zero tense.

(115)   The inventory of Farsi tenses:

    a. Unshiftable (absolute) tense: past

    b. Shiftable (relative) tense: present

    c. Zero tense: 'subjunctive'

2.2.1 Shiftable Present

Like Russian and Hebrew, Farsi has a shiftable present tense. That is, present tense in Farsi under the complement clause of a past attitude predicate, can be interpreted *de se*. That is, it can be evaluated with respect to the time in which the attitude holder self-locates themselves. For instance, the sentence in (116) conveys that the time of John's living in Amherst overlaps with the time at which Ana self-located herself when uttering "*John lives in Amherst now*" in 2004.

(116) *Ana in 2004: "John lives in Amherst now."*

  dar 2004, Ana gof-t   ke   John dar Amherst zendegi
  In   2004, Ana say-PERF.PST.3SG that John in   Amherst live
  mi-kon-∅-ad.
  IMPF-do-PRES-3SG

  'In 2004, Ana said that John lived in Amherst (then).'

Languages with a shiftable present differ in whether or not present tense can shift outside of attitudinal environments, such as relative clauses. While present tense in Hebrew and Russian does not shift in such environments, present tense in Japanese does. Farsi behaves like Hebrew and Russian in this respect. The sentence in (117a) is infelicitous in the given context where an absolute reading is ruled out. This shows that Farsi present tense does not shift in relative clauses.

(117) *John is dead. Lyn met John in 1985. He was living in Amherst then.*

  a. # dar 1985, Lyn mardi   ra molaqat kard   ke   hamun
        In   1985, Lyn man-INDF RA meet   do.PERF.PST.3SG that same
        moghe dar Amherst zendegi mi-kon-∅-ad.
        time   in   Amherst live   IMPF-do-**PRES**-3SG
      'In 1985, Lyn met a man who lives in Amherst.'

  b. dar 1985, Lyn mardi   ra molaqat kard   ke   hamun
        In   1985, Lyn man-INDF RA meet   do.PERF.PST.3SG that same
        moghe dar Amherst zendegi mi-kard.
        time   in   Amherst live   IMPF-do-**PST**-3SG

'In 1985, Lyn met a man who lives in Amherst.'

In Section 2.1, I showed that present tense in Farsi, like German, has a non-past semantics. I take the pattern of data presented above as evidence for the shiftability of present tense in languages like Farsi and Russian. Shiftable (relative) tenses can be interpreted relative to a point in time, which can be provided either the global context of utterance or the local context introduced by an attitude predicate.

I propose (118a) as the denotation of present tense in Farsi. According to (118a), present tense ($\textsc{present}_i$) receives an interpretation that depends on a variable assignment (g), and there is a deictic constraint that the denotation should be non-past relative to i, which is just a variable ranging over situations without any deictic constraint. This situation variable takes its value from the global or the local context. Note that the denotation of Farsi present tense (118a) differ from the denotation of English present tense (118b) in two respects: (i) Unlike Farsi present tense that has a non-past semantics, and can freely refer to future, English present tense presupposes that the temporal slice of *s overlaps with* the temporal slice of a free variable s_i (ii) While s_i in the denotation of English present tense is set to the speech situation, in Farsi this free variable can get its value from its local context.[12]

(118)   a. **Farsi**

$[\![\textsc{present}_i]\!]^{c,g} = \lambda P_{\langle s,t \rangle}. \ \lambda s : \tau(s_i) \preceq \tau(s). \ P(s) = 1.$

   b. **English**

$[\![\textsc{present}_i]\!]^{g} = \lambda P_{\langle s,t \rangle}. \ \lambda s : \tau(s) \circ \tau(s_i). \ P(s) = 1$, where s_i is the speech situation by default.

---

[12]Alternatively, we can represent s_i as variable in syntax and let it be bound by the closest c-commanding binder.

2.2.2 Unshiftable Past

This section has two main objectives. In the first of this section, I argue that Farsi past tense is an absolute tense. That, is it is always construed as past relative to the speech situations. I also present data showing that Farsi lacks a SOT rule. In the second part of this section, I bring up a data point about Farsi past that will be that will be important in the subsequent chapters. Farsi past tense cannot occur in the antecedent of conditionals to describe a past situation. Instead, perfect aspect is used. I then show that this property seems to be shared among languages that pattern with Farsi in the competition between past tense and present perfect.

2.2.2.1 No SOT Rule

In some languages, known as SOT languages, there is a mechanism by which temporal features of an embedded past tense remains uninterpreted. The details of this mechanism does not concern us here (tense deletion under c-command (Sharvit 2003, 2018) or feature transmission (Abusch 1997; Kratzer 1998a; Grønn & Von Stechow 2010)). I will refer to this mechanism as 'tense deletion rule' because of the transparency of this term, but this does not come with a theoretical commitment. The existence of the tense deletion rule accounts for the availability of a simultaneous reading for (119), which is ambiguous between a 'simultaneous' and a 'back-shifted' reading.

(119)   On January 20th, 2021, Mary said that Donald was the president.

   Simultaneous reading: Mary said:'Donald is the president.'

   Mary is a devoted Trump supporter who thinks the election was rigged. She still considers Trump to be the legitimate president of the US.

   Back-shifted reading: Mary said:'Donald was the president.'

   Mary is a democrat and is happy that Trump lost the election.

Now let us look at data showing that Farsi lacks a tense deletion rule. The same sentence in Farsi only has a back-shifted reading.

(120)   Dar Janvie-ye 2021, Mary goft ke Donald raees-jomhoor bud.

In Jauary-ez 2021, Mary say.ᴘᴇʀꜰ.**ᴘsᴛ**.3sɢ that Donal president be.**ᴘsᴛ**.3sɢ

Only back-shifted reading: Mary said:'Donald was the president.'

In languages that lack a tense deletion rule, like Hebrew and Russian, the tense feature of an embedded past is always interpreted. This, however, does not mean that a past-under-past construction cannot have a simultaneous reading in non-SOT languages. An embedded past event which is interpreted as past with respect to the utterance time can happen to have the same running time as the matrix past event. In (121), for instance, both *loving* and *saying* are evaluated as past with respect to the utterance time.

(121)   *Sara broke up with Sina last week. Two years ago, Sara told Sina that she loved him. But she doesn't love him anymore.*

do   sal   piš Sara be Sina gof-t   ke   dust-aš dašt.
two year ago Sara to Sina say-ᴘᴇʀꜰ.**ᴘsᴛ**.3sɢ that love-her have.**ᴘsᴛ**.3sɢ

'Two years ago, Sara told Sina that she loved him.'[13][14]

This strategy gives rise to a *de re* interpretation of past tense (Ogihara 1989; Abusch 1997), and the temporal features of the embedded tense are interpreted.

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[13]I should note that for many of my consultants, including myself, the embedded past is in general marked, and is only acceptable with certain intonation (putting focus on the matrix verb *say*).

[14]This is similar to double access reading of present tense in English, exemplified in (i).

(i)   John thought that Mary is pregnant.

The key intuition is that such sentences make reference to two times: Mary's pregnancy overlaps with both (i) the attitude holder's now (*de se* component) and (ii) the utterance time (*de re* component) (Enç 1987; Abusch 1997; Heim 1994, among others).

Similarly, simultaneous readings of the embedded past tense is only allowed when the event described by the complement is past with respect to both the attitude holder's now, and the actual utterance time. This seems to me to be the difference between (121) and (120). I leave this as a topic for future research.

Therefore, simultaneous readings are in principle available in both SOT and non-SOT languages (Sharvit 2014; Bar-Lev 2015). Only simultaneous readings that are the result of a tense deletion rule are expected to be absent in non-SOT languages. How can we show that the simultaneous reading of past-under-past constructions in Farsi is only achieved via a *de re* strategy? Consider the context given in (122) in which Sara still loves Sina. Since the use of past tense in Farsi triggers a cessation implicature, the past form of the verb *love* is infelicitous when the *loving* state still holds and is not entirely in the past of the utterance time.

(122)   *Sara and Sina are a happy couple and love each other. Two years ago, Sara told Sina for the first time that she loved him.*

    # do sal piš Sara be Sina gof-t   ke   dust-aš dašt.
      two year ago Sara to Sina say-PERF.**PST**.3SG that love-her have.**PST**.3SG
    'Two years ago, Sara told Sina that she loved him.'

Another way to distinguish between the two strategies to obtain simultaneous readings is to block the *de re* interpretation of the embedded past and check whether the sentence can still have a simultaneous reading (Ogihara & Sharvit 2012). Tsilia (2021) argues that Farsi lacks a tense deletion rule by showing that the example (123), where the *de re* interpretation of the embedded past is blocked, only has a back-shifted reading.

(123)   hafteie pish,   Abtin goft   ke dah ruz dige be dustdoxtar-esh
        week   previous, Abtin tell-PST that ten day other to girlfriend-his
        xaahad goft   ke daf'eie axari-bud ke   hamdigaro **didand**
        will   tell-PST that time   last-was that eachother see-PST
        'A week ago, Abtin said that in ten days he would say to his girlfriend that they had met for the last time'   (Tsilia 2021)

The simultaneous reading is only available when shiftable present is used.

(124) hafteie pish,   Abtin goft   ke dah ruz dige be dustdoxtar-esh
      week   previous, Abtin tell-ᴘsᴛ that ten day other to girlfriend-his
      xaahad goft   ke   daf'eie axari-e ke   hamdigaro mibinand
      will   tell-ᴘsᴛ that time   last-is that eachother see-ᴘʀᴇs
      'A week ago, Abtin said that in ten days he would say to his girlfriend that they met

      for the last time.'   (Tsilia 2021)

In the context (125) where the intended reading of "*two hours ago, Zahra thought
it was 2.*" is only true with a *de se* interpretation of the embedded tense, a past-
under-past construction a 125a is infelicitous. Farsi behaves exactly like other non-
SOT languages that have a shiftable present. Such languages usually achieve the
simultaneous reading via a shiftable present instead. As shown in (125b), the
embedded verb should bear a present tense in order to convey a simultaneous *de se*
reading.

(125) *It's now 1pm. Two hours ago when it was 11am, Zahra thought it was 2pm.*

   a. # Do sa'at-e piš Zahra fekr   mi-kard   ke Sa'at 2 bud.
        two hour-ᴇᴢ ago Zahra though ɪᴍᴘF-do.ᴘsᴛ.3sɢ that hour 2 be.ᴘsᴛ.3sɢ
        'Two hours ago, Zahra thought it was 2.'

   b. Do sa'at-e piš Zahra fekr   mi-kard   ke Sa'at 2 ast
      two hour-ᴇᴢ ago Zahra though ɪᴍᴘF-do.ᴘsᴛ.3sɢ that hour 2 be.ᴘʀᴇs.3sɢ
      'Two hours ago, Zahra thought it was 2.'

The inability of past-under-past constructions in Farsi to obtain a simultaneous
reading in *de re* blocking scenarios, shows that Farsi lacks the tense deletion rule.

Past-under-future constructions in Farsi cannot have a Later-than-Matrix read-
ings in which the embedded event is interpreted as past relative to the matrix event.

(126) # do mah-e   digar Zahra be Carl mi-guy-ad   ke mah-e
        two month-ᴇᴢ other Zahra to Carl ɪᴍᴘF-say.ᴘʀᴇs-3sɢ that month-ᴇᴢ
      qabl defa   kar**d**.
      before defense do.**ᴘᴀsᴛ**.ᴘᴇʀF-3sɢ
      'Two months from now, Zahra will tell Carl that she defended (*her thesis*) a month

      before.'

Given the data discussed above, I take past tense in Farsi to be an unshiftable (absolute) tense, which can only be interpreted relative to the speech situation.

2.2.2.2 Competition between past and present perfect

It is infelicitous to use simple past in the antecedent of Farsi conditionals to refer to a past event.

(127) *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 AXU.PRES.3SG
       '*If John danced yesterday, Mary danced too.*'

To refer to a past event in the antecedent of a conditional, Farsi uses either present perfect (128a) or subjunctive perfect (128b).

(128)   a. Agar John dirooz   **(mi)-raghs-ide ast**,   Mary ham
           if   John yesterday (IMPF)-dance-PP AXU.**PRES**.3SG, Mary too
           raghs-ide ast.
           dance-PP AXU.PRES.3SG
           '*If John danced yesterday, Mary danced too.*'

        b. Agar John dirooz   **raghs-ide bash-ad**,   Mary ham raghs-ide
           if   John yesterday dance-PP AXU.∅.3SG, Mary too   dance-PP
           ast.
           AXU.PRES.3SG
           '*If John danced yesterday, Mary danced too.*'

I do not attempt to account for why this happens, but this descriptive fact will be important in the discussion of Farsi conditionals in Chapter Three. Here, I want to demonstrate that infelicity of simple past in the antecedent of conditionals is not limited to Farsi. It seems to exist in languages that pattern together when it comes to the competition between past tense and present perfect.

It is infelicitous to use the simple past in the antecedent of conditionals to refer to a past event in languages like German (129a) and Dutch (130a). Instead, present

perfect has to be used in such contexts.

(129)   a.   # Wenn Hans auf der Party war, war die Party lustig / ist die Party
              If   John at   the party was, was the party fun   / is   the party
        lustig gewesen
        fun   been
        If john was at the party, the party was/has been fun.

        b.   Wenn Hans auf der Party gewesen ist, war die Party lustig / ist die
             If   John at   the party been   is, was die Party fun   / is the
        Party lustig gewesen
        party fun   been
        If john has been at the party, the party was/has been fun.

                                                                          German

(130)   a.   ?? Als Jan   op het feest was, is het feest leuk geweest / was het
              If   John at the party was, is the party fun   been   / was the
        feest leuk
        party fun
        If john was at the party, the party was/has been fun.

        b.   Als Jan   op het feest is geweest, is het feest leuk geweest / was het
             If John at the party is been,   is the party fun   been   / was the
        feest leuk
        party fun
        If john has been at the party, the party was/has been fun.

                                                                          Dutch

We have seen in (131a) and (55), repeated below in as (131), that present perfect

in German and Farsi can felicitously combine with 'specific' past time adverbials.

(131)   a.   Hans ist gestern   um zehn weggegangen.
             Hans is yesterday at   10   left
        Hans has left yesterday at 10.   (Musan 2001)

        b.   Ali dirooz   reside   ast.
             Ali yesterday arrive.PP AUX.3SG
        Ali has arrived yesterday.

Schaden (2009) argues that the differences observed among languages with

respect to the present perfect puzzle, is part of a bigger pattern of cross-linguistic

variation in the outcome of the competition between simple past and present perfect. He argues that simple past in German and French cannot be used in contexts where some *current relevance* of the event under consideration is required.

A context where the current relevance can be tracked is where an object resulting from a past event is under discussion at the moment of utterance. Schaden (2009) shows that while the English simple past can be felicitously used to describe an event that outputs the object while pointing at it, simple past in German cannot. Instead, present perfect has to be used in such contexts. This has been illustrated in (132).

(132) *The speaker is pointing to the picture painted by their daughter:*

    a. My daughter painted this.

    b. # Meine Tochter malte das.
          My daughter painted this

Schaden (2009) comments that (132b) can only be interpreted as *the thing represented in this picture has been painted at some time in the past by my daughter*, but not as *this is a picture that my daughter painted*. To convey the latter meaning in German, present perfect has to be used.

Farsi patterns with German. In the context described above, the simple past in Farsi is infelicitous, as shown in (133a), and present perfect should be used instead, as in (133b).

(133)   a. # doxtar-am in naghaši ro kešid.
            daughter-my this painting RA draw-PERF.PST.3SG
            My daughter painted this painting.

    b. doxtar-am in naghaši ro kešide ast
        daughter-my this painting RA draw.PP AUX.PRES.3SG
        My daughter has painted this painting.

Kratzer (1998a) makes a similar observation. She notes that simple past tense in English and German behave differently. The use of simple past in the question

in (134a) is acceptable out of the blue. The example in (134b) shows that simple past in German is infelicitous out of the blue. In such contexts, present perfect is used in German, as shown in (134c).

(134) a. Who built this Church? Borromini built this church.

　　　　b. *Wer baute diese Kirche? Borromini baute diese Kirche.
　　　　　　Who built this   church? Borromini built this   church.

　　　　c. Wer hat diese Kirche gebaut? Borromini hat diese Kirche gebaut.
　　　　　　Who has this   church built?   Borromini has this   church built.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　(Kratzer 1998a)

In Farsi, like German, sentences containing a past tense need a contextually salient past time to be felicitous. If a salient past time is not available, present perfect is used instead. This is shown in examples (135) and (136).

(135) *You are looking at mosques in Isfahan. Out of the blue, the following question comes up:*

　　　　a. # ki   in majesd ra saxt?
　　　　　　　who this mosque RA build.PERF.PST.3SG
　　　　　　　'Who built this mosque?'

　　　　b. ki   in majesd ra saxte   ast?
　　　　　　　who this mosque RA build.PP AUX.PRES.3SG
　　　　　　　'Who has built this mosque?'

(136) a. be hameye šekayat-i   ke #(**dirooz**) daryaft
　　　　　　to every   complaints-INDEF that **yesterday** received
　　　　　　šo-d   residegi mi-šav-∅-ad
　　　　　　becom-PERF.PST.3SG reviewed IMPF-become-PRES-3SG
　　　　　　*'Every complain that was received **yesterday** will be reviewed. '*

　　　　b. be hameye šekayat-i   ke daryaft šode   ast
　　　　　　to every   complaints-INDEF that received become.PP AUX.PRES.3SG
　　　　　　residegi mi-šav-∅-ad
　　　　　　reviewed IMPF-become-PRES-3SG
　　　　　　'Every complain that was received will be reviewed. '

Schaden (2009) describes the difference between languages that pattern with English (like Spanish) and languages that pattern with German (like French, Dutch and Farsi) as follows: In English-like languages, present perfect is not the only way to express current relevance. In German-like languages, however, present perfect is necessarily used to express current relevance.

English, Spanish:

French, German:

In sum, it seems that the infelicity of past tense in the antecedent of conditionals in certain languages is part of the cross-linguistic pattern of the competition between present perfect and past tense. I leave the question of why such infelicity arises to future study.

2.2.3 Zero tense

Following Kratzer (1998a); Arregui (2005), I propose that in addition to two deictic tenses (past and present), the inventory of tenses in Farsi has a zero tense, which is traditionally referred to as 'subjunctive'. Unlike deictic tenses, zero tenses does not add any temporal constraint on the value of the situation variable in the embedded aspectual phrase. Zero tenses are simply identity functions.

(137) $[\![\varnothing]\!]^g = \lambda P_{\langle s,t\rangle}. \ P$

Given that the shiftability of present tense in Farsi, there are embedded contexts where both zero tense and present tenses can describe the temporal relation between matrix and embedded events.

(138) a. dirooz   Ana fekr   mi-kard   ke Sara be mehmani
          yesterday Ana thought IMPF-do.PST that Sara to party
          be-ay-ad.
          IMPF-come.∅-3SG
          Yesterday, Ana thought that Sara would come to the party.

       b. dirooz   Ana fekr   mi-kard   ke Sara be mehmani
          yesterday Ana thought IMPF-do.PST that Sara to party
          mi-ay-∅-ad.
          IMPF-come-**PRES**-3SG
          Yesterday, Ana thought that Sara would come to the party.

In the next section, I will show that these two tenses differ in presuppositions they trigger. Following (Mari & Portner 2018), I take the zero tense in Farsi to presuppose that the truth of the proposition is not settled in the context. Present tense, on the other hand, trigger the presupposition that the context either entails the truth of the proposition or it entails that it is asserted in the context, which is similar to the presupposition (Farkas 2003; Schlenker 2005) assign to the indicative mood. In the next chapter, however, I show that this is in fact the presupposition of deictic tenses in Farsi, and not the mood.

2.3 Tense and aspect in Farsi conditionals

It has been observed that languages use their inventories of temporal morphology to mark semantics and pragmatic differences in conditionals. What makes Farsi interesting is that it uses seven out of nine logically possible combinations of tense (present, past, zero tense) and aspect (imperfectice, perfective, perfect) morphemes to distinguish between different kinds of conditionals.

These three types of conditionals have imperfective and perfect versions. Temporal specifications of the antecedent is determined in part by aspect in the antecedent. Imperfective antecedents are compatible with past (only in past marked conditionals), present and future situations. Perfect antecedents are compatible with past and future situations, but not with present situations. Perfective aspect only shows up in the antecedent of zero tense conditionals, and can only refer to future situations.

In the rest of this chapter, I give a brief description of Farsi conditionals. Properties of Farsi conditionals will be discussed in more details in the next two chapters.

2.3.1 Tense

The antecedents of the conditionals in (139) have perfect aspect, and they all describe a past situation. These conditionals, however, differ in the tense morphology of their antecedents, which determines their interpretation. Consequents of Farsi conditionals do not usually have an overt modal in them.[15]

(139) a. **Zero tense conditional**

Agar Oswald Kennedy ro na-košte **baš-ad**, kas-e
if   Oswald Kennedy RA NEG-kill-PP **AUX.∅.3SG**, person-EZ
digar-i   ou ro košte ast.
another-INDF him RA kill.PP AUX.PRES.3SG

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

(*hypothetical*)

---

[15]It is of course possible to have an overt modal in the consequent but it is not necessary.

(i) a. agar Ali mariz baš-ad/ ast,   mi-tavan-∅-ad   moraxxasi be-gir-ad
     if   Ali sick be.∅-3SG/ be.PRES-3SG IMPF-can-PRES-3SG leave   IMPF-take.∅-3SG
     Roughly means: *If Ali is sick, he can take a day off.*
   b. agar Ali mariz baš-ad/ ast,   bayad moraxxasi be-gir-ad
     if   Ali sick be.∅-3SG/ be.PRES-3SG should leave   IMPF-take.∅-3SG
     Roughly means: *If Ali is sick, he should take a day off.*

b. **Present tense conditional**

Agar Oswald Kennedy ro na-košte **ast**, kas-e
if Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.ᴘʀᴇs**.3sɢ, person-ᴇᴢ
digar-i ou ro košte ast.
another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ

'If Oswald didn't kill Kennedy, someone else did.'

(*factual*)

c. **Past tense conditional**

Agar Oswald Kennedy ro na-košte **bud**, kas-e
if Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.ᴘsᴛ**.3sɢ, person-ᴇᴢ
digar-i ou ro mi-košt.
another-ɪɴᴅꜰ him ʀᴀ ɪɴᴅ.ɪᴍᴘꜰ-kill.ᴘsᴛ.3sɢ

'If Oswald hadn't killed Kennedy, someone else would have.'

(*counterfactual*)

(139a) contains a zero tense (subjunctive), and has a hypothetical interpretation. That is, it can be used to talk about the consequence of a hypothetical situation in which Oswald didn't kill Kennedy (the antecedent might or might not be true in reality). The only difference between (139b) and (139a) is that the antecedent of (139b) is marked with present tense. Note that the consequent of both (139b) and (139a) is in present tense. The English translations for both of these conditionals are the same, but as the labels show, they have different interpretations in Farsi. (139b) can only have a factual interpretation. That is, it can only be used in contexts where in the antecedent proposition has been proposed to be true (usually by someone other than the speaker (Bhatt & Pancheva 2017; Iatridou 1991)). The dialogue in (140) provides a stereotypical example of factual conditionals.

(140)   a. My friend Joe, whom you haven't met, is very smart.

   b. Oh yeah? If he's so smart why isn't he rich?

(Bhatt & Pancheva 2017)

In Farsi, such conditionals can only be made with present tense in the antecedent.

(141)   *My friend Joe, whom you haven't met, is very smart.*

   Oh yeah?

   a. **Present tense conditional**

   agar enqadr bahuš **ast**,   čera puldar n-ist?
   if   so   smart be.**PRES**.3SG why rich   NEG-be.PRES.3SG

   If he's so smart why isn't he rich?

   b. **Zero tense conditional**

   #agar enqadr bahuš **baš-ad**,   čera puldar n-ist?
     if   so   smart be.∅-3SG why rich   NEG-be.PRES.3SG

   If he's so smart why isn't he rich?

Going back to our Oswald examples, the truth of the antecedent proposition is unsettled in the context below. It might or might not be the case that Oswald killed Kennedy. Here, only a zero tense conditional is felicitous.

(142)   *Context: The police holds a press conference, and announces that they are inves-*
        tigating the speculation that Oswald might not be the murderer, but nothing is
        certain. John and his friend are watching the press conference.
        John to his friend:

   a. Agar Oswald Kennedy ro na-košte   **#ast**/   **baš-ad**,
      if   Oswald Kennedy RA NEG-kill-PP **AUX.PRES**.3SG/ **AUX**.∅.3SG
      kas-e   digar-i   ou ro košte ast
      person-EZ another-INDF him RA kill.PP AUX.PRES.3SG
      'If Oswald didn't kill Kennedy, someone else did.'

When is a present tense conditional used? To see this, consider the following context.

(143)   *Context: Investigation is complete. The police holds a press conference, and an-*
        nounces that they can confirm that Oswald wasn't the murderer. John and his

friend are watching the press conference.

John to his friend:

    a. Agar Oswald Kennedy ro na-košte **ast**/   **baš-ad**,
       if   Oswald Kennedy RA NEG-kill-PP **AUX.PRES**.3SG/ **AUX.∅**.3SG
       kas-e   digar-i   ou ro košte ast
       person-EZ another-INDF him RA kill.PP AUX.PRES.3SG
       'If Oswald didn't kill Kennedy, someone else did.'

In the context given in (143), the antecedent proposition has been already asserted by the police. Here, both zero tense and present conditionals are felicitous. Why is that? Isn't the context settled with respect to the truth of the antecedent? Shouldn't we expect the zero tense conditional to be infelicitous?

Notice that the context doesn't specify whether the proposition has been accepted or rejected by the participants in discourse. The mere act of asserting a proposition doesn't settle the question about the truth of that proposition in the context. We disagree with each other, and reject many claims our interlocutors make. Context doesn't automatically change to entail a proposition that is asserted. It only entails propositions that are accepted by *all* participants in discourse. While context doesn't necessarily presuppose a proposition (p) after its being asserted, it does presupposes that *'p is asserted'*(Stalnaker 2014). All it takes for present tense conditionals to be felicitous is that context entails that the antecedent proposition is asserted. Zero tense conditionals are felicitous as long as the context doesn't presuppose the truth or falsity of the antecedent proposition, irrespective of whether it is asserted or not.

The example shows that in a context where the truth of the antecedent proposition is presupposed, the zero tense conditional is infelicitous. In such a context, only a present tense conditional can be used.

(144)   Agar do ta jang-e jahani   ettefagh   oftaade ast/
        if   two CL war-EZ worldwide occurrence fall.PP   AUX.PRES.3SG/

> #baš-ad, jang-e jahani-e sevvom ham mi-tavan-∅-ad
> AUX.∅-3SG war-EZ worldwide-EZ third also IMPF-can-PRES-3SG
> ettefagh be-oft-ad
> occurrence IMPF-fall-∅-3SG
> *If two world wars have happened, a third world war can also happen.*

Past antecedent conditionals, like (139c), have a counterfactual reading. They can only be used in contexts where the falsity of the antecedent proposition is either presupposed or asserted. The consequent of these conditionals is always in past tense. Like other conditionals in Farsi, there is usually no overt modal in the consequent.[16]

Past conditionals show a similar pattern of competition with zero tense conditionals as present (factual) conditionals. Consider again the context given in (142), repeated here in (145).

(145)   *Context: The police holds a press conference, and announces that they are investigating the speculation that Oswald might not be the murderer, but nothing is certain. John and his friend are watching the press conference.*

John to his friend:

a. **Past tense conditional**

> # Agar Oswald Kennedy ro na-košte **bud**, kas-e
> if Oswald Kennedy RA NEG-kill-**PP AUX.PST**.3SG, person-EZ

---

[16]It is possible to have an overt modal in the consequent. Note, however, that the presence of past tense is still necessary. If the modal itself has a past form, like *tavan*, it appears in past. If the modal lacks a past form, like *bayad*, it is the embedded verb that carries the past tense morphology.

(i)   a. **Past tense conditional**

> agar Ali mariz (mi)-bud, mi-tavan-est moraxxasi be-gir-ad
> if Ali sick IMPF-be.PST.3SG IMPF-can-PST.3SG leave IMPF-take.∅-3SG

Roughly means: *If Ali was sick, he could have taken a day off.*

b. **Zero tense conditional**

> agar Ali mariz (mi)-bud, bayad moraxxasi mi-gereft
> if Ali sick IMPF-be.PST.3SG should leave IMPF-take.PST-3SG

Roughly means: *If Ali was sick, he should have taken a day off.*

digar-i ou ro košte bud
another-INDF him RA kill.PP AUX.PST.3SG

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

b. **Zero tense conditional**

Agar Oswald Kennedy ro na-košte **baš-ad**, kas-e
if Oswald Kennedy RA NEG-kill-PP AUX.∅.3SG, person-EZ
digar-i ou ro košte ast
another-INDF him RA kill.PP AUX.PRES.3SG

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

Since the truth of the antecedent proposition is unsettled in the context, and its falsity has not been asserted either, only a zero tense antecedent is accepted. Now, let us consider the context in (146) where the falsity of the antecedent proposition is asserted, but it is not specified whether the claim has been accepted. As was the case with the competition between present tense and zero tense conditionals in (143), both past tense and zero tense conditionals are felicitous in such a context. The only difference is that here the disagreement with what has been asserted needs to be marked, hence the use of '*but*'.

(146) *Context: Investigation is complete. The police announces that they can confirm that Oswald was in fact the murderer.*

  a. **Past tense conditional**

Agar Oswald Kennedy ro na-košte **bud**, kas-e
if Oswald Kennedy RA NEG-kill-PP AUX.PST.3SG, person-EZ
digar-i ou ro košte bud
another-INDF him RA kill.**PP AUX.PST**.3SG

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

  b. **Zero tense conditional**

Amma agar Oswald Kennedy ro na-košte **baš-ad**, kas-e
but if Oswald Kennedy RA NEG-kill-PP AUX.∅.3SG, person-EZ
digar-i ou ro košte ast
another-INDF him RA kill.PP AUX.PRES.3SG

'But if Oswald didn't kill Kennedy, someone else did.'

Finally, in contexts where it is settled that the antecedent is false, the zero tense conditional is infelicitous.

a. **Past tense conditional**

Agar do ta jang-e jahani ettefagh na-oftaade bud,
if two CL war-EZ worldwide occurrence NEG-fall.**PP AUX.PST**.3SG
emkan na-dašt ke jang-e jahani-e sevvom
possiblity NEG-have.PST.3SG that war-EZ worldwide-EZ third
ettefagh be-oft-ad
occurrence IMPF-fall-∅-3SG

If two world wars hadn't happened, there wouldn't have been the possibility of

a third world war.

b. **Zero tense conditional**

Agar do ta jang-e jahani ettefagh na-oftaade baš-ad,
  if two CL war-EZ worldwide occurrence NEG-fall.**PP AUX**.∅-3SG
emkan na-dar-∅-ad ke jang-e jahani-e sevvom
possiblity NEG-have-PRES-3SG that war-EZ worldwide-EZ third
ettefagh be-oft-ad
occurrence IMPF-fall-∅-3SG

If two world wars haven't happened, there won't be a possibility of a third world

war.

To sum up, I have shown that conditionals whose antecedents lack deictic tense (i.e. subjunctive) are used when the context doesn't presuppose truth or falsity of the antecedent. In contrast, conditionals whose antecedents carry a deictic tense (present, past) are used when the context presupposes either the truth/ falsity of the antecedent or the assertion of its truth/ falsity.

One might argue that it is the mood choice in the antecedent that distinguishes subjunctive conditionals from past and present conditionals which have an indica-tive mood. Given that the mood distinction in Farsi is really about the presence or

absence of deictic tense, at this point this is just a choice of terminology. In the next chapter, however, I'll argue that the cross-linguistic variations are better explained in terms of properties of tense in the antecedent.

The role of tense in Farsi conditionals will be explored in details in Chapter Three and Four.

2.3.2 Aspect

Aspect has a uniform meaning contribution in the antecedent of the tree conditional types in Farsi. In this section, I will discuss one such contribution that is easily detectable across conditional constructions in Farsi. That is, aspect restricts the temporal orientation of the antecedent. In what follows, I will provide data showing that antecedents that contain perfective aspect (both perfective and perfect that embeds perfective) cannot describe situations that are ongoing at the utterance time. Moreover, it will be shown that only perfect aspect can describe past situations in the antecedent of all conditional types. Imperfective aspect can only do so when the antecedent carries past tense.

There are seven conditional constructions in Farsi that differ in tense and aspect morphology in their antecedent. Perfect and imperfective aspects can combine with the three available tenses in Farsi. Perfective aspect only appears in the antecedent of zero tense conditionals. The temporal orientations of antecedents of these conditionals are represented in the table below.

		TENSE		
		PRESENT	**PAST**	∅
Imperfective	**Temporal orientation**	present/future	present/*past*/future	present/future
Perfect	**Temporal orientation**	past/future	past/future	past/future
Perfective	**Temporal orientation**			future

Table 2.4: Temporal orientation of antecedents

As the table shows, there is only one type of conditionals whose antecedent carries perfective aspect. This conditional patterns with other zero tense conditionals in the presuppositions of the contexts in which they are felicitous. As mentioned earlier, zero tense conditionals are felicitous in contexts where the truth of the antecedent proposition is an open issue. This is illustrated with a fair coin flipping scenario given below, in which zero tense conditionals (both imperfective and perfective) are felicitous, but conditionals with present and past in their antecedents are infelicitous.

(147)   a. **Zero tense (im)perfective conditional**

agar sekke šir   umad/   be-ay-ad,   tim-e   abi
if   coin   heads come.∅.ᴘᴇʀꜰ.3ꜱɢ/ ɪᴍᴘꜰ-come.∅.3ꜱɢ team-ᴇᴢ blue
bazi   ra šoru mi-kon-∅-ad
game ʀᴀ begin ɪᴍᴘꜰ-do-ᴘʀᴇꜱ-3ꜱɢ

If the coin comes up heads, the blue team will start the game.

b. **Present tense imperfective conditional**

#agar sekke šir   mi-ay-∅-ad,   tim-e   abi bazi ra šoru
 if   coin   heads ɪᴍᴘꜰ-come-ᴘʀᴇꜱ-3ꜱɢ team-ᴇᴢ blue game ʀᴀ begin
mi-kon-∅-ad
ɪᴍᴘꜰ-do-ᴘʀᴇꜱ-3ꜱɢ

If the coin is coming up heads, the blue team will start the game.

c. **Past tense imperfective conditional**

#agar sekke šir   mi-amad,   tim-e   abi bazi   ra šoru
 if   coin   heads ɪᴍᴘꜰ-come-ᴘꜱᴛ.3ꜱɢ team-ᴇᴢ blue game ʀᴀ begin
mi-kard
ɪᴍᴘꜰ-do-ᴘꜱᴛ.3ꜱɢ

If the coin was coming up heads, the blue team would start the game.

The antecedent of a perfective conditional can only describe a future situation, even when the antecedent contains a stative predicate. The example in (109a),

repeated here as (148), illustrates this fact. Perfective conditionals describe a hypothetical future situation where Ali is tired. The conditional is infelicitous with the temporal adverb '*now*'.

(148) **Zero tense perfective conditionals**

agar Ali (#alan) xaste bud,   mozahem-sš
if   Ali now   tired be.PERF.∅.3SG, bother-him
ne-mi-š-∅-am
NEG-IMPF-become-PRES-1SG
If (it turns out that) Ali is tired, I will not bother him.

The choice of aspect in the antecedent results in semantic and pragmatic differences between imperfective and perfective zero tense conditionals. Conditional imperatives provide a clear case of contrast between these conditionals. As shown in (149), conditional imperatives in Farsi are ungrammatical with imperfective zero tense antecedents. Deriving the differences between perfective and imperfective zero tense conditionals in Farsi is outside the scope of this dissertation, and I will not discuss perfective zero tense conditionals further in this dissertation.

(149) a. *Agar farda   **be-bin-i**-sh,   in-o   beh-esh be-gu
       If   tomorrow IMPF-see.∅-2SG-him this-RA to-him IMPER-say
       If you see him tomorrow, tell this to him.

  b. Agar farda   **did-i**-sh,   in-o   beh-esh be-gu
     If   tomorrow see.PERF.∅-2SG-him this-RA to-him IMPER-say
     If you see him tomorrow, tell this to him.

All three perfect conditionals in Farsi (present, past, zero tense) are incompatible with present oriented interpretations. That is, they cannot describe situations that are ongoing at the time of utterance.

(150) **Zero tense conditionals (hypothetical)**

  a. *agar Ava alan javaab ro daneste baš-ad,   barande-ye mosabeghe
     if   Ava now answer RA know-PP AUX.∅-3SG winner-EZ   competition
     mi-šav-∅-ad.
     IMPF-become-PRES-3SG

'*If Ava knows the answer now, she will win the competition.'*

Present oriented stative

b. #agar alaan dars   xun-de   baši,   man radio ro xamush
   if   now lesson study-**PP** **AUX-PRES**-2**SG** I   radio **RA** off
   mi-kon-∅-am
   IMPF-do.**PST**-1**SG**
   'If you have studied now, I will turn off the radio.'

Present oriented eventive

(151) **Present tense conditionals (factual)**

a. *agar Ava alan javaab ro daneste ast,   barande-ye
   if   Ava now answer **RA** know-**PP** **AUX.PRESENT**-3**SG** winner-**EZ**
   mosabeghe mi-šav-∅-ad.
   competition **IMPF**-become-**PRES**-3**SG**
   'If Ava knows the answer now, she will win the competition.'

Present oriented stative

b. #agar alaan dars   xun-de   ∅-i,   man radio ro xamush
   if   now lesson study-**PP** **AUX-PRES**-2**SG** I   radio **RA** off
   mi-kon-∅-am
   IMPF-do.**PST**-1**SG**
   'If you have studied now, I will turn off the radio.'

Present oriented eventive

(152) **Past tense conditionals (counterfactual)**

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

Present oriented stative

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

Present oriented eventive

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Conditionals with a perfect antecedent describe past and future situations (although they need a future temporal adverb (*by ...*) to be able to do so). Aspect in the antecedent of the zero tense conditional in (153a) is perfect, and the conditional hypothesizes about a past situation where Ali went to the party. Perfect aspect in the antecedent of zero tense conditionals can also describe a future situation provided that there is future temporal adverb in the antecedent, as in (153b).

(153) **Perfect zero tense conditionals (hypothetical)**

a. Agar Ali dirooz   be mehmooni rafte baš-ad,   xoš gozašte
    If   Ali yesterday to party   go-PP AUX.∅-3SG fun pass-PP
    ast
    AUX.PRES.3SG
    If Ali has gone to the party yesterday, it was fun.

Past oriented

b. Agar Ali ta farda   reside   baš-ad,   be mehmooni
    If   Ali by tomorrow arrive-PP AUX.∅-3SG to party
    mi-rav-∅-ad
    IMP-go-PRES.3SG
    If Ali has arrived by tomorrow, he'll go to the party

Future oriented

Similarly, the antecedent of the present tense conditional in (154a) has perfect aspect, and the conditional describes a past situation where Ali went to the party. Again, factual conditionals are only felicitous in contexts where the proposition in the antecedent has already been asserted. This is why it is hard to construct a natural context where the a future oriented present perfect conditional is felicitous, although it is in principle possible for perfect factual conditionals to describe a future situation, as in (154b).

(154) **Perfect present tense conditionals (factual)**

a. Agar Ali be mehmooni rafte ast,   xoš gozašte ast
    If   Ali to party   go-PP AUX.PRES-3SG fun pass-PP AUX.PRES.3SG

If Ali has gone to the part, it was fun.

<div align="right">*Past oriented*</div>

    b. *Sara: I've read that experts believe Covid will be over by summer.*

    John: good to know, ...

Agar Covid ta tabestun tamum šode   ast   bilit-ha-ye
If   Covid by summer finish   bcome.PP AUX.PRES-3SG ticket-PL-EZ
parvaz gerun   mi-šav-∅-ad
flight   expensive IMPF-become-PRES.3SG

If Covid has been over by summer, flight tickets will get expensive.

<div align="right">*Future oriented*</div>

Past tense conditionals whose antecedent carry perfect aspect can also refer to past and future situations. For instance, (155) can describe a contrary-to-fact past or (unrealizable) future situation.

(155)   **Perfect Past tense conditionals (counterfactual)**

agar John dirooz/farda   rafte bud   italia, Sara xošhal
if   John yesterday/tomorrow go-PP AUX-PST.3SG Italy   Sara happy
mi-šod
IMPF-become-PST.3SG

If John had gone to Italy yesterday/tomorrow, Sara would have been happy.

<div align="right">*Past/future oriented*</div>

All three imperfective conditionals (present, past, zero tense) can refer to present (stative predicates) or future (stative and eventive predicates) situations. The eventive predicate in the antecedent of the imperfective zero tense conditional in (156a) refers to a hypothetical future situation where Ali goes to the party. When there is a stative verb in the antecedent, it can refer to both present and future situations, as in (156b).

(156)   **Imperfective zero tense conditionals (hypothetical)**

a. Agar Ali farda   be mehmooni be-rav-ad,   xoš
   If   Ali tomorrow to party   IMPF-go.∅-3SG, fun
   mi-gozar-∅-ad
   IMPF-pass-PRES-3SG
   If Ali goes to the party tomorrow it will be fun.

Future oriented eventive

b. Agar Ali alan/farda   xune bašad,   cheraq rošan ast.
   If   Ali now/tomorrow home be.∅-3SG, lamp   on   be.PRES-3SG
   If Ali is home now/tomorrow the light is/will be on.

Present/future oriented stative

Present tense conditionals show the same pattern as zero tense conditionals. The antecedent of the imperfective zero tense conditional on (157a) refers to a future situation where Ali goes to the party. Being a factual conditional, (157a) is only felicitous when Ali's plan to go to the party has been already uttered in the context. The stative verb in the antecedent can refer to both present and future situations, as shown in (158b).

(157)   **Imperfective present tense conditionals (factual)**

a. Agar Ali be mehmooni mi-rav-∅-ad,   xoš mi-gozar-∅-ad
   If   Ali to party   IMPF-go.PRES-3SG fun IMPF-pass-PRES-3SG
   If Ali goes to the part, it will be fun.

Future oriented eventive

b. Agar Ali alan/farda   xune ast,   cheraq rošan ast.
   If   Ali now/tomorrow home be.PRES-3SG lamp   on   be.PRES-3SG
   If Ali is home now/tomorrow, the light is/will be on.

Present/future oriented stative

Like imperfective present and zero tense conditionals, the antecedent of an imperfective past conditional can refer to present or future situations depending on lexical aspect of the predicate. In addition to present and future orientated interpretations, imperfective past conditionals can also describe a past situation (irrespective of predicate type), as shown in (158).

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(158)   **Imperfective past conditionals (counterfactual)**

    a. Agar Ali dirooz/farda   be mehmooni mi-raft,   xoš
       If   Ali yesterday/tomorrow to party   IMPF-go.PST-3SG fun
       mi-gozašt
       IMPF-pass-PST-3SG
       If Ali had gone to the party yesterday/tomorrow, it would have been fun.

                                                 Past/future oriented eventive

    b. Agar Ali dirooz/alan/farda   xune bud,   cheraq rošan
       If   Ali yesterday/now/tomorrow home be.PST-3SG lamp   on
       bud.
       be.PST-3SG
       If Ali had been home yesterday/now/tomorrow, the light would have been on.

                                             Past/present/future oriented stative

The temporal orientation of antecedents in past conditionals is more complicated, and I will discuss the full pattern of past conditionals in the next chapters. Note, however, that present and zero tense imperfective conditionals (irrespective of the type of the predicate in their antecedent) cannot describe past situations. This is shown in (159) and (160).

(159)   **Imperfective zero tense conditionals (hypothetical)**

    a. *Agar Ali dirooz   be mehmooni be-rav-ad,   xoš gozašte
       If   Ali yesterday to party   IMPF-go.∅-3SG, fun pass-PP
       ast
       AUX.PRES.3SG
       Intended: *If Ali went to the party yesterday, it was fun.*

                                                 *Past oriented eventive

    b. *Agar Ali dirooz   xune bašad, cheraq rošan bud.
       If   Ali yesterday home be.∅-3SG, lamp   on   be.PRES-3SG
       Intended *If Ali was home yesterday, the light was on.*

                                                 *Past oriented stative

(160)   **Imperfective present tense condtionals (factual)**

a. *Agar Ali dirooz   be mehmooni mi-rav-∅-ad,   xoš gozašte
   If   Ali yesterday to party   IMPF-go.PRES-3SG, fun pass-PP
   ast
   AUX.PRES.3SG
   Intended: *If Ali went to the party yesterday, it was fun.*

   Past oriented eventive

b. *Agar Ali dirooz   xune ast,   cheraq rošan bud.
   If   Ali yesterday home be.PRES-3SG, lamp   on   be.PRES-3SG
   Intended: *If Ali is home yesterday, the light was on.*

   Past oriented stative

2.4 Summary

In this chapter, we reviewed essential background on properties of tense, aspect
and mood in Farsi. In the next chapter I provide more detailed description of Farsi
conditionals, focusing on the distribution of tense and aspect in the antecedent of
different types of conditionals. I also discuss the problems the pattern of Farsi
conditionals pose for existing theories of X-marking.

CHAPTER 3

Tense in Conditionals

In the last chapter we have seen that there are seven types of conditionals in Farsi differing in specifications of tense and aspect in their antecedent. This chapter focuses on the role of tense in determining semantic and pragmatic properties of conditionals.

I begin this chapter with an investigation of semantics and pragmatics of conditional constructions in Farsi. Focusing on properties of conditional constructions associated with the expression of counterfactuality, I present the main empirical facts this dissertation aims to explain. In addition to a descriptive presentation, this chapter provides the theoretical background for the study of conditionals that express counterfactuality. As I will show, the pattern of Farsi conditionals poses new challenges for existing theories.

3.1 Types of conditionals

I start this section with giving an overview of various types of conditionals in Farsi and English. I then turn to a detailed discussion about properties of conditional constructions associated with the expression of counterfactuality in the two languages.

3.1.1 O-marked vs. X-marked conditionals

The linguistic and philosophical research distinguishes between two main types of conditionals: (i) *indicative conditionals* convey that the truth of the antecedent is an open issue; (ii) *counterfactual or subjunctive conditional* convey that the antecedent is false. These two types of conditionals are exemplified by a modified version of the famous counterfactual sentence from Lewis (1973) and its indicative counterpart in (161b) and (161a), respectively.

(161)   a. If the (newborn) kangaroo **has** no tail, it will topple over.

(*indicative*/**O-marked**)

   b. If the newborn kangaroo **had** no tail, it would topple over.

(*subjunctive*/*counterfactual*/**X-marked**)

The labels *indicative*, *subjunctive* and *counterfactual* are misleading. von Fintel & Iatridou (2020) suggest a different terminology. They refer to the second group, which cross-linguistically carry some *extra* morphology, as *X-marked conditionals*. They call the first group, in which the extra morphology is absent, *O-marked conditionals*.

(162)   "Since neither the term 'counterfactual conditional' nor 'subjunctive conditional' will do, we propose that we need new terminology, which will have the advantage of not suggesting (right or wrong) associations. We propose to use the term 'O-marked conditional' (where 'O' can stand for *open*, *ordinary*, or whatever other mnemonic the reader prefers) for (1a) (exemplified here in (161a) and (163a)). We propose to use the term 'X-marked conditional' (where 'X' can stand for *eXtra*, or whatever other mnemonic the reader prefers) for (1b)... (exemplified here in (161b) and (163b))"

(von Fintel & Iatridou 2020)

In addition to the present/future oriented forms, given in (161), the two kinds of conditionals also have a past oriented form. The distinction between past oriented O-marked and X-marked conditionals is illustrated in the famous example by Adams (1970), given in (163).

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

<div align="right">(*O-marked*)</div>

        b. If Oswald **hadn't killed** Kennedy, someone else would have.

<div align="right">(*X-marked*)</div>

I refer to the X-marked conditionals in (161b) and (163b) as *the simple past* and *the pluperfect* X-marked conditionals, respectively. Simple past X-marked conditionals refer to present or future situations, and pluperfect X-marked conditionals refer to past and future situations.

Across many languages, the grammatical difference between the O-marked and X-marked conditionals is reflected in the temporal morphology of their antecedent. Many unrelated languages use *past* tense morphology in the antecedent of X-marked conditionals (Iatridou 2000), as in (161). The meaning contribution of past tense morphology in the antecedent of X-marked conditionals is not to specify the temporal orientation of the antecedent. The temporal orientation of antecedents of X-marked conditionals is the same as the temporal orientation of the corresponding O-marked antecedent (without the X-marker past). The corresponding O-marked antecedent of simple past X-marked conditionals would be a sentence with a bare form of the verb, which can have either present or future orientation. The corresponding O-marked antecedent of pluperfect X-marked conditionals still carries past tense morphology, and thus it is evaluated in the past. O-marking is characterized by the absence of X-marking. On grammatical grounds, *antecedents* of O-marked conditionals look exactly like those of X-marked conditionals, except for lacking the additional X-marking morphology.

Let us now look at the morphological make-up of conditionals in Farsi. Like English and many other languages, the antecedent of X-marked conditionals in Farsi appears with past tense morphology. In addition to a past morpheme, the verb in the antecedent of X-marked conditionals in Farsi carries the tensed (a.k.a., indicative) form of the imperfective prefix *mi-*, as shown in (164). I will call this structure *imperfective X-marked*. Although it's been argued that the antecedent of English X-marked conditionals is also imperfective (Iatridou 2000), I will only use the term '*imperfective X-marked*' for Farsi in which an overt imperfective morpheme appears together with the past morpheme.

(164) **Present/future oriented imperfective X-marked**

Context: The rule of the game is that whoever gather 10 points faster wins. Ava only needs one more point to win. A new question is asked, which is about geography. Zahra knows that Ava cannot possibly know the answer as she's very bad at geography.

Zahra: It's a shame that Ava doesn't know anything about geography.

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

We have said that O-marked conditionals are characterized by not being X-marked. As discussed with examples (139) in Section 2.3.1 of Chapter Two, there are two conditionals in Farsi that are not X-marked, and thus we can refer to both as *O-marked*. These two conditionals differ in properties of tense in their antecedents: zero tense vs. present tense. Present/future oriented zero tense *O-marked* conditionals carry the tenseless (a.k.a., subjunctive) variant of imperfective aspect (*be-*) in their antecedent, as shown in (165). I will refer to zero tense O-marked conditionals as *hypothetical conditionals*, since the truth of their antecedents is an open

issue (these are conditionals that are traditionally called *indicative conditionals*).

(165) **Present/future oriented imperfective zero tense O-marked**

Context: The rule of the game is that whoever gather 10 points faster wins. Ava only needs one more point to win.

agar Ava javaab ro be-dan-ad,   barande-ye mosabeghe
if   Ava answer RA IMPF-know-∅-3SG winner-EZ   competition
mi-šav-∅-ad.
IMPF-become.**PRES**-3SG

'*If Ava knows the answer, she will win the competition.*'

The present/future oriented present tense *O-marked* conditionals carry the present imperfective form of the verb (tensed variant of the imperfective marker (mi-) and a null present morpheme) in their antecedent, as shown in (166).

(166) **Present/future oriented imperfective present tense O-marked**

Context: The rule of the game is that whoever gather 10 points faster wins. Ava only needs one more point to win. A new question is asked, which is about literature. Zahra knows that Ava knows the answer to this question as they talked about the same topic the day before.

Zahra : Ava knows the answer to this question. We were talking about the same thing yesterday.

Kosar: Oh, that's perfect then...

agar Ava javaab ro mi-dan-∅-ad,   barande-ye mosabeghe
if   Ava answer RA IMPF-know-**PRES**-3SG winner-EZ   competition
mi-šav-∅-ad.
IMPF-become.**PRES**-3SG

'*If Ava knows the answer, she will win the competition.*'

Present tense O-marked conditionals are interpreted as *factual*, as the truth of their antecedents is either settled or already asserted in the context. We have seen a stereotypical example of factual conditionals in in (140), repeated here as (167).

(167)   a. My friend Joe, whom you haven't met, is very smart.

        b. Oh yeah? If he's so smart why isn't he rich?

<div align="right">(Bhatt & Pancheva 2017)</div>

As I have shown in the previous chapter, such conditionals in Farsi can only be made with present tense in the antecedent. This was illustrated with the contrast in (141), repeated here as (168).

(168)   *My friend Joe, whom you haven't met, is very smart.*

      Oh yeah?

      a. **Present tense O-marked**

        agar enqadr bahuš **ast**,   čera puldar n-ist?
        if   so   smart be.**PRES**.3SG why rich   NEG-be.PRES.3SG

        If he's so smart why isn't he rich?

      b. **Zero tense O-marked**

        #agar enqadr bahuš **baš-ad**, čera puldar n-ist?
         if   so   smart be.∅-3SG why rich   NEG-be.PRES.3SG

        If he's so smart why isn't he rich?

Factual O-marked conditionals and X-marked conditionals pattern together in requiring the truth or falsity of their antecedent to be somehow settled. The infelicity of both factual O-marked conditional (169a) and X-marked conditional (169b) in a fair coin-tossing scenario illustrates this. Since the future event that the antecedent refers to is not plannable, only a zero tense hypothetical conditional (169c) can be used in such a context.

(169)   a. **Future oriented imperfective present tense O-marked**

        # agar sekke šir   mi-y-∅-ad,   team-e abi bazi ra šoru
         if   coin head IMPF-come-**PRES**-3SG, team-EZ blue game RA begin
        mi-kon-∅-ad
        IMPF-do-PRES-3SG

#If the coin will come up head, the blue will start the game.

b. **Future oriented imperfective X-marked**

\# agar sekke šir   mi-am-ad,   team-e abi bazi ra šoru
    if   coin   head ɪᴍᴘꜰ-come-**ᴘꜱᴛ**-3ꜱɢ, team-ᴇᴢ blue game ʀᴀ begin
mi-kard
ɪᴍᴘꜰ-do.ᴘꜱᴛ.3ꜱɢ

If the coin had come up head, the blue would have started the game.

c. **Future oriented imperfective zero tense O-marked**

agar sekke šir   be-y-ad,   team-e abi bazi ra šoru
if   coin   head ɪᴍᴘꜰ-come-∅-3ꜱɢ, team-ᴇᴢ blue game ʀᴀ begin
mi-kon-∅-ad
ɪᴍᴘꜰ-do-ᴘʀᴇꜱ-3ꜱɢ

If the coin comes up head, the blue will start the game.

As the English translations for (165) and (166) show, O-marked conditionals in English are ambiguous between hypothetical and factual interpretations. However, their factual interpretation is usually ignored in the discussion of the dichotomy between O-marked and X-marked conditionals. Take this quote from Bennett (2003), for instance.

(170)   *'Counterfactual' is not matched by a corresponding label for the other type of conditional, which nobody has called 'factual' or 'profactual' or the like (*Bennett *2003)*[1]

As we have seen in the last chapter with examples (139), repeated here in (171), past oriented forms of X-marked and O-marked conditionals (hypothetical and factual) are made via perfect aspect. It is tense that distinguishes the three types

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[1]It should be, however, noted that Goodman (1947) alludes to the relation between counterfactuals and factual conditionals, but it is ignored in the rest of the literature on X-marked conditionals.

"In one sense the name 'problem of counterfactuals' is misleading, because the problem is independent of the form in which a given statement happens to be expressed. The problem of counterfactuals is equally a problem of factual conditionals, for any counterfactual can be transposed into a conditional with a true antecedent and consequent".(Goodman 1947)

of conditionals. Past oriented X-marked conditionals are made via pluperfect as shown in (171a). The antecedent of past oriented hypothetical conditionals appears in zero tense perfect, as shown in (171b). Lastly, the antecedent of past oriented factual conditionals appears in the present perfect, as shown in (171c).

(171) a. **past oriented pluperfect X-marked**

Agar Oswald Kennedy ro na-košte   **bud**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP AUX.PST.3SG, person-EZ
digar-i   ou ro mi-košt.
another-INDF him RA IMPF-kill.PST.3SG

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

  b. **Past oriented perfect zero tense O-marked**

Agar Oswald Kennedy ro na-košte   **baš-ad**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP AUX.∅.3SG, person-EZ
digar-i   ou ro košte ast.
another-INDF him RA kill.PP AUX.PRES.3SG

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

  c. **Past oriented perfect present tense O-marked**

Agar Oswald Kennedy ro na-košte   **ast**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP AUX.PRES.3SG, person-EZ
digar-i   ou ro košte ast.
another-INDF him RA kill.PP AUX.PRES.3SG

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

I have discussed felicity conditions for each of these conditionals in length in Chapter Two. The upshot of the discussion was that zero tense O-marked conditionals stand apart from X-marked and factual O-marked conditionals in requiring their antecedent proposition to be an open issue. That is, the truth of their antecedent is not settled in the context. Factual O-marked conditionals and X-marked conditionals require the truth or falsity of their antecedents to be (or proposed to

be) settled in the context. To refresh our memory, let us look at the contexts provided in the last chapter, which illustrate the contrast between these conditionals are illustrated. In the context given in (172), repeated from (142) and (145), in which the truth of the antecedent proposition is unsettled and there is no pending proposal about it either, only a zero tense conditional is felicitous.

(172)   *Context: The police holds a press conference, and announces that they are investigating the speculation that Oswald might not be the murderer, but nothing is certain. John and his friend are watching the press conference.*
John to his friend:

a. **Past oriented perfect zero tense O-marked**

Agar Oswald Kennedy ro na-košte   **baš-ad**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP **AUX.∅.3SG**, person-EZ
digar-i   ou   ro košte ast.
another-INDF him RA kill.PP AUX.PRES.3SG

'If Oswald didn't kill Kennedy, someone else did.'

b. **Past oriented pluperfect X-marked**

#Agar Oswald Kennedy ro na-košte   **bud**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP **AUX.PST**.3SG, person-EZ
digar-i   ou   ro mi-košt.
another-INDF him RA IMPF-kill.PST.3SG

'If Oswald hadn't killed Kennedy, someone else would have.'

c. **Past oriented perfect present tense O-marked**

#Agar Oswald Kennedy ro na-košte   **ast**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP **AUX.PRES**.3SG, person-EZ
digar-i   ou   ro košte ast.
another-INDF him RA kill.PP AUX.PRES.3SG

'If Oswald didn't kill Kennedy, someone else did.'

In contexts where the truth of antecedent propositions are proposed to be settled (that is the proposition has been asserted in the context but it still needs to be

accepted by other participants in discourse), both zero tense and factual O-marked conditionals are felicitous and true. The zero tense conditional implies that despite police's statement the truth of the antecedent is still an open issue. This was shown in the last chapter with the example (143), repeated here as (173).

(173) *Context: The investigation is complete. The police holds a press conference, and announces that they can confirm that Oswald wasn't the murderer. John and his friend are watching the press conference.*

John to his friend:

    a. **Past oriented perfect present tense O-marked**

    Agar Oswald Kennedy ro na-košte   **ast,**   kas-e
    if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-**ᴘᴘ ᴀᴜx.ᴘʀᴇs**.3sɢ, person-ᴇᴢ
    digar-i   ou ro košte ast.
    another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ

    'If Oswald didn't kill Kennedy, someone else did.'

    b. **Past oriented perfect zero tense O-marked**

    Agar Oswald Kennedy ro na-košte   **baš-ad,**   kas-e
    if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-**ᴘᴘ ᴀᴜx.∅**.3sɢ, person-ᴇᴢ
    digar-i   ou ro košte ast.
    another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ

    'If Oswald didn't kill Kennedy, someone else did.'

Similarly, in contexts where the falsity of antecedent propositions are proposed to be settled, both zero tense O-marked and X-marked conditionals are felicitous, but only O-marked conditional is true. This was shown in the last chapter with the example (146), repeated here as (174).

(174) *Context: The investigation is complete. The police holds a press conference, and announces that they can confirm that Oswald was in fact the murderer. John and his friend are watching the press conference.*

John to his friend:

a. **Past oriented pluperfect X-marked**

Agar Oswald Kennedy ro na-košte **bud**,   kas-e
if   Oswald Kennedy RA NEG-kill-PP AUX.PST.3SG, person-EZ
digar-i   ou ro košte bud
another-INDF him RA kill.PP AUX.PST.3SG

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

b. **Past oriented perfect zero tense O-marked**

Amma agar Oswald Kennedy ro na-košte **baš-ad**,   kas-e
but   if   Oswald Kennedy RA NEG-kill-PP AUX.∅.3SG, person-EZ
digar-i   ou ro košte ast
another-INDF him RA kill.PP AUX.PRES.3SG

'*But if Oswald didn't kill Kennedy, someone else did.*'

In contexts where the antecedent propositions is settled (that is, its truth or falsity is among the shared presuppositions of discourse participants), factual O-marked conditionals have to be used. Similarly, only X-marked conditionals can be used in contexts where the falsity of the antecedent is settled. Zero tense O-marked conditionals are infelicitous in both of these contexts. This was illustrated in the last chapter with example (144) and (146a), repeated here as (175) and (176).

(175) a. **Past oriented perfect present tense O-marked**

Agar do ta jang-e jahani   ettefagh   oftaade ast,
if   two CL war-EZ worldwide occurrence fall.PP   AUX.PRES.3SG
jang-e jahani-e   sevvom ham mi-tavan-∅-ad   ettefagh
war-EZ worldwide-EZ third   also IMPF-can-PRES-3SG occurrence
be-oft-ad
IMPF-fall-∅-3SG

If two world wars have happened, a third world war can also happen.

b. **Past oriented perfect zero tense O-marked**

#Agar do ta jang-e jahani   ettefagh   oftaade baš-ad,   jang-e
if   two CL war-EZ worldwide occurrence fall.PP   AUX.∅-3SG war-EZ
jahani-e   sevvom ham mi-tavan-∅-ad   ettefagh
worldwide-EZ third   also IMPF-can-PRES-3SG occurrence
be-oft-ad
IMPF-fall-∅-3SG

If two world wars have happened, a third world war can also happen.

(176) a. **Past oriented pluperfect X-marked**

Agar do ta jang-e jahani   ettefagh   na-oftaade bud,
if   two CL war-EZ worldwide occurrence NEG-fall.PP **AUX.PST**.3SG,
emkan   na-dašt   ke jang-e jahani-e   sevvom
possiblity NEG-have.PST.3SG that war-EZ worldwide-EZ third
ettefagh   be-oft-ad
occurrence IMPF-fall-∅-3SG

If two world wars hadn't happened, there wouldn't have been the possibility of

a third world war.

  b. **Past oriented perfect zero tense O-marked**

Agar do ta jang-e jahani   ettefagh   na-oftaade baš-ad,
 if   two CL war-EZ worldwide occurrence NEG-fall.PP **AUX.**∅-3SG
emkan   na-dar-∅-ad   ke jang-e jahani-e   sevvom
possiblity NEG-have-PRES-3SG that war-EZ worldwide-EZ third
ettefagh   be-oft-ad
occurrence IMPF-fall-∅-3SG

If two world wars haven't happened, there won't be a possibility of a third world

war.

The table below summarizes facts about the antecedents of Farsi condition-
als. As we have seen, tense in the antecedent of Farsi conditionals determines
the interpretation of the whole conditional by marking the relationship between
the antecedent proposition and presuppositions held in the context. Conditionals
whose antecedents are marked with deictic tense (indicative mood) have to be used
in contexts in which their truth (present tense) or falsity (past tense) is settled
or will be settled after an already uttered proposition is accepted by participants
in discourse. Present and past tense conditionals are interpreted as factual and
counterfactual conditionals, respectively. Zero tense (subjunctive mood) condi-
tionals whose antecedent lacks semantic specification for tense, are used when the
proposition is not settled in the context. The felicity of zero tense conditionals

crucially is not sensitive to unnegotiated proposals in the common ground. Zero tense conditionals are interpreted as hypothetical conditionals. This is shown in the first and second rows of the table below, where Cs represents the Stalnakarian context set (the set of possible worlds in the intersection of commonly accepted propositions in Common Ground). The symbol $C_{\mathscr{F}}$ represents the context set adjusted to entail a given pending proposal (referred to as *the projected context set* (Farkas & Bruce 2010; Biezma & Goebel to appear)). p represents the antecedent proposition, and "$C_{\mathscr{F}} \models p$" is to be read as "the projected context set entails p", and "$Cs \not\models p \wedge Cs \not\models \neg p$" as "the context set does not entail p and does not entail $\neg$ p".

We have also seen that aspect in the antecedent restricts the temporal orientation of the antecedent situation. The third row of the table shows that imperfective aspect is only compatible with past situation when the antecedent carries past tense morphology. Perfect aspect is always incompatible with present situations. Finally, the last row of the table represents the morphological make-up of the antecedents of Farsi conditionals.

		Indicative		**Subjunctive**
		Tense		
		Present	**Past**	∅
Imperfective	Cs	$C_{\mathscr{F}} \models p$	$C_{\mathscr{F}} \models \neg p$	$Cs \not\models p \wedge Cs \not\models \neg p$
	label	'factual'	'counterfactual'	'hypothetical'
	time	present/future	present/*past*/future	present/future
	morphology	IMPF-verb.PRES	IMPF-verb-PST	IMPF-verb.∅
	example	(166)	(164)	(165)
Perfect	Cs	$C_{\mathscr{F}} \models p$	$C_{\mathscr{F}} \models \neg p$	$Cs \not\models p \wedge Cs \not\models \neg p$
	label	'factual'	'counterfactual'	'hypothetical'
	time	past/future	past/future	past/future
	morphology	verb.PP AUX.PRES	verb.PP AUX.PST	verb.PP AUX.∅
	example	(171c)	(171a)	(171b)

Table 3.1: Antecedent morphology of Farsi conditionals

What Farsi data shows us is that the complement of the set of X-marked conditionals (i.e. *O-marked conditionals*) is not a homogeneous group. Rather, O-marked conditionals are further subdivided into two groups: *hypothetical* and *factual* conditionals. We saw that X-marked conditionals in Farsi pattern with factual conditionals in requiring their antecedents to be settled. What does this tell us about X-marked conditionals in English? Does this mean X-marked conditionals in English are also matched by factual conditionals, but we cannot see it due to impoverished morphology? Or can it be that X-marked conditionals in English and Farsi are different? If so, what is the source of this difference?

The rest of this chapter aims to answer these questions. I will first compare Farsi and English X-marked conditionals. After showing the shared and distinct properties of X-marked conditionals in the two languages, I will give an account of the observed variation.

3.1.2 Properties of X-marked conditionals: Farsi vs English

As it was discussed in the previous section, the salient overt morphological differ-
ence between the *antecedents* of X-marked conditionals in English and Farsi is that
Farsi marks the antecedent of present/future oriented X-marked conditionals with
past imperfective, as shown in (177a).[2]

(177)   a.   **Present/future oriented past imperfective X-marked**

> agar Ava javaab ro mi-dunes-t,   barande-ye mosabeghe
> if   Ava answer RA **IMPF**-know-**PST**-3SG winner-EZ   competition
> mi-šod.
> **IMPF**-become.**PST**-3SG
>
> *'If Ava knew the answer, she would win the competition.'*

   b.   **Past oriented pluperfect X-marked**

> Agar Oswald Kennedy ro na-košte   **bud**,   kas-e
> if   Oswald Kennedy RA NEG-kill-**PP AUX.PST**.3SG, person-EZ
> digar-i   ou ro košte bud
> another-INDF him RA kill.PP AUX.PST.3SG
>
> *'If Oswald hadn't killed Kennedy, someone else would have.'*

In this section, I will discuss three areas in which Farsi and English X-marked
conditionals differ: (1) temporal orientation of antecedents, (2) aspectual restric-
tions in antecedents, and (3) strength of counterfactuality.

3.1.2.1   Temporal orientation of antecedents

Simple past X-marked conditionals in English can either describe a contrary-to-fact
present situation (presX), as in (178), or refer to unlikely but still realizable future
possibilities ("Future Less Vivid" (FLV) (Iatridou 2000)), as in (179).

(178)   If I were rich, I would buy a house.

---

[2]They also differ in whether the modal in the consequent is null (Farsi) or overt (English).

(179)　If I won a lottery, I would buy a house.

Iatridou (2000) argues that it is the lexical aspect of predicates in the antecedent that determines whether the conditionals is interpreted as a presX or a FLV conditional. She shows that the interaction of the predicate type and the time of evaluation in the antecedent of the simple past X-marked conditional is similar to how different predicate types are interpreted when combined with present tense morphology. Simple past X-marked conditionals containing eventive predicates (e.g. 180) talk about a situation in the future that is unlikely to be realized. In contrast, a simple past X-marked conditional containing an (individual-level) stative (e.g. 181a) describes a counterfactual situation in the present (although it is possible to get a future interpretation with individual-level stative predicates, as shown in (181b)). Finally, simple past X-marked conditionals containing stage-level stative predicates can describe either a situation in the future that is unlikely to be realized(e.g. 182a) or a counterfactual situation in the present (e.g. 182b).

(180)　*Eventive predicates*

　　　If he took the syrup, he would get better.　　　　　　　　**Future**

(181)　*Individual-level statives*

　　　a.　If I were tall, I would be able to reach the ceiling.　　　**Present**

　　　b.　*Context: Mahdieh and Majid both have black hair. They are expecting a baby.*
　　　　　If the baby was blond, they would be surprised.　　　　**Future**

(182)　*Stage-level statives*

　　　a.　If he were drunk at next weeks meeting, the boss would be really angry.
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　Future

　　　b.　If he were drunk, he would be louder.　　　　　　　　**Present**

The same interaction holds in conditionals containing present tense morphology. When the antecedent contains an eventive predicate, the situation described

can only be interpreted to be about the future. When the antecedent contains a stative predicate (stage-level or individual-level), it can either describe a situation in the future or a situation at the utterance time.

(183)   *Eventive predicates*

    If he takes the syrup, . . .   **Future**

(184)   *Individual-level statives*

    a. If he is tall, . . .   **Present**

    b. If the baby is blond, . . .   **Future**

(185)   *Stage-level statives*

    a. If he is drunk next week, . . .   **Future**

    b. If he is drunk, we should not let him drive.   **Present**

The tables below summarize the time orientation of the predicate types when combined with the simple past and the present tense in the antecedent in English. In sum, all antecedents can get future interpretations, but only antecedents containing a stative predicate can get present interpretations.

English	**Past**	**Present**	**Future**
Individual-level Stative	✗	✓	✓
Stage-level Stative	✗	✓	✓
Eventive	✗	✗	✓

Table 3.2: Temporal orientation of antecedents of English X-marked

English	Past	Present	Future
Individual-level Stative	✗	✓	✓
Stage-level Stative	✗	✓	✓
Eventive	✗	✗	✓

Table 3.3: Temporal orientation of antecedents of English O-marked

Similarly, the lexical aspect of predicates in past imperfective X-marked conditionals in Farsi determines whether the antecedent has a present or future oriented interpretation. A past imperfective X-marked conditional whose antecedent contains an eventive predicate (e.g. 186a) can talk about a future situation that is no longer possible to be realized.

(186) *Eventive predicates*

a. *There's Covid-related travel restrictions in place. Only EU residents can visit Europe. John is American. He cannot visit Sara, who lives in Italy.*

agar John farda mi-raf-t italia, Sara xošhal
if John tomorrow IMPF-go-PST.3SG Italy Sara happy
mi-šod.
IMPF-become-PST.3SG

If John went to Italy tomorrow, Sara would be happy. **Future**

As we have stated earlier, Farsi X-marked conditionals can only be used when their antecedent is settled in the projected common ground. That means they cannot describe a future situation that may or may not be realized. In other words, Farsi X-marked conditionals lack Future Less Vivid interpretations. In a scenario where the result of a lottery has not yet been announced, an X-marked conditionals is infelicitous, and only a zero tense O-marked conditional can be used.

(187) *The result of the DV-lottery will be announced tomorrow.*

a. #agar latary ro mi-bord-am,   green card mi-gereft-am
   if   lottery RA IMPF-win-PST-1SG green card IMPF-get.PST-1*sg*
   '*If I won the lottery, I would get a green card.*'

b. agar latary ro be-bar-am,   green card mi-gir-∅-am
   if   lottery RA IMPF-win-∅-1SG green card IMPF-get.PRES-1*sg*
   '*If I won the lottery, I would get a green card.*'

Future

A past imperfective X-marked conditional that contains an individual-level stative predicate (e.g. 188), like in English, describes a contrary-to-fact situation in the present. As mentioned in Chapter Two, the copular verb *be* and the stative verb *have* are incompatible with the imperfective marker *mi-*. In the antecedents of X-marked conditionals, there is variation among speakers as to whether the imperfective marker is used with the stative verbs, hence the use of parenthesis.

(188) *Individual-level statives*

agar ghad boland (mi)-bud-am, dast-am be saghf mi-res-id
if   height tall   IMPF-be.PST-1SG hand-my to ceiling IMPF-reach-PST.3SG

'*If I were tall, I would be able to reach the ceiling.*'   **Present**

Unlike English, however, individual-level stative predicates in antecedents of X-marked conditionals that have future orientations are rare. The reason is that the falsity of the antecedent proposition of Farsi X-marked conditionals has to be settled in the projected context set. The unlikelihood of a future state is not enough for the felicity of Farsi X-marked conditionals.

(189) *Individual-level statives*

Context: Mahdieh and Majid both have black hair. They are expecting a baby.

#agar bačče blond (mi)-bud,   taajob   mi-kard-and
 if   baby blond IMPF-be.PST-3SG surprised IMPF-becomePST.3SG

'*If the baby was blond, they would be surprised.*'   **future**

The example below illustrates a scenario in which a future individual-level state is not realizable, and thus the X-marked conditional is felicitous.

(190)   *Individual-level statives*

   Context: Swati is planting some sunflower seeds.

   agar gol-ha-š   qermez (mi)-bud,   Sakshi xošhal
   if   flower-PL-its red   IMPF-be.PST.3SG Sakshi happy
   mi-šod
   IMPF-become.PST.3SG

   If its flowers were red, Sakshi would be happy.   **Future**

Finally, past imperfective X-marked conditionals containing stage-level stative predicates or atelic eventive predicates can describe either a future situation that is no longer realizable (e.g. 191a and 192a) or a contrary-to-fact present situation (e.g. 191b and 192b).

(191)   *Stage-level statives*

   a. *John used to have an alcohol problem but he does not drink anymore.*

      agar tu jalase-ye   hafte-ye ba'd mast (mi)-bud,   ra'ees vaghean
      if   at meeting-EZ week-EZ next drunk IMPF-be.PST-3SG boss   really
      asabani mi-sho-d.
      angry   IMPF-become-PST.3SG

      'If he were drunk at next week's meeting, the boss would be really angry.'

                                                                        Future

   b. agar mast (mi)-bud,   sholoogh-tar (mi)-bu-d.
      if   drunk IMPF-be.PST-3SG louder   IMPF-be-PST.3SG
      'If he were drunk, he would be louder.'   **Present**

(192)   *Atelic eventives*

   a. agar farda   dars mi-xun-d-i,   emtehan ro pass
      if   tomorrow lesson **IMPF**-study-**PST**-2SG exam   RA pass
      mi-sho-d-i
      IMPF-become-**PST**-2SG
      'If you studied tomorrow, you would pass the exam.'   **Future**

b. agar alaan dars   mi-xun-d-i,   man radio ro xamush
   if   now   lesson **IMPF**-study-**PST**-2**SG** I   radio **RA** off
   mi-kard-am
   IMPF-do.**PST**-1**SG**
   'If you were studying now, I would turn off the radio.'[3]   **Present**

As Iatridou (2000) showed for English, the same interaction holds in O-marked conditionals containing present tense morphology. When the antecedent contains a telic predicate, the situation described can only be in the future (e.g. 193a). When it contains an individual-level stative predicate (e.g. 194a), it describes a situation at the utterance time. Again, since present O-marked conditionals require the truth of their antecedent to be settled in the projected common ground, individual-level stative predicates in antecedents of factual O-marked conditionals cannot be about future.

(193) *Telic predicates*

     a. agar john   farda   mi-rav-∅-ad italia, . . .
         if   tomorrow **IMPF**-go.**PRES**-3**SG** Italy
         If John goes to Italy tomorrow, . . .   **Future**

(194) *Individual-level statives*

     a. agar ghad   boland ast,   . . .
         if   height tall   be.**PRES**.3**SG**
         If he is tall, . . .   **Present**

     (193) *Context: Swati is planting some sunflower seeds.*

         agar gol-ha-š   zard ast,   Sakshi xošhal
         if   flower-**PL**-its red   be.**PRES**.3**SG** Sakshi happy
         mi-šav-∅-ad
         IMPF-become-**PRES**-3**SG**

         If its flowers are red, Sakshi will be happy.   **Future**

---

[3]Note that imperfective verbs in Farsi can get ongoing interpretation (as shown in (28) and (75a)), but in English ongoing readings are only possible with progressive aspect (*'dogs bark'* vs. *'dogs are barking'*).

When the antecedent contains a stage-level stative or an atelic eventive predicate, it can either be about a situation in the future (e.g. 194a and 195a) or a situation at the utterance time(e.g. 194b and 195b).

(194) *Stage-level statives*

    a. Agar farda   xaste ast,   . . .
       if   tomorrow tired be.**PRES**.3SG
       'If he is tired tomorrow, . . .'   **Future**

    b. agar xaste ast,   na-bayad be-gzar-im   ranandegi
       if   tired be.**PRES**.3SG, NEG-should IMPF-let-∅-1PL drive
       bo-kon-ad
       IMPF-do-∅-3SG
       'If he is tired, we should not let him drive. '   **Present**

(195) *Atelic eventives*

    a. agar farda   dars   mi-xun-∅-i,   . . .
       if   tomorrow lesson **IMPF**-study.**PRES**-2SG
       'If you study tomorrow, . . .'   **future**

    b. agar alaan dars mi-xun-∅-i,   man radio ro xamush
       if   now   lesson **IMPF**-study.**PRES**-2SG I   radio RA off
       bo-kon-am
       IMPF-do-∅-1SG
       'If you are studying now, I'll turn off the radio.'   **Present**

There is an important difference in the temporal orientation of Farsi past imperfective X-marked conditionals and English simple past X-marked conditionals. In Farsi, both past imperfective and pluperfect X-marked conditionals can be used to describe a contrary-to-fact situation in the past, as shown in (196b).

(196) *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.

Past

The contrast in (197) shows that English can only use pluperfect (e.g. (197b))
to express counterfactuality in the past. A simple past X-marked conditional, given
in (197a), cannot refer to counterfactual past events.

(197)   a. *If John went to Italy yesterday, Sarah would be happy.

        b. If John had gone to Italy yesterday, Sara would have been happy.

The tables below summarize the temporal orientation of the predicate types
when combined with past imperfective and present imperfective in the antecedent
in Farsi.

Farsi	**Past**	**Present**	**Future**
Individual-level Stative	✗	✓	✓
Stage-level Stative	✓	✓	✓
Telic Eventives	✓	✗	✓
Atelic Eventives	✓	✓	✓

Table 3.4: Temporal orientation of antecedents of Farsi imperfective X-marked

Farsi	**Past**	**Present**	**Future**
***Individual-level Stative*/PRES IMPF**	✗	✓	✓
***Stage-level Stative*/PRES IMPF**	✗	✓	✓
***Telic Eventives*/PRES IMPF**	✗	✗	✓
***Atelic Eventives*/PRES IMPF**	✗	✓	✓

Table 3.5: Temporal orientation of antecedents of Farsi imperfective O-marked

As seen in the contrast given in (197), to express counterfactuality in the past in English a pluperfect has to used. Pluperfect X-marked conditionals can also refer to a contrary-to-fact situation in the present and in the future.

(198)   a. If Her Majesty had been here now, she would have been revolted.

   b. If Grannie had missed the last bus on Friday (next Friday), she would have walked home (she is actually dead).   (Dudman 1984)

Like English, Farsi pluperfect X-marked conditionals can describe both past (199a) and future situations(199b).

(199)   a. 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.   **Past**

   b. agar John farda   rafte bud   italia, Sara xošhal
       if   John tomorrow go-**PP AUX-PST**.3sG Italy   Sara happy
       mi-šod
       IMPF-become-PST.3sG
       If John had gone to Italy tomorrow, Sara would have been happy.   **Future**

Unlike English pluperfect X-marked conditional which can describe present situations as in (198a), Farsi pluperfect X-marked conditionals cannot be about present. This is shown in (**??**) and (**??**).

This brings me to an important observation: the "realness" of aspect in the antecedent of X-marked conditionals.

3.1.2.2   Aspectual restrictions in antecedents

As I have discussed in Chapter Two, Section 2.2.2, the lack of aspectual morphology in English obscures the distinction between imperfective and perfective. There is a controversy in the literature about the semantic contribution of aspect in the

antecedent of X-marked conditionals. Under some accounts, the aspect in the antecedent of X-marked conditionals is considered to be 'fake' (Iatridou 2000, 2009) or rendered vacuous (Anand & Hacquard 2010; Ferreira 2011, 2016). Arregui (2005, 2007), however, argues that aspect in these conditional is real and contributes its typical meaning. Since Farsi overtly marks imperfective aspect, the absence of imperfective marker indicates the presence of perfective in the structure. Here, I want to illustrate that this feature of Farsi grammar provides an opportunity to further our understanding of the semantic contribution of aspect in the antecedent of X-marked conditionals.

While eventive verbs can appear with either the past imperfective or the pluperfect form in antecedents of X-marked conditionals to express counterfactuality in past and future, stative verbs like "*know*", which are generally incompatible with perfect aspect in Farsi, can only appear in past imperfective to describe past, present or future counterfactuals.

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

             the competition.'

        b.   *agar Ava dirooz/emrooz/farda   javaab ro daneste
             if   Ava yesterday/today/tomorrow answer RA know-**PP**
             bud,   barande-ye mosabeghe mi-šod.
             AUX-PST-3SG winner-**EZ**   competition **IMPF**-become.**PST**-3SG
             '*If Ava knew the answer yesterday/today/tomorrow, she would win/have won*

             the competition.'

A similar aspectual restriction with stative verbs can be seen in the pluperfect. Farsi stative verbs *be* and *have* cannot take the pluperfect outside of X-marking contexts, as shown in (201).[4]

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[4]It should be noted that the restriction, at least in the case of "*have*", is not morphological. "*have*"

(201)   a. *qablan xune dašte   bud-am
            before   house have.**PP AUX.PST**-1SG
            '*I had had a house before.*'

        b. *qablan puldar bude budam.
            before   rich   be.**PP AUX.PST**-1SG
            '*I had been rich before.*'

        c. qablan italia rafte budam.
            before Italy go.**PP AUX.PST**-1SG
            '*I had gone to Italy before.*'[5]

The ungrammaticality of (202) shows that this restriction also holds in the antecedent of pluperfect X-marked conditionals.

(202)   a. *agar xune dašte   bud-am,   ejare ne-mi-dad-am.
            if   house have.**PP AUX.PST**-1SG rent **NEG-IMPF**-give.**PST**-1SG
            '*I had had a house, I wouldn't have to pay rent.*'

        b. *agar puldar bude budam,   xune mi-khar-id-am
            if   rich   be.**PP AUX.PST**-1SG house **IMPF**-buy-**PST**-1SG
            '*If I had been rich, I would have bought a house.*'

Farsi X-marked conditionals whose antecedent contains a stative predicate can only carry past imperfective morphology, as shown in (203).[6]

(203)   a. agar xune (mi)-dašt-am,   ejare ne-mi-dad-am.
            if   house **IMPF**-have.**PST**-1SG rent **NEG-IMPF**-give.**PST**-1SG
            '*I had had a house, I wouldn't have to pay rent.*'

        b. agar puldar (mi)-bud-am, xune mi-khar-id-am
            if   rich   **IMPF**-be.**PST**-1SG house **IMPF**-buy-**PST**-1SG
            '*If I had been rich, I would have bought a house.*'

As I discussed in Section 2.2.2.2 of the last chapter, such differences arise because Farsi perfect forms that lack imperfective marker always embed perfective aspect,

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is a common light verb in Farsi and can take the pluperfect (e.g. negah dašte bud-am = had kept)

[5]Unlike English, Farsi pluperfect doesn't need a subordinate clause to act as a reference time.

[6]Most stative predicates in Farsi are complex predicates whose verbal elements are either *be* or *have*.

which is known to be incompatible with stative verbs as well as with present inter-pretations (present perfective paradox).

Counterfactual generic conditionals provide further evidence in support of the realness of aspect in X-marked conditionals. In Chapter Two, I discussed that the presence of an imperfective aspect marker is necessary to get generic readings in Farsi. Perfect forms of the verb that do not carry an additional imperfective marker, cannot have generic interpretation. This was shown in (50b), repeated here as (204).

(204) Az   aqaz-e   hayat, zamin dor-e   xoršid (*mi)-čarxide
      Since beginning-ez existence, Earth around-ez sun   IMPF-revolve.PP
      ast.
      AUX.PRES.3SG
      Since the beginning of existence, the Earth has revolved around the sun.

As the contrast in (205) shows, counterfactual generic statements can only be expressed with imperfective aspect in the antecedent. Pluperfect X-marked con-ditionals, which do not carry an imperfective marker and thus contain perfective aspect, cannot yield generic interpretations.

(205) a. Agar dainasur-ha-ye Dracorex gušt **mi**-xor-**d**-and,   dandun-ha-šun
         if   dinosaur-PL-ez Dracorex meat IMPF-eat-PST-3PL, tooth-PL-their
         saf ne-mi-bud.
         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-**d**e 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.

I conclude therefore, that aspects maintain their semantics in antecedents of X-marked conditionals.

3.1.2.3 Strength of counterfactuality

X-marked conditionals in Farsi and English show a contrast in contexts where they can be felicitously used without implying the falsity of their antecedents. As shown in (179), repeated here as (206), future oriented simple past X-marked conditionals in English yield Future Less Vivid interpretations.

(206) If I won a lottery, I would buy a house.

Farsi, in contrast, lacks Future Less Vivid conditionals. A conditional claim about the future whose antecedent is still an open question, no matter how unlikely it is, can only be expressed via a hypothetical O-marked conditional. Future oriented X-marked conditionals in Farsi can only be used when the situation described by the antecedent is believed to be **unrealizeable** in the future. This was illustrated by the lottery example (187), which is repeated here as (207).

(207) *The result of the DV-lottery will be announced tomorrow.*

    a. #agar latary ro mi-bord-am,   green card mi-gereft-am
       if   lottery RA **IMPF**-win-**PST**-1SG green card IMPF-get.PST-1*sg*
       '*If I won the lottery, I would get a green card.*'

    b. agar latary ro be-bar-am,   green card mi-gir-∅-am
       if   lottery RA **IMPF**-win-∅-1SG green card IMPF-get.PRES-1*sg*
       '*If I won the lottery, I would get a green card.*'

Future

It is worth mentioning that future oriented pluperfect X-marked conditionals cannot have Future Less Vivid interpretations in either English (Ippolito 2013) or Farsi.

(208) *The result of the DV-lottery will be announced tomorrow.*

    a. #If I had won the lottery, I would have gotten a green card.

    b. #agar latary ro borde bud-am,   green card mi-gereft-am
       if   lottery RA win-**PP** **AUX**-**PST**-1SG green card IMPF-get.PST-1*sg*

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'If I had won the lottery, I would have gotten a green card.'

Farsi and English X-marked conditionals differ as to whether they can be used in Anderson-type examples. (Anderson 1951) made a seminal observation that English X-marked conditionals can be used as part of reasoning for the truth of the antecedent. Consider examples below which are variants of the Anderson-type example provided by Iatridou (2000).

(209)   a. If the patient **had 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. (Ippolito & Su 2014)

    b. If the patient **had** the measles, he **would have** exactly the symptoms he has now.

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

        ✓But we know that he doesn't have the measles. (Ogihara 2014)

Anderson examples point to the *cancelability* of antecedent falsity inference associated with X-marked conditionals. This important observation which has attracted significant attention in the philosophical and linguistic literature (Stalnaker 1975; von Fintel 1998; Ippolito 2006, 2013; Mackay 2015 and Leahy 2018, among others) has led many scholars to conclude that the antecedent falsity is a pragmatic property of X-marked conditionals (But see Zakkou (2020) for a presuppositional account of antecedent falsity). In Section 3.3.2, I will discuss more cases that demonstrate that the antecedent falsity is not hardwired into semantics of X-marked conditionals.

Past imperfective and pluperfect X-marked conditionals in Farsi cannot be used to reason for the truth of the antecedent. The infelicity of (210a) and (210b) shows that the antecedent falsity of counterfactual conditionals in Farsi cannot be can-

celled. Only a perfect zero tense conditional (210c) is compatible with the continuation "*We conclude, therefore, that the patient has the measles*".

(210)   a. **Pluperfect X-marked**

agar bimar   sorxak   gerefte bud,   daghighan in
if   patient measles get-**PP** **AUX.PST**.3SG exactly   this
alayem-i   ke   alan neshan mi-dah-∅-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.

   b. **Imperfective X-marked**

agar bimar   sorxak   mi-gereft,   daghighan in   alayem-i
  if patient measles **IMP**-get.**PST**.3SG exactly   this symptoms-INDF
ke   alan neshan mi-dah-∅-ad   ra neshan mi-daad.
that now show   IMPF-give-PRES-3.SG RA show   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.

   c. **Zero tense (hypothetical) O-marked**

agar bimar   sorxak   gerefte bash-ad, daghighan in   alayem-i
if   patient measles get-**PP** AUX.∅-3SG exactly   this symptoms-INDF
ke   alan neshan mi-dah-∅-ad   ra neshan mi-dah-∅-ad
that now show   IMPF-give-PRES-3.SG RA show   IMPF-give-PRES-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.

Interim Summary

Let us take stock here. We started with the well-established categorization of conditionals into two groups of O-marked (indicative conditionals) and X-marked conditionals. On grammatical grounds, O-marked conditionals are conditionals that lack the morphology for X-marked conditionals. In the most part of the literature, O-marked conditionals have been assumed to form a unified class. The morphological distinction between present and zero tense conditionals in Farsi shows that O-marked conditionals are further subdivided into hypothetical and factual conditionals. Farsi X-marked conditionals pattern with factual conditionals in both morphology (carrying the tensed form of the imperfective marker (mi-)) and felicity conditions (requiring their antecedent to be settled in the projected common ground). I have discussed two areas where Farsi and English X-marked conditionals differ:

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

- (ia) Farsi past imperfective X-marked conditionals can refer to past events, but English simple past X-marked conditionals cannot ((196b) vs. (197)).

- (ib) English pluperfect X-marked conditionals can refer to present states, but Farsi pluperfect X-marked conditionals cannot ((198a) vs. (**??**)).

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

- (iia) English simple past X-marked conditionals have a Future Less Vivid interpretation, Farsi past imperfective X-marked conditionals do not ((206) vs. (208b)).

- (iib) English pluperfect X-marked conditionals can be used in Anderson-type examples, but Farsi pluperfect X-marked conditionals cannot ((209) vs. (210)).

I have also shown that the overt morphological realization of aspectual markers in Farsi lets their semantic contribution in the antecedent of X-marked conditionals shine through. I have made two observations that lead me to conclude that aspect maintains its typical semantics in the antecedent of X-marked conditionals.

(a) Aspectual restrictions that hold outside of conditional environments also hold in the antecedent of X-marked conditionals (illustrated with examples (200) and (202)).

(b) The presence of imperfective aspect in the antecedent of X-marked conditionals is necessary to make counterfactual generic claims (illustrated with example 205).

The table below provides a summary of contrasts between English and Farsi X-marked conditionals.

		COUNTERACTUAL			NON-COUNTERACTUAL	
		PASTX	**PRESX**	**FUTX**	FLV	Anderson
English	**Simple past**	✗	✓	✗	✓	✓
	Pluperfect	✓	✓	✓	✗	✓
Farsi	**Past imperfective**	✓	✓	✓	✗	✗
	Pluperfect	✓	✗	✓	✗	✗

Table 3.6: Contrasts between English and Farsi X-marked conditionals

Given the wide cross-linguistic distribution of past tense in the morphological make-up of X-marked conditionals, most linguistic work on the topic is focused on deriving the semantic and pragmatic differences between X-marked and O-marked conditionals from the semantic contribution of the past tense (Dudman 1984; Iatridou 2000, 2009; Arregui 2005, 2009; Ippolito 2006, 2013; Khoo 2015; Schulz 2014; Karawani 2014; Karawani & Zeijlstra 2013; Romero 2014). There are two main

accounts of what the past tense *means* in X-marked conditionals. According to one approach, the past tense morpheme always has a temporal meaning (Dudman 1984; Arregui 2005; Ippolito 2006; Khoo 2015). The other approach takes the past tense morpheme to be underspecified, which can have temporal or modal interpretations depending on the environment it occurs in (Iatridou 2000; Schulz 2014; Mackay 2019a). These approaches can also differ as to whether the relevant pairs of O-marked and X-marked conditionals have a substantive semantic difference (Edgington 1995; Bennett 2003) or they just merely differ in the temporal reference (Dudman 1984; Khoo 2015).

What is the source of these variations in properties of X-marked conditionals in Farsi and English? What does the typological picture of X-marked conditional emerging from the data look like? To answer these questions, I will first review existing theories on the semantic contribution of the linguistic ingredients of X-marking. To understand how these theories handle the Farsi data, I will then discuss how the temporal orientation of antecedent and the defeasibility of antecedent falsity are accounted for under these two types of approaches.

3.2 The role of tense in X-marked conditionals

A series of papers by Dudman draw attention to grammatical differences between English O-marked and X-marked conditionals (Dudman 1983, 1984). Linguists explored this matter further to understand the contribution of morphological elements found in X-marked conditionals, especially the role of the past morphology that is used in a large number of unrelated languages to distinguish O-marked and X-marked conditionals. There are two main approaches to account for the semantic contribution of the past morpheme in X-marked conditionals: (i) *the ambiguous*[7]

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[7]I'm using the term *ambiguous* atheoretically. Iatridou (2000) and Mackay (2019a) take the past morpheme to be *underspecified*.

past approach (Iatridou 2000; Schulz 2014; Karawani & Zeijlstra 2013, and Mackay 2019a) 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 this 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.

Following the suggestion of Schulz (2014), the ambiguous past approach and the uniform past approach have been referred to as *past as modal* as *past as past*, respectively. I believe these terms are misleading, as they obscure the modal aspect of the past meaning within the uniform past approach.

Here, I will present a general overview of these two approaches, and how they account for variations in the temporal orientation of antecedents, as well as the strength of counterfactuality. A full comparison between the two approaches will be postponed until the next section.

3.2.1 Ambiguous Past

An early highly influential theory for the semantic contribution of past tense in X-marking was proposed by Iatridou (2000). Exploring the morphological make up of X-marking in conditionals as well as *wish*-constructions across several languages, Iatridou (2000) argues that the past tense in these constructions does not contribute its usual temporal interpretation, and thus is *fake*. To explain the role of past tense in X-marking, she proposes that the morpheme associated with the past tense always has a skeletal meaning of the form (211).

(211) Topic(x) excludes the x of the deictic center.

The variable x can range over times or worlds. When x ranges over times, the topic time excludes the utterance time and we get 'past tense.' We don't get the future because unlike the past and the present, it is not a tense but a modal.

When the variable x ranges over worlds, the topic worlds exclude the actual world. The past in X-marked conditionals conveys that the set of worlds selected by the antecedent excludes the world of utterance, and thus gives rise to modal remoteness inference.

Schulz (2014) aims to formulate Iatridou's proposal more explicitly. Instead of the exclusion schema proposed by Iatridou (2000), Schulz's approach takes the morphological realization of past morpheme to encode an anteriority function $x < x^*$. This function operates either on temporal domain or epistemic domain. The variable x^* is the deictic center. When the function operates on the temporal domain, the order is interpreted as temporal precedence.

In the modal interpretation, x^* is the epistemic deictic center, which is the set of worlds that the speaker expects the actual world to be among. Worlds are ordered on the basis of what the speaker considers to be epistemically optimal. The anteriority function localises the worlds selected by the antecedent outside the epistemic deictic center. X-marked conditionals, therefor, convey that the conditional is about unexpected worlds.

Similarly, Mackay (2019a) takes past tense to have a skeletal denotation $x < x^*$, where x can get either temporal or modal value. In the modal case, the past operates on modal bases. He proposes that the variable x is sets of propositions in the modal base, and x^* is the factive common ground, defined in (212), which determines the set of of worlds epistemically possible in a context.

(212) **The factive common ground**: The set of proposition that are presupposed and true in a context of utterance.

The relation $<$ in the modal context is a proper subset relation $\subseteq$.[8] Therefore, what past in X-marked conditional contributes is the presupposition that the modal base is *a proper subset* of the factive common ground. The modal base of O-marked conditionals, in contrast, is the factive common ground.

Under Mackay's approach, the modal remoteness inference is derived as a presuppositional implicature. When the modal base is a proper subset of the factive common ground, *Maximize presupposition Heim (1991)* makes the assertion of an X-marked conditional obligatory. When the modal base is the factive common ground, only an O-marked conditional can be asserted as the presupposition of the X-marked conditional is not met in such contexts.

3.2.2 Uniform Past

The second kind of approach to the role of the past in X-marked conditional takes it to always contribute a temporal precedence. The perceived deviance from the usual interpretation arises because the structural position of the past tense in X-marked conditionals enables it to manipulate a parameter of the conditional, instead of shifting the temporal reference of the antecedent or consequent. Accounts in this group differ in which parameter of the conditional they take the past tense to shift. An obvious candidate is the time in which the conditional statement is evaluated. This approach, which is taken by Dudman (1984) and Romero (2014), takes X-marked conditionals and future-oriented O-marked conditionals to differ merely in temporal reference. The idea basically is that an X-marked conditional like (213a) expresses at a later time what is expressed by its corresponding future-oriented O-marked conditional (213b).

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[8]Note, however, that unlike Iatridou's and Schulz's analysis in which the function $<$ in both temporal and modal meaning of the past is the same, under Mackay's analysis we are really dealing with a purely ambiguous past morpheme with no overlap between the modal and temporal meaning of past.

(213)   a. If Oswald had not killed Kennedy, someone else would have.

b. If Oswald does not kill Kennedy, someone else will.

Ippolito (2003, 2006, 2013) provides a compositional account of the meaning contribution of the past tense. A conditional is evaluated with respect to two times: the accessibility time and the reference (a.k.a., evaluation) time. These times can be shifted by temporal operators, independently of each other. Instead of evaluation time, however, she takes the past tense in X-marked conditionals to manipulate the time of the accessibility relation of the modal. She argues that X-marked conditionals may have more than one past operator, in which case the additional past can shift the reference time to a past time.

According to Ippolito's account, X-marked conditionals are bare conditionals embedded under a past operator. The modal operator of the conditional "*woll*" takes the past tense as its time argument that manipulates the time of the accessibility relation. Following Thomason & Gupta (1980) and Condoravdi (2001), she argues that the accessibility relation is historical. Therefore, the modal with the past as its argument picks out worlds that are historically accessible from the evaluation world at some past time.

(214) $[\![\text{ woll }]\!]^{c,g,t,w} = \lambda t' \in D_i.\lambda p_{<s,t>}. \ \lambda q_{<s,t>}.\forall w' \ [\ w' \in SIM_w \ (HIST_{w,t'} \ (p)) \rightarrow w' \in q]$

As the defintion of the modal operator in (214) shows, the first argument of the modal has to be of type i. However, the past tense, as defined in 215 by Ippolito (2013), is of type $\langle\langle i,t\rangle, t \rangle$.

(215) $[\![\text{past}]\!]^{c,g,t,w} = \lambda \ P_{<i,t>}. \ \exists \ t' < t : P(t') = 1$ (Ippolito 2013)

To resolve this type mismatch, tense raises and adjoins to the bare conditional. It leaves a trace of type i behind and creates a λ-abstractor which is co-indexed with the trace. (216) shows the structure of X-marked conditionals.

(216) *The structure of simple past X-marked conditionals*

```
                          S″
                ╱                   ╲
            Past                     S′
                             ╱              ╲
                            1                S
                                      ╱            ╲
                                     α              Consequent-clause
                                ╱         ╲
                               β           Antecedent-clause
                           ╱       ╲
                        WOLL         t₁
```
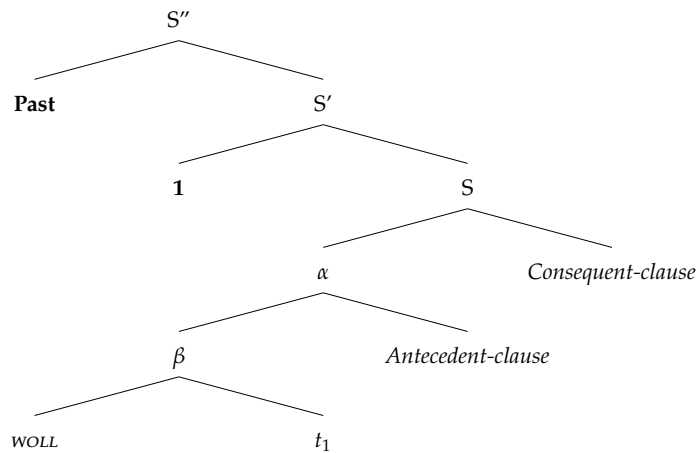
(Ippolito 2013)

The presence of the past operator which shifts the time of the accessibility re-lation to the past allows these conditionals to be felicitous when there is no world historically accessible at the utterance time in which the antecedent proposition is true. By shifting the accessibility time to the past, we make sure that the antecedent worlds *can* be incompatible with the actual world at the utterance time. This gives rise to the antecedent falsity inference. In the case of an O-marked conditional whose time of the accessibility relation is the utterance time, quantification cannot be over antecedent-worlds that are not compatible with the actual world at the utterance time. Therefore, when the antecedent is false, an O-marked conditional is infelicitous.

Adapting a situations framework (Kratzer 2021), Arregui (2005, 2009) proposes a uniform past account that takes the role of the past to be to anchor the inter-pretation of the X-marked conditional on particular past facts. That is, the past tense determines the temporal specification of the anchor situation from which the modal domain in conditionals projects. She adopts a Lewis-Stalnakerian semantics, according to which an X-marked conditional of the form *if A, would B* is true iff the most similar A-worlds are also B-worlds. By identifying features of the actual

world that are shared in A-worlds, the pastness of the anchor situation affects the resolution of similarity invoked by X-marked conditionals. According to Arregui's proposal, X-marked conditionals of the form *if A, would B* are true iff A-worlds that also contain a counterpart of the past facts the anchor situation refers to, are worlds in which B is true[9].

3.3 Approaches to X-marking in light of Farsi data

We have seen that Farsi X-marked conditionals differ in two aspects from their English counterparts:

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

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

3.3.1 Temporal orientation of the antecedent

Earlier in this chapter we have seen that the antecedents of X-marked conditionals in Farsi can get a range of temporal interpretations, which their corresponding English X-marked conditionals lack.

(ia) Farsi past imperfective X-marked conditionals can refer to past events, but English simple past X-marked conditionals cannot ((196b) vs. (197)).

(ib) English pluperfect X-marked conditionals can refer to present states, but Farsi pluperfect X-marked conditionals cannot ((198a) vs. (**??**)).

In this section, I will review how these important properties of X-marked conditionals are accounted for in existing proposals. I will also discuss where these

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[9]Unlike the standard Lewis-Stalnakerian approach where the kind of similarity is global similarity, Arregui argues for a local notion of similarity.

proposals stand with respect to the observed variation in temporal orientation of antecedents between Farsi and English.

I will discuss two classes of proposals. The first group take the temporal orientation of the antecedent to follow from the evaluation time of the antecedent represented by tense in the antecedent (Iatridou 2000, 2009; Ippolito 2006, 2013). The second group take the interaction of the modal and aspect in the antecedent to determine the temporal orientation of the antecedent (Arregui 2005, 2007, 2009; Khoo et al. 2022).

3.3.1.1 Tense and lexical aspect

The first linguistic analysis of the temporal orientation of antecedents in X-marked conditionals was presented by Iatridou (2000). As mentioned earlier, she argues that tense and the lexical aspect of the predicate in the antecedent determines its temporal interpretation. She has convincingly shown that the temporal orientation of the antecedent of simple past X-marked conditionals mirrors the temporal interpretation of the predicate involved in the antecedent of O-marked conditionals whose antecedent is marked with the present tense. Stative predicates can refer to the present or the future. Eventive predicates can only describe a future event. She argues that the antecedent of past oriented X-marked conditionals contain a real past tense.

Ippolito (2006) provides a compositional implementation of this idea in a uniform past approach. She takes the temporal interpretation of the antecedent to be independent of the past tense c-commanding the bare conditional. Ippolito (2006) takes the antecedent of simple past X-marked conditionals to contain a present tense. She argues that the present in English has a non-past semantics, and thus can be used to refer to the present and the future. It is only when the predicate is eventive that the present tense obligatorily receives a future interpretation, as the

behavior of temporal adverbs in (217a) shows. (217b) reveals that these temporal adverbs behave exactly the same in the antecedent of simple past X-marked conditionals. Ippolito (2006) takes this as evidence for the presence of the present tense in the antecedent of simple past X-marked conditionals.

(217)   a. I hope John cooks fish tomorrow/every day/*right now.

         b. If John cooked fish tomorrow/every day/*right now, I wouldn't have to.

Ippolito (2006) argues that the ungrammaticality of simple past X-marked conditionals with past oriented temporal adverbs, as in (218), provides a compelling evidence that the antecedent contains a present tense.

(218)   *If John cooked fish yesterday, I wouldn't have to.

The structure that Ippolito (2006) proposes for simple past X-marked conditionals is given in (219).

(219)   PAST $\left[\text{MODAL}\left[\text{IF }\textbf{PRES-}\phi\right]^{t_c}\left[...\right]\right]$

Like Iatridou (2000), Ippolito (2006) takes the presence of a real past tense in the antecedent of X-marked conditionals to be necessary to describe a past event. Therefore, she proposes (220) as the structure of pluperfect X-marked conditionals that receive a past oriented temporal interpretation. The pluperfect is the morphological realization of two layers of past morphology in English.

(220)   PAST $\left[\text{MODAL}\left[\text{IF }\textbf{PAST-}\phi\right]^{t_c}\left[...\right]\right]$

As we have seen earlier, the pluperfect X-marked conditional can also receive present and future interpretations. There are in fact cases like (221) where a pluperfect X-marked conditional is needed to refer to a counterfactual situation in the future. In the scenario given in (221), the simple past X-marked conditional is infelicitous.

(221) *John had chicken pox last year during the summer exam period. It was a disaster.*

      a. Bad timing. #If he were sick with chicken pox next summer instead, it would be much better.

      b. Bad timing. If he had been sick with chicken pox next summer instead, it would have been much better.

Ippolito (2013) argues that Iatridou's approach in which a second layer of past always locates the eventuality in the antecedent in the past fails to account for the future oriented pluperfect X-marked conditionals. To account for future interpretation of pluperfect X-marked conditionals, (Ippolito 2013) posits that the antecedent of these conditionals contains a present tense, and that the whole conditional is embedded under two layers of past morphology, as shown in (222).

(222) PAST [PAST [MODAL [IF **PRES-**ϕ]^{t_c} [...]]]

Now let us consider Farsi facts again. As was shown in (196b), repeated here as (223), past imperfective X-marked conditionals in Farsi, which contain only one past marker, can be used to describe a counterfactual past event.

(223) agar dirooz   rah mi-oft-aad   hafte-ye ba'd mi-res-id
      if   yesterday way **IMPF**-fall-**PST** week-EZ next **IMPF**-arrive-**PST**.3SG
      'If he had left yesterday, he would have arrived next week.'

The Farsi data is a problem for accounts that rely on an additional layer of past to account for past orientation of the antecedent. It is especially problematic for an ambiguous past version of such accounts (Iatridou 1991), as it is not clear how a *fake* past that doesn't contribute a temporal meaning can locate the time of the event described in the antecedent in the past.

A uniform past version of this kind of accounts Ippolito (2013) has a way out of this problem, by attributing Farsi facts to special properties of the present tense in Farsi. As we saw in the last chapter, the present tense in Farsi is shiftable. That is,

a present tense verb embedded under a matrix past tense can get a past interpretation. This fact about Farsi is illustrated in (224), which conveys that the time of John's living in Amherst overlaps with the time at which Ana self-located herself when uttering "*John lives in Amherst now*" in 1985.

(224) *Ana in 2004: "John lives in Amherst now."*

> dar 2004, Ana gof-t   ke   John dar Amherst zendegi mi-kon-∅-ad.
> In   2004, Ana say-PST.3SG that John in   Amherst live   IMPF-do-PRES-3SG
>
> 'In 2004, Ana said that John lives in Amherst (then).'

According to Ippolito (2003, 2006, 2013), in an X-marked conditional a past tense scopes over the whole conditional. Assuming the antecedent of a past imperfective X-marked conditional in Farsi contains a shiftable present tense, we can argue that the past orientation of these conditionals arises because the present tense is interpreted relative to the c-commanding past tense. I will come back to this idea in Chapter Four.

3.3.1.2 Modal and Aspect

Arregui (2005, 2009) takes a different approach. She proposes that the antecedent of X-marked conditionals lacks a deictic tense. Tense in the antecedent is a zero tense pronoun (∅). Following Kratzer (1998a), she takes English zero pronoun to inherit the morphological features of the closest c-commanding deictic tense. According to her analysis, (225) is the structure of X-marked conditionals.

(225) *The structure of X-marked conditionals (Arregui 2009)*

$$\text{Past}_i \qquad\qquad\qquad \text{consequent}$$

$$\textbf{would}$$

$$\text{j} \qquad\qquad \textbf{if } [......\varnothing_j......]$$
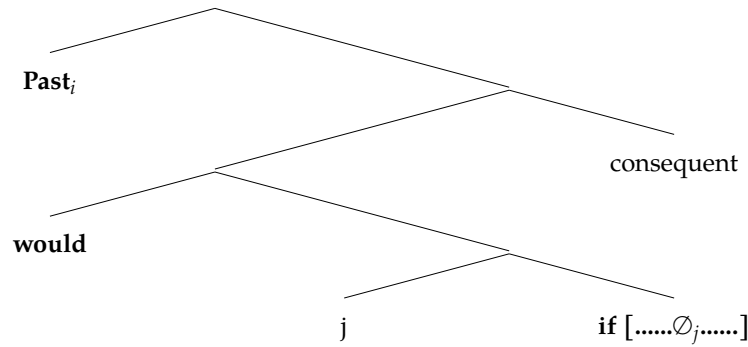
Semantically, the antecedent of X-marked conditional is interpreted as a property of situations. There is no temporal constraints on the situation a zero tense can refer to. Arregui (2005, 2009) proposes that the modal *would* in X-marked conditionals shifts the antecedent situation to some non-past time. Under her account, the temporal interpretation of the antecedent is determined by the interaction of aspect in the antecedent with this non-past time.

Arregui (2005, 2007, 2009) takes the difference between past and pluperfect X-marked conditionals to be aspectual. The antecedent of a past X-marked conditional with an eventive predicate contains a perfective aspect. Given the denotation of perfective in (226), the antecedent with perfective aspect states that the running time of the event described is included in a non-past time. Therefore, the temporal location of the antecedent of past X-marked conditionals is necessarily in a non-past time.

(226)   Where P is a property of events, and $\mathbf{e}_i$ is an event pronoun,

$[\![\textbf{perfective-e}_i]\!]^{g,w}(\text{P}) = \lambda t.\ \lambda w'.\ \text{P}([\![\mathbf{e}_i]\!]^{g,w}) \wedge \exists\, s\ (s < w' \wedge [\![\mathbf{e}_i]\!]^{g,w}(s) = 1$

$\wedge \tau(s) \subset t)$

Arregui (2005, 2007) proposes that stative verbs denote properties of times, and thus can directly combine with tenses. The antecedent of a past X-marked conditional with a stative predicate describe a non-past state.

The antecedent of pluperfect X-marked conditionals contains perfect aspect. Given the denotation of perfect aspect in (227), an antecedent with perfect aspect

states that the running time of the situation described precedes a non-past time. This does not restrict the set of possibilities for the temporal location of the event. The event itself can be past, present or future.

(227) $[\![\textbf{perfect-e}_i]\!]^{g,w}(P) = \lambda t.\ \lambda w.\ \exists e\ (P([\![e_i]\!]^{g,w} \wedge \exists\ s\ (s < w\ \&\ e\ \text{occurs in s}\ \&$
$\tau(s) < t))$

An important advantage of Arregui's account is that it takes the role of aspect in the antecedent of X-marked conditionals seriously. In the last chapter, I have shown that aspect in the antecedent of Farsi conditionals determines the temporal orientation of the situation described. Imperfective aspect in antecedents of Farsi conditionals typically refers to present and future situations (in X-marked conditionals it can also refer to past). Perfect aspect in antecedents of Farsi conditionals refers to past and future situations. Theories that take aspect in the antecedent of X-marked conditionals to be fake Iatridou (2000, 2009); Ippolito (2013); Crowley (2022) need to spell out mechanisms by which aspects can be bleached of its usual meaning. Moreover, they have to explain why such bleaching does not occur in Farsi. As noted earlier, imperfective and perfect aspects in the antecedent of Farsi X-marked conditionals exhibit their typical properties. I have argued for the realness of aspect based on three observations. Firstly, I have shown that the general incompatibility of the pluperfect and Farsi stative verbs *be* and *have*, as in (228), also holds in the antecedent of pluperfect X-marked conditionals, as shown in (229).

(228) a. *qablan xune dašte   bud-am
          before house have.PP AUX.PST-1SG
          '*I had had a house before.*'

       b. *qablan puldar bude budam.
          before   rich   be.PP AUX.PST-1SG
          '*I had been rich before.*'

(229) a. *agar xune dašte   bud-am,   ejare ne-mi-dad-am.
          if   house have.PP AUX.PST-1SG rent NEG-IMPF-give.PST-1SG

'I had had a house, I wouldn't have to pay rent.'

b. *agar puldar bude budam, xune mi-khar-id-am
if rich be.PP AUX.PST-1SG house IMPF-buy-PST-1SG
'If I had been rich, I would have bought a house.'

Moreover, we have seen that the stative predicate *know* which is generally incompatible with perfect aspect, can only appear in the antecedent of imperfective X-marked conditionals.

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

the competition.'

b. *agar Ava dirooz/emrooz/farda javaab ro daneste
if Ava yesterday/today/tomorrow answer RA know-PP
bud, barande-ye mosabeghe mi-šod.
AUX-PST-3SG winner-EZ competition IMPF-become.PST-3SG
'If Ava knew the answer yesterday/today/tomorrow, she would win/have won

the competition.'

Lastly, we have also seen that counterfactual generic statements can only be expressed with imperfective aspect in the antecedent. This was illustrated by the contrast in (205), repeated her as (231).

(231) a. Agar dainasur-ha-ye Dracorex gušt **mi**-xor-**d**-and, dandun-ha-šun
if dinosaur-PL-EZ Dracorex meat IMPF-eat-PST-3PL, tooth-PL-their
saf ne-mi-bud.
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-**d**e 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.

Under an approach like Arregui's which takes the antecedent of the pluperfect X-marked conditional to contain a real perfect aspect, it is no mystery that aspectual restrictions are maintained in X-marked conditionals.

Can the past orientation of past imperfective X-marked conditionals in Farsi be derived from the interaction of imperfective aspect and the non-past time provided by the modal? I do not think so. Imperfective aspect in other types of Farsi conditionals is not compatible with a past interpretation. Therefore, the past orientation must have another source.

We have seen that past imperfective X-marked conditionals pattern with the present tense conditionals in terms of settledness, as opposed to zero tense conditionals. This suggests that their antecedent does not contain a zero tense, as Arregui proposes for English. Perhaps the nature of tense pronouns in the antecedent of X-marked conditionals is subject to cross-linguistic variation. Arregui (2005, 2009), like (Ippolito 2003), takes X-marked conditionals to have a past tense in the highest position of their structures. Therefore, we can couple her proposal with the modification that was suggested to Ippolito's. The antecedent of a past imperfective X-marked conditional in Farsi contains a shiftable present tense, thus it can be interpreted relative to the c-commanding past tense. I will elaborate this idea in Chapter Four.

Interim summary

In sum, in this section I have argued that the past orientation of past imperfective X-marked conditionals in Farsi poses a problem for the ambiguous past approach which takes the one layer of the past tense in X-marked conditionals to lack its temporal meaning. Given that Farsi past imperfective X-marked conditionals have only one layer of past tense, which presumably has a modal function, there is no deictic past tense in the structure of these conditionals to which their past orientation can

be attributed to.

The problem is not as fatal for the uniform past approach. According to this view, there is a deictic past tense in the structure of all X-marked conditionals. Therefore, the past orientation of Farsi past imperfective X-marked conditionals can be explained with the interaction of the shiftable present tense in the antecedent and the c-commanding deictic past tense.

Lastly, I have also argued that Farsi data lends support to (Arregui 2007)'s position that aspect in X-marked conditionals are not bleached of its meaning. I have reasoned for this view based on the fact that the incompatibility of perfect aspect with stative verbs, as well as its incompatibility with generic readings, is also maintained in X-marked conditionals.

3.3.2   Strength of Counterfactuality

We have seen two cases where English X-marked conditionals do not imply that their antecedent is False: (i) Future Less Vivid conditionals, and (ii) Anderson-type examples. It has been widely assumed that X-marked conditionals do not carry a counterfactuality presupposition. Rather, the antecedent falsity of X-marked conditional is an implicature. (Anderson 1951, Stalnaker 1975, Karttunen & Peters 1979, Palmer 1986).

Stalnaker (1975) provides another argument against counterfactuality as a presupposition. He shows that X-marked conditionals can be used to conduct a modus tollens argument, as in (232). If counterfactuality were presupposed, asserting the falsity of the antecedent would be uninformative. However, the modus tollens argument in (232) goes through without producing redundancy. Therefore, we can conclude that the falsity of antecedent proposition is only implicated.

(232)   The knife was clean.

        But if the butler had done it, we would have found blood on the kitchen

knife.

Therefore, the butler did not do it. (Stalnaker 1975)

von Fintel (1998) also brings up the case in (233), attributing it to Stanley Peters. In the context below, both X-marked and O-marked conditionals[10] are equally felicitous.

(233) *X: Kennedy was shot by a lone gunman.*

Y: Kennedy was shot by two gunmen.

Z: Look guys. You gotta admit this.

   a. If two gunmen had shot Kennedy, then two guns would have been found. So, let's find out...

   b. If two gunmen shot Kennedy, then two guns must have been found. So, let's find out... (von Fintel 1998)

von Fintel (1998) argues that a successful theory of X-marked conditionals should account for the fact that they do not have a complementary distribution with O-marked conditionals. With Stalnaker (1975), he concludes that antecedent falsity should be derived pragmatically.

We have seen that Farsi X-marked conditionals cannot be interpreted as Future Less Vivid (208b), and are infelicitous in Anderson-examples (210). Moreover, Farsi X-marked conditionals, as shown in (234), are infelicitous in Stanley Peter's case discussed earlier in (233).

(234) *X: Kennedy was shot by a lone gunman.*

Y: Kennedy was shot by two gunmen.

Z: Look guys. You gotta admit this.

---

[10]As we have said earlier, O-marked conditionals are characterized as lacking X-marking. Although the conditionals in (233) are not minimal pairs (must vs. would), they still show the point that O-marked and X-marked conditionals are sometimes felicitous in the same context.

a. #agar do nafar be Kennedy šellik karde bud-and, do ta tofang
   if two person to Kennedy shoot do.**PP AUX.PST**-3PL, two CL gun
   peida šode bud.
   find become.**PP AUX.PST.3SG**
   If two gunmen had shot Kennedy, then two guns would have been found.

b. agar do nafar be Kennedy šellik karde baš-and, do ta tofang
   if two person to Kennedy shoot do.**PP AUX.∅**-3PL, two CL gun
   peida šode ast.
   find become.**PP AUX.PRES.3SG**
   If two gunmen shot Kennedy, then two guns must have been found.

So, let's find out...

Before reviewing different proposals about the strength of counterfactuality, I want to rule out one obvious option to account for strong antecedent falsity of Farsi X-marked conditionals. That is to simply say that they are different from their English counterparts in presupposing the falsity of their antecedent. The felicity of Farsi X-marked conditionals in modus tollens arguments, as in (235) shows that this option is not tenable.

(235)   *The knife was clean.*

   agar pishkhedmat in kar ro kar-de bud, ma ru-ye chagu xun
   if butler this work RA do-**PP AUX.PST**.3SG we on-EZ knife blood
   peida mi-kard-im. chagu tamiz-e; pas pishkhedmat in kar
   found IMPF-do.PST-1PL. knife clean-is therefore butler this work
   ro na-kar-de ast.
   RA NEG-do-PP AUX.3SG

   'If the butler had done it, we would have found blood on the kitchen knife. The knife was clean; therefore, the butler did not do it.'

Lastly, as we have seen earlier, there are contexts like (174), repeated here as (236), where both X-marked conditionals and zero tense conditionals are felicitous.

(236)   *Context: The investigation is complete. The police holds a press conference, and announces that they can confirm that Oswald was in fact the murderer. John and*

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his friend are watching the press conference.

John to his friend:

a. Agar Oswald Kennedy ro na-košte   **bud**,   kas-e
   if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.ᴘsᴛ**.3sɢ, person-ᴇᴢ
   digar-i   ou ro košte bud
   another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘsᴛ.3sɢ
   '*If Oswald hadn't killed Kennedy, someone else would have.*'

b. *I'm not convinced but*

   agar Oswald Kennedy ro na-košte   **baš-ad**,   kas-e
   if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.∅**.3sɢ, person-ᴇᴢ
   digar-i   ou ro košte ast
   another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
   '*if Oswald didn't kill Kennedy, someone else did.*'

As I explained in Chapter Two, this context doesn't specify whether the antecedent proposition (p) has been accepted by all participants in discourse. All we know is that the police has reached the conclusion that Oswald is the murderer. John may not accept this claim. The zero tense conditional is felicitous as long as context doesn't presuppose p or its negation, irrespective of whether they are asserted or not. The settledness requirement on the felicitous use of X-marked conditionals is also satisfied in this context, as the projected context in which the proposition uttered by the police is negotiated and accepted, entails the falsity of antecedent proposition. Thus, both zero tense and X-marked conditionals are felicitous. However, only the claim with the zero tense conditional is true. The X-marked conditional claim is false, because it is not given that Kennedy would have been murdered anyway even if Oswald hadn't killed him.

The example in (236) is very important, as it shows that even in the case of Farsi where the antecedent falsity associated with X-marked conditionals is strong, we still need a theory that does not predict complementarity of X-marked and O-marked conditionals (von Fintel 1998).

The examples in (237) and (238) provide further evidence for the pragmatic

nature of strong counterfactuality of Farsi X-marked conditionals. These example show that there are cases where Farsi X-marked conditionals do not necessarily imply the falsity of their antecedents. However, this option seems to be only available to the **past oriented** past imperfective X-marked conditional. The pluperfect X-marked conditional in (237b) and (238b) is not felicitous in the same context[11].

(237)   *Context: Aria has borrowed Farshid's car. He calls Farshid and tells him: It's foggy everywhere. There was a turn where...*

    a.   agar shans ne-mi-avar-d-am,   tah-e   darre mi-oft-ad-am.
        if   luck   NEG-IMPF-bring-PST-1SG bottom-EZ valley IMPF-fall.PST-1SG
        'if I wasn't lucky, I (with the car) would fall into a valley.'

    b.   #agar shans na-yavorde   bud-am,   ,   tah-e
        if   luck   NEG-bring-PP AUX-PST-1SG bottom-EZ valley
        darre   mi-oft-ad-am.
        IMPF-fall.PST-1SG
        'if I hadn't been lucky, I (with the car) would have fallen into a valley.'

    Farshid: Are you really calling so early in the morning to say this?

    Aria: well, I wasn't lucky...

adapted from a post on *Twitter*[12]

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

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

    b.   *(chon)   agar dirooz   rafte bud-am,   taxfif   mi-gereft-am.
        (because) if   yesterday go-PP AUX-PST-1SG discount IMPF-get.PST-1SG
        'Because if I had gone yesterday, I would have gotten a discount.'

---

[11]Later in this chapter, I discuss cases where Farsi pluperfect X-marked conditionals are also used without implying antecedent falsity.

[12]Thanks to Masoud Jasbi for showing me this example.

3.3.2.1 Stalnaker (1975); von Fintel (1998), and von Fintel & Iatridou (2020)

According to von Fintel's formalization of Stalnaker's proposal, which is also adopted by von Fintel & Iatridou (2020), O-marked conditionals carry no presupposition. von Fintel (1998) proposes a default pragmatic constraint according to which the domain of quantification is contained in the context set. Given this constraint, O-marked conditionals are felicitous when all antecedent worlds in the domain of quantification are within the context set.

(239)   a. O-marked conditionals: presupposition: $\varnothing$

          b. Default pragmatic constraint: $D(w) \subseteq C$

<div align="right">(von Fintel 1998; von Fintel & Iatridou 2020)</div>

X-marked conditionals carry a presupposition that the domain of quantification is partly outside the context set.

(240)   X-marked conditionals: presupposition: $D(w) \nsubseteq C$

<div align="right">(von Fintel 1998; von Fintel & Iatridou 2020)</div>

The domain widening approach accounts for the distribution of O-marked and X-marked conditionals in English. I will not go through all the cases here, I refer the reader to von Fintel (1998). But let us see how the domain widening approach account for Stanley Peter's case.

The domain widening approach maintains that X-marking signals that the domain of quantification is partly outside the context set. von Fintel (1998) proposes that there are different possibilities to understand why an X-marked form which signals domain widening has been used:

(241)   a. The antecedent is counterfactual.

          b. The domain of quantification is widened for some other reason.

c. The speaker wants to avoid a direct signal that the antecedent is epistemically possible.

The hearer is free to interpret X-marked conditionals as meaning any of the options above. As for Stanley Peter's case, von Fintel (1998) argues that the use of the X-marked conditional is *'the more diplomatic way of mediating here'*. The hearer interprets the X-marked conditional as meaning that the speaker does not want to make a potentially offensive utterance by using the O-marked conditional which directly signals that the antecedent is possible. The X-marked conditional is diplomatically neutral with respect to possibility of the antecedent proposition being true.

von Fintel (1998) and Stalnaker (1975) were not concerned with the role of the past tense morphology in the domain widening presupposition associated with X-marked conditionals. As such, their account does not really explain the role of past morpheme in X-marked conditionals. As a result, there are not enough tools in the approach to explain the cross-linguistic variation in the strength of counterfactuality as observed in Farsi.

3.3.2.2 Iatridou (2000)

Iatridou (2000) provides an account of how the counterfactuality can be derived as a conversational implicature, taking into account the contribution of the past tense morphology. She argues that the cancelability of counterfactuality in X-marked conditionals is similar to the cancelable implicature in the following conversation:

(242) A: What do you think about Peter and Ian?
       B: Well, I like Ian.

The fact that B has chosen not to talk about his feelings toward Peter can give rise to the implicature that B does not like Peter. But B has not asserted this. He

can later add that he, in fact, like Peter and cancel this implicature. Iatridou (2000) argues that the cancelability of counterfactuality can be accounted for in a similar way. The speaker of an X-marked conditional discusses the relationship between the proposition in the antecedent (p) and the proposition in the consequent (q), and makes their utterance to be about a set of worlds (the topic worlds) to which the actual world does not belong. In interpreting the X-marked conditional, the hearer pragmatically reasons that the reason why speaker chooses to talk about p worlds instead of the actual world, is that they do not think that the actual world is a p world.

Following Lewis (1973) and Stalnaker (1975), Iatridou (2000) argues that X-marked conditionals are not a statement about all worlds in which p is true but only about a subset of them, i.e. the topic worlds do not exhaust all the p worlds. The speaker of an X-marked conditional merely states that the actual world is not among the p worlds that they are talking about. It does not necessarily follow that the actual world is not among the p worlds. When the counterfactuality of an X-marked conditional is canceled, it is first asserted that the topic worlds exclude the world of the speaker (i.e. the actual world), and it is subsequently asserted that the set of p worlds includes the worlds of the speaker. This means that the set of p worlds is large enough to contain the topic worlds and the utterance world, but the topic worlds excludes the utterance world.

Iatridou (2000) points out that the temporal past tense morphology shows a similar cancelability property. Consider the example below in which the speaker utters the following two sentences:

(243)   a. John was in the classroom.

          b. In fact, he still is.

The speaker of (243a) asserts that at the topic time the situation S (John is in the classroom) holds and that the topic time excludes the utterance time. But it doesn't

necessarily follow that the "situation" time excludes the utterance time. This is only an implicature that arises because the speaker has chosen to talk about the topic time and not the utterance time. The speaker can later add (243b) which asserts the situation time includes the utterance time. The situation time is large enough to include both the topic time and the utterance time, with the former excluding the latter.

Now let's see how Iatridou's account handles Farsi data. Like English, if the Farsi speaker uses the temporal past (choosing to talk about the topic time instead of the utterance time), it gives rise to the implicature that they don't think the topic time includes the utterance time. This implicature gets canceled if the speaker later adds that the topic time includes the utterance time.

(244)   a. John tu kelas bud.
            John in class be.PST.3SG
            '*John was in the classroom.*'

        b. dar vaghe, hanooz ham hast.
            in fact   still   too be.3SG
            '*In fact, he still is.*'

However, this implicature cannot be canceled when "past" ranges over worlds. As we have seen the antecedent falsity of Farsi X-marked conditionals cannot be canceled. This raises the question why the implicature associated with (T(x) excludes C(x)) can be canceled when x ranges over times but not when it ranges over worlds. Furthermore, it's not clear what is the source of the difference between Farsi and English in the strength of counterfactuality.

3.3.2.3   Mackay (2019a)

Mackay (2019a) proposes an account that derives the distribution of X-marked and O-marked conditionals pragmatically from the presupposition of the past tense

morphology in X-marked conditionals, while avoiding the problems Mackay (2015) mentions for ambiguous past approaches of Iatridou (2000) and Schulz (2014).

Mackay's proposal is similar in spirit to those of Stalnaker (1975) and von Fintel (1998). The O-marked conditional is the unmarked form, and its modal base is the factive common ground. The X-marked conditional presupposes that their modal base is a proper subset of the factive common ground. This is in contrast with Stalnaker and von Fintel's proposals that O-marked and X-marked conditionals differ in their relation to the presupposition of the whole common ground. Mackay (2019a) argues that such a departure is needed to account for intuitions about conditionals that are asserted in contexts where the speakers' presuppositions are false. He explains this with the example below by Edgington (1995). Assume the conditional (245) is uttered in a context where it is wrongly presupposed that dancing will make it rain the next day. At such a context, at every world in the context at which we dance, it rains the next day. Further suppose that the speakers dance, and it does not rain.

(245)   If we dance, it will rain tomorrow.

The conditional (245) is judged false in such a scenario, since the speakers danced and then it did not rain. However, a view that takes the domain of the O-marked conditional to be within the context set (the whole common ground) wrongly predicts (245) to be true.The reason is, Mackay (2019a) argues, '*if the world selected for an O-marked conditional is in the context set even when the world of evaluation is not, then the selected world at which the speakers dance must be one at which it does rain*'.

Given that ambiguous past approaches have problems accounting for the past orientation of Farsi past imperfective conditionals, Mackay's proposal falls short of explaining the role of past tense in X-marked conditionals cross-linguistically. Moreover, the variation in the strength of counterfactuality remains unexplained.

3.3.2.4 Leahy (2018)

Leahy (2011, 2018) provides a pragmatic account of the antecedent falsity inference associated with the X-marked conditional, according to which the X-marked conditional is the unmarked form, and thus carries no presupposition. O-marked conditionals, in contrast, presuppose that their antecedents are epistemically possible. He defines the notion of epistemic possibility as follow:

(246)   A proposition is *epistemically possible* for a speaker s iff it is consistent with the set of proposition that the speaker knows, as modulated by their purposes in the conversation at hand.

The antecedent falsity of X-marked conditionals is derived as a presuppositional implicature from the pragmatic principle of Maximize Presupposition (Heim 1991), defined in (247).

(247)   **Maximize Presupposition**

If ϕ and ψ are contextually equivalent alternatives, and the presuppositions of ψ are stronger than those of ϕ, and are met in the context of utterance, one must use ψ in c.

Presuppositions of X-marked and O-marked conditionals are asymmetrically ordered by logical strength, where O-marked conditionals carry the logically stronger presupposition. Together with Maximize Presupposition, the use of the X-marked conditional in a context gives rise to the implicature that the speaker has reason to believe that the presupposition of the logically stronger alternative, i.e. the O-marked conditional, is not met in the context. That is, the antecedent proposition is not epistemically possible for the speaker.

Leahy (2011, 2018) argues that the use of X-marked conditionals does not generate the antecedent falsity implicature in Anderson's examples and modus tollens arguments (Stalnaker 1975), because the O-marked conditional is infelicitous in

such cases, and thus does not count as a contextual alternative to the X-marked conditional.

(248)   a. This was done with stiletto. # But if the butcher did it, he used a cleaver. So it wasn't the butcher.

        b. # If he took arsenic, he showed just exactly the symptoms that he in fact showed.

<div align="right">(Leahy 2018)</div>

Leahy (2018) admits, however, that his account is not developed to capture non-counterfactual uses of X-marked conditionals. For instance, Crowley (2022) mentions that Leahy's proposal fails to account for cases brought up by von Fintel (1998), where both O-marked and X-marked conditionals are equally felicitous, as shown in (233).

Leahy's account suffers from two problems: (i) This analysis does not explain the role of past morpheme in X-marked conditionals. (ii) Cross-linguistic variations in the strength of counterfactuality remains unexplained.

3.3.2.5 Crowley (2022)

Crowley (2022) proposes an account that combines insights from Leahy (2011, 2018) and Mackay (2019a). Like Leahy, he takes X-marking to lack a direct presuppositional or truth-conditional contribution. The antecedent falsity inference associated with X-marked conditionals arises from the competition with their O-marked alternatives, which are presuppositionally stronger. Crowley (2022) suggests that both O-marked and X-marked conditionals carry a presupposition that their modal base is a subset of the factive common ground (represented by the notation c^T).

(249)   *Subset Property of Modal Bases*

Given a world w, a context c and a modal M_f such that X and O can appear in the immediate scope of M_f, $f(w) \subseteq c^T$.

(Crowley 2022)

O-marked conditionals further presuppose that their modal base is identical to the factive common ground.

(250) *Presupposition of O-marked conidtionals*

$\forall w' \in \bigcap f(w) \cap \phi : w' \in \bigcap c^T.$

(Crowley 2022)

This is attributed to the universal projection of the presupposition of an operator O, defined in (251a), that sits in the immediate scope of restricted modal quantifier in O-marked conditionals, as the LF (251b) illustrates.

(251) a. $[\![O]\!]^{c,f} = \lambda p.\ \lambda w\ :\ w \in \bigcap c^T.\ p = 1$

      b. $[[Nec\ [if\ \phi]][O\ \psi]]$

(Crowley 2022)

The competition between X-marked and O-marked conditionals give rise to the implicature that the modal base of the X-marked conditional is a *proper* subset of the factive common ground, as proposed by Mackay (2019a). Crowley (2022) argues that the hearer then derives the meaning that presuppositions are being suspended in the interpretation of X-marked conditionals (Stalnaker 1975; von Fintel 1998).

Crowley's analysis is aimed to account for two desiderata stated in (252a) and (252b).

(252) a. **Desideratum 1**

      It should be possible to interpret X-marking in an embedded position relative to the modal that it is associated with.

b. **Desideratum 2**

X-marking in the antecedent and main clause of conditionals can be attributed to separate instances of X-marking operators.

(Crowley 2022)

One of the motivations for the first desideratum comes from the obligatory use of X-marking with counterfactual desire expressions like *wish* as in (253).

(253)   I wish I had a car now.

Following von Fintel (2012), Crowley (2022) argues that the appearance of X-marking in such constructions cannot be due to agreement with a higher instance of X-marking. Crowley (2022) also takes X-marking in non-SOT languages like Russian and Japanese, which do not otherwise have agreement-induced occurrences of the past tense, further evidence that X-marking is not necessarily get assigned from a higher X-marking operator.

He reasons for the second desideratum on the basis of the X-marking pattern in languages like Spanish where the antecedent of the X-marked conditional bears past subjunctive morphology while the consequent takes a conditional form.

I will discuss counterfactual desire expressions in the last section. Here, I want to mention that, as Crowley (2022) acknowledges, it doesn't follow from different morphological forms in the antecedent and the consequent that there are multiple operators involved in conditionals. There are more substantial problems with this approach though. It has no explanation for the robust cross-linguistic generalization that many unrelated languages use past tense morphology for X-marking. Crowley (2022) claims that all morphologies that are involved in X-marking are vacuous. This hypothesis which he dubs as *Generalized Vacuity Hypothesis* is stated below.

(254)   **Generalized Vacuity Hypothesis**

For all morphological forms that can serve as X-marking, all interpretations of these forms, whether modal or not, are associated with a semantically vacuous function in the LF of the expression containing the morphology. (Crowley 2022)

Farsi data shows that this hypothesis cannot be correct. Both tense and aspect in X-marked conditionals show some of their normal semantic functions. Moreover, any theories that take X-marking to be semantically vacuous fails to account for the two important observations made by Ippolito (2013). The first observation is that future oriented pluperfect X-marked conditionals strongly imply falsity of their antecedent, as the infelicity of such conditionals in Anderson-type example (255) suggests.

(255)   # 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 by train tomorrow.

If both tense and aspect are semantically vacuous, as Crowley (2022) claims, what gives rise to the strong counterfactuality of future oriented pluperfect X-marked conditionals?

The second observation is that the future-less-vivid conditionals cannot be used in contexts where presuppositions of their antecedent are not met.

(256)   *John was training for the Boston Marathon last summer when he unexpectedly died.*

   a. # If John ran the Boston Marathon next spring, he would win.

   b. If John had run the Boston Marathon next spring, he would have won.

Note that according to Crowley's proposal, the pragmatic inference associated with X-marked conditionals is not the antecedent falsity, but suspension of presuppositions from the hypothetical domain of a conditional. As discussed by Crowley

(2022), the antecedent falsity is only one of motivations for suspending a presupposition. Another motivation may be that the hypothetical proposition is unlikely. The question, however, is why the suspended presupposition in (256a) cannot be the existence presupposition. Moreover, we have seen that Farsi X-marked conditionals do not have a future less vivid interpretation. They imply the antecedent falsity, not unlikelihood, as the infelicity of (257a) shows.

(257) *The result of the DV-lottery will be announced tomorrow. The chance of winning is 0.15%.*

    a. #agar latary ro mi-bord-am,   green card mi-gereft-am
        if   lottery RA IMPF-win-PST-1SG green card IMPF-get.PST-1*sg*
        '*If I won the lottery, I would get a green card.*'

    b. agar latary ro be-bar-am,   green card mi-gir-∅-am
        if   lottery RA IMPF-win-∅-1SG green card IMPF-get.PRES-1*sg*
        '*If I won the lottery, I would get a green card.*'

Therefore, I conclude that the approached proposed by Crowley (2022) cannot explain the role of past morpheme in X-marked conditionals. It also fails to capture variations within and across languages in the strength of counterfactuality associated with X-marked conditionals.

3.3.2.6 Ippolito (2003, 2006, 2013)

Ippolito (2003, 2006, 2013) derives the felicity conditions of X-marked conditionals from the semantic impact of tense and aspect. As discussed earlier, she takes the past tense in X-marked conditionals to shift the time of the accessibility relation to the past. This approach predicts that X-marked conditionals are felicitous in contexts where the antecedent proposition cannot be true in any world historically accessible at the utterance time. O-marked conditionals are predicted to be false in such contexts, because when the time of the accessibility relation is the utterance

time, quantification cannot be over antecedent-worlds that are not compatible with the actual world at the utterance time.

Ippolito (2013) makes important observations about contrasts between simple past and non-past pluperfect X-marked conditionals in their felicity conditions. The first observation is what she calls *presupposition asymmetry* which concerns the fact that the simple past X-marked conditional is infelicitous when the presupposition of its antecedent of is not met in the context of utterance, as shown in (258). This is true even in cases where the antecedent is truly counterfactual (e.g. (258a)).

(258)   *John is dead.*

    a.   #If he were in love with Mary (now), he would ask her to marry him.

    b.   If he had been in love with Mary (now), he would have asked her to marry him.

<div align="right">(Ippolito 2013)</div>

Under Ippolito's account, the reference time of conditionals plays an important role in their felicity. The presuppositions of a conditional must be satisfied at the reference time. As the reference time of the simple past X-marked conditional is the utterance time by default, the presuppositions of this type of conditionals must hold at the utterance time. The infelicity of the simple past X-marked conditional in (258a) then follows from the fact that the presupposition of this conditional is incompatible with what is possible at the utterance time. As the context in (258) says John is dead at the utterance time, the *existence presupposition*, i.e. the presupposition that John exists, is not satisfied.

She accounts for the felicity of the pluperfect conditional in (258b) by proposing that non-past pluperfect conditionals have two layers of past scoping over the whole conditional. The role of the second past is to move the reference time of the whole conditional to a contextually salient past time. As the reference time is a past time,

any presupposition in the antecedent must be compatible with what is possible in the actual world at a past time. As the reference time in the pluperfect conditional is a past time, this presupposition needs to be satisfied in a past time not at the utterance time. Therefore, the fact that John is dead at the utterance time doesn't affect the felicity of the pluperfect conditional in this context.

The second observation, what she calls the *time asymmetry observation*, is that the simple past X-marked conditional is felicitous only if the eventuality in the antecedent has not already happened. The examples in (221), repeated here as (259), illustrate this fact.

(259)   *John had chicken pox last year during the summer exam period. It was a disaster.*

    a. Bad timing. #If he were sick with chicken pox next summer instead, it would be much better.

    b. Bad timing. If he had been sick with chicken pox next summer instead, it would have been much better.

<div align="right">(Ippolito 2013)</div>

To account for the infelicity of (259a), Ippolito (2013) makes two assumptions. First, she argues that the antecedent of this conditional is interpreted referentially. It is about a salient eventuality of John's being sick. Following Kratzer (1998a), she assumes that aspectual operators take a predicate of events as their argument, and return a predicate of times. Unlike Kratzer (1998a) who takes aspect heads to existentially quantify over the event argument of the predicate, Ippolito (2013) proposes that the aspectual operators introduce an event pronoun as the argument of the event predicate. Secondly, she proposes that eventive and stative predicates carry *the possibility presupposition* defined below.

(260)   **The Possibility Presupposition**

    For any eventuality v, let v be *possible* at time t and world w just in case v

has not already ended at any time $t' < t$ in w. (Ippolito 2013)

She explains that (259a) is infelicitous because the possibility presupposition of the antecedent which requires the salient eventuality of John being sick to be possible tomorrow is not satisfied at the utterance time. The reason is that the contextually salient eventuality of John's being sick has occurred, and ended yesterday. Therefore, the infelicity of (259a) follows from the anaphoric interpretation of the event argument of the predicate in the antecedent, and the possibility presupposition. In the pluperfect conditional, however, the possibility presupposition is required to be compatible with the set of worlds historically accessible at a past time (presumably some past time before the time when John got sick in the actual world). Therefore, the fact that this presupposition is not compatible with the state of the actual world is irrelevant to felicity of this conditional.

As mentioned before, Ippolito (2013) shows that the antecedent falsity inference associated with non-past pluperfect X-marked conditionals is strong, and cannot be cancelled. This is confirmed by the infelicity of such conditionals in Anderson-type reasoning.

(261)   # 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 by train tomorrow.

(Ippolito 2013)

In 3.1.2.3, I have also noted that future oriented pluperfect X-marked conditionals cannot have Future Less Vivid interpretations. This was demonstrated with example (208a), repeated here as (262).

(262)   *The result of the DV-lottery will be announced tomorrow.*   #If I had won the lottery, I would have gotten a green card.

When the presuppositions of the antecedent are met at the time of utterance, the use of the non-past pluperfect X-marked conditional strongly implies that the antecedent is false.

(263) *John is alive.*

    a. If John played his last game tomorrow, he would win.

    b. If John had played his last game tomorrow, he would have won.

<div align="right">(Ippolito 2013)</div>

She derives the strong counterfactuality of non-past pluperfect X-marked conditionals via the principle of Maximize Presupposition. She argues that simple past and non-past pluperfect X-marked conditionals form a scale where the simple past X-marked conditional is presuppositionally stronger. Therefore, when the speaker uses the presuppositionally weaker alternative, the hearer derives the inference that some presuppositions of the antecedent are not consistent with the context at the utterance time. For instance the use of (263b) in a context where the existence presupposition is met, triggers the inference that John's playing his last game tomorrow is not a possibility at the utterance time.

Before discussing Farsi data, I want to bring up a potential counter-example to Ippolito's analysis of the contrast between simple past and non-past pluperfect X-marked conditionals. Given that aliens do not exist (at least as far as we know) and their arrival to earth is not a possible future event, Ippolito's analysis in terms of the principle of Maximize Presupposition falsely predicts that the presuppositionally stronger alternative (pluperfect) must be used in (264).

(264)   a. If aliens came to earth tomorrow, they would kill us all.

    b. #If aliens had come to earth tomorrow, they would have killed us all.

Let's now look at Farsi. We have seen that Farsi X-marked conditionals strongly imply the falsity of their antecedent. There is no difference in strength of counter-

factuality between future past imperfective and pluperfect X-marked conditionals. They are both infelicitous in a context where the antecedent proposition is still realizable, irrespective of how unlikely it is.

(265) *The result of the DV-lottery will be announced tomorrow. The chance of winning is 0.15%.*

    a. #agar latary ro mi-bord-am,   green card mi-gereft-am
         if   lottery RA IMPF-win-PST-1SG green card IMPF-get.PST-1*sg*
         'If I won the lottery, I would get a green card.'

    b. #agar latary ro borde bud-am,   green card mi-gereft-am
         if   lottery RA win-PP AUX-PST-1SG green card IMPF-get.PST-1*sg*
         'If I had won the lottery, I would have gotten a green card.'

However, the two types of conditionals contrast in their felicity conditions. It's infelicitous to use the pluperfect in contexts where a counterpart of the situation described in the antecedent hasn't already been realized in the actual world.

(266) *John is in hospital. His team will play an important game tomorrow.*

    a. agar John farda   bazi mi-kard,   team-esh mi-bor-d.
         if   John tomorrow play IMPF-do.PST.3SG, team-his IMPF-win.PST.3esG
         ' If John played tomorrow, his team would win.'

    b. #agar John farda   bazi karde bud,   team-esh
         if   John tomorrow play do.PP AUX.PST.3SG team-his
         mi-bor-d.
         IMPF-win.PST.3SG
         'If John had played tomorrow, his team would have won.'

The examples in (267) and (268) show that in contexts where a counterpart of the situation describe by the antecedent proposition hasn't already been realized, the pluperfect X-marked conditional is infelicitous irrespective of whether or not the existence presupposition of the antecedent is not satisfied at the utterance time.

(267) a. agar farda   ye asb-e   šaxdar mi-did-am,   xošhal
         if   tomorrow a horse-EZ unicorn IMPF-see-PST-1SG happy
         mi-šod-am
         IMPF-become-PST-1SG

If I saw a unicorn tomorrow, I'd be happy.

b. # agar farda   ye asb-e   šaxdar dide bud-am,   xošhal
    if   tomorrow a horse-ᴇᴢ unicorn see-ᴘᴘ ᴀᴜx-ᴘsᴛ-1sɢ happy
   mi-šod-am
   ɪᴍᴘF-become-ᴘsᴛ-1sɢ
   #If I had seen a unicorn tomorrow, I would have been happy.

(268)   *Mostafa is dead. He loved Larry David. A new season of "Curb Your Enthusiasm"*

      which will be released tomorrow.

   a. agar Mostafa in   film ro mi-did-id,   kheili mi-xand-id
     if   Mostafa this film ʀᴀ ɪᴍᴘF-see.ᴘsᴛ-3sɢ, very ɪᴍᴘF-laugh-ᴘsᴛ.3sɢ
     If Mostafa had watch this movie, he would have laughed a lot.

   b. # agar Mostafa in   film ro dide bud,   kheili mi-xand-id
      if   Mostafa this film ʀᴀ see.ᴘᴘ ᴀᴜx.ᴘsᴛ-3sɢ, very ɪᴍᴘF-laugh-ᴘsᴛ.3sɢ
     If Mostafa had watch this movie, he would have laughed a lot.

My intuition about the contrast in (268) is that the use of perfect aspect implies that it was in principle possible for Mostafa to watch the movie, but he didn't. Since the movie is made after Mostafa's death, the conditional with pluperfect aspect is anomalous.

When the situation described in the antecedent has already been realized, both past imperfective and pluperfect X-marked conditionals are equally felicitous, as illustrated in (269a). This is in contrast with English where only the pluperfect X-marked conditional is felicitous in this context, as was shown in (259).

(269)   *John had chicken pox last year during the summer exam period. It was a disaster.*

   a. bejash agar tabestan-e ba'd abele morghan mi-gereft,   keili
     instead if   summer-ᴇᴢ next pox chicken ɪᴍᴘF-get.ᴘsᴛ.3sɢ much
     behtar bud.
     better be.ᴘsᴛ.3sɢ
     'If he got chicken pox next summer instead, it would be much better.'

   b. Bejash agar tabestan-e ba'd abele morghan gerefte bud,   keili
     instead if   summer-ᴇᴢ next pox chicken get-ᴘᴘ ᴀᴜx.ᴘsᴛ.3sɢ much
     behtar bud.
     better be.ᴘsᴛ.3sɢ

'If he had gotten chicken pox next summer instead, it would have been much better.'

Ippolito's observations are important in understanding pragmatic inferences and felicity conditions of different types of X-marked conditionals. No other theory we have discussed so far, has a way of explaining these observations. I have brought up data from Farsi and English which are problematic for the account proposed by Ippolito (2013) according to which the (in)compatibility of presuppositions of a conditional with the state of the world at the reference time is what determines the felicity of X-marked conditionals. First, as we have seen past imperfective X-marked conditionals, which have only one layer of past, are felicitous in contexts where presuppositions of its antecedent aren't satisfied. Secondly, pluperfect X-marked conditionals can be infelicitous in such contexts.

Farsi data suggests that the contrast between these two X-marked conditionals is about whether or not the situation described in the antecedent has already been realized. Future oriented pluperfect X-marked conditionals in both Farsi and English can be used when the situation described in the antecedent has already been realized. The difference between the two languages is that while in English only pluperfect can be used in contexts where the situation described in the antecedent has already been realized (the simple past X-marked conditional is infelicitous), both imperfective and pluperfect X-marked conditionals in Farsi are felicitous in such contexts. In contexts where the situation described in the antecedent has *not* already been realized, Farsi pluperfect X-marked conditionals are infelicitous. Moreover, the strong counterfactuality of Farsi X-marked conditionals remains unexplained in Ippolito's approach, just like all other approaches we have discussed so far.

I conclude that a successful account of felicity conditions of X-marked conditionals should be able to explain Ippolito's observations, as well as the observed

cross-linguistic variations. However, the approach proposed by Ippolito (2003, 2006, 2013) is not able to tackle this task.

3.3.2.7 Arregui (2005, 2007)

Arregui (2005, 2007) proposes an account where that the difference between felicity conditions of the simple past and the pluperfect X-marked conditionals follow from their aspectual differences. The antecedent of simple past X-marked conditionals contain a silent perfective aspectual head. Pluperfect X-marked conditional, in contrast, contains a perfect aspectual head.

The contrast in (270) shows that the simple past X-marked conditional whose antecedent contains an eventive predicate is infelicitous in contexts where the situation described in the antecedent is known to be contrary-to-fact.

(270)   (*continuation*) *Suppose that your plants die before you leave on holidays, and you cancel your request. I would feel sorry, but also relieved.*
You: Don't worry about looking after my plants. They died yesterday.
Me: I am sorry, but also a bit relieved.

   a. If your plants had died next week, I would have been very upset.

   b. #If they died next week (instead), I would be very upset.

(Arregui 2005, 2007)

A simple past antecedent whose main predicate is stative can be used to describe a counterfactual situation in the future, as the example in (271) illustrates.

(271)   You: I'm worried about my plants.
Me: Your plants do not have enough light. If they had enough light, they would be fine.

(Arregui 2005, 2007)

Arregui (2007) argues that contrasts in felicity conditions of simple past and pluperfect X-marked conditionals arise from the differences between the perfective and the perfect aspect. The perfective is deictic, but the perfect aspectual head is crucially not deictic. The denotations of the perfective and perfect aspect heads are given below.

(272)   a. $[\![$ **PERFECTIVE- e_i** $]\!]^{g,w} = \lambda P\ \lambda t\ \lambda w'\ (P([\![e_i]\!]^{g,w}))\ \&\ \exists s\ (s < w'\ \&$
$[\![e_i]\!]^{g,w}(s) = 1\ \&\ \tau(s) \subset t)$

   b. $[\![$ **PERFECT** $]\!]^{g,w} = \lambda P\ \lambda t\ \lambda w'\ \exists e'\ (P(e)\ \&\ \exists s\ (s < w'\ \&\ e$ occured
in s & $\tau(e) < t)$

<div align="right">(Arregui 2007)</div>

She proposes that a deictic event pronoun presupposes that the event is true of some spatiotemporal region in the actual world. Therefore, the felicitous use of a deictic event pronoun requires that this pronoun have a denotation in the actual world. As there is a perfective operator in simple past X-marked conditional in (270b), the antecedent carries the presupposition that the deictic event pronoun e_i has a denotation in the actual world. The modal quantifies over worlds in which *the* event that is presupposed to occur in the actual world is an event of your plants dying next week. In the context where your plants have already died yesterday, the actual world can't be a world in which your plants die next week. Therefore, the antecedent is not defined and the conditional is infelicitous.

In the pluperfect X-marked conditional, perfect aspect existentially binds the event argument in the argument structure of the antecedents predicate. The proposition in the antecedent is true in every possible world in which *some* event of your plants dying next week is true of a spatiotemporal region before t_i. Since perfect aspect is not deictic, there is no presupposition that the event in question occurs in the actual world. Therefore, there is no incompatibility between the actual course of events and the properties of the antecedent event.

To account for the felicity of the simple past antecedents whose main predicate is stative (e.g. 271), Arregui (2005) argues that unlike eventive verbs which denote properties of events, stative verbs denote properties of times. Therefore, tenses, which denote temporal intervals, can directly combine with stative VPs. As the antecedent doesn't contain a deictic perfective aspect, the antecedent doesn't carry the presupposition that the event in question is true in the actual world.

We have seen that the contrast in felicity conditions of past imperfective and pluperfect X-marked conditionals in Farsi do not quite match the contrast between English simple past and pluperfect X-marked conditionals. However, if Arregui (2007) is right in assuming that the antecedent in English simple past X-marked conditionals contains a perfective aspect, the different behavior of Farsi past imperfective conditionals can be attributed to properties of imperfective aspect. For instance, we can assume that imperfective aspect like perfect aspect is not deictic. This, however, doesn't explain why pluperfect X-marked conditionals in Farsi can only be felicitous when the situation described in the antecedent has already been realized. Moreover, Arregui's approach cannot capture the strong counterfactuality of Farsi X-marked conditionals.

3.3.2.8 Concluding thoughts

In this section, I have reviewed several proposals about pragmatic inferences and felicity conditions of X-marked conditionals. Here, I want to lay out what an ideal theory about pragmatics of X-marked conditionals should be able to explain.

(i) There are contexts in which both O-marked and X-marked conditionals are felicitous: Stanley Peter's example (233) in English, and (236) in Farsi. We therefore, need a theory that does not predict complementarity of X-marked and O-marked conditionals (von Fintel 1998).

(ii) The antecedent falsity of some X-marked conditionals is cancelable: Future

Less Vivid (206) and Anderson-type examples (209) in English, past oriented past imperfective X-marked conditionals in Farsi (238). This points to the conclusion which has been reiterated in the literature on X-marking (Stalnaker 1975; von Fintel 1998; Iatridou 2000; Leahy 2018; Mackay 2019a, among others) that the antecedent falsity is a pragmatic inference (see Zakkou (2020) for a different view).

(iii) The antecedent falsity of some X-marked conditionals is strong: infelicity with Future Less Vivid interpretation ((208b) in Farsi and (262) in English) and with Anderson-type examples ((210) in Farsi and (261) in English).

(iv) Contrasts in felicity conditions of simple/imperfective past and future pluperfect X-marked conditionals in English and Farsi (discussion in 3.3.2.6 and 3.3.2.7)

(v) The role of past tense in giving rise to antecedent falsity inference in X-marked conditionals.

Iatridou (2000), Ippolito (2003, 2006, 2013), and Arregui (2005, 2007, 2009) focus on deriving the felicity conditions of X-marked conditionals from the past, and are not concerned with the distribution of O-marked conditionals. Thus, they have not discussed (i).

All approaches we reviewed have discussed the cancelability of the antecedent falsity inference, and can capture (ii). We just need to figure out why the past oriented past imperfective X-marked conditionals are different from other Farsi X-marked conditionals in the strength of counterfactuality.

As we have seen, none of these approaches can straightforwardly explain (iii). In fact, only Ippolito (2013), and to some extent Mackay (2019a), have discussed cases where the information of the antecedent falsity is difficult to cancel. As these approaches have attributed the strong antecedent falsity to the presence of two layers of past morphology, they cannot capture the strong counterfactuality of future oriented past imperfective, and past oriented pluperfect X-marked conditionals in Farsi. Therefore, we have to look elsewhere to explain cross-linguistic variations in

the strength of counterfactuality in X-marked conditionals.

Ippolito (2003, 2006, 2013), and Arregui (2005, 2007, 2009) are the only approaches that have discussed (iv). But we have seen that Farsi data is challenging for both of these approaches.

Iatridou (2000), Ippolito (2003, 2006, 2013), Arregui (2005, 2007, 2009), and Mackay (2019a) have taken the role of the past morphology in the semantic and pragmatic properties of X-marked conditionals seriously. Stalnaker (1968); von Fintel (1998); Leahy (2011, 2018), and Crowley (2022), on the other hand, have put the role of past morphology aside. Leahy (2011, 2018) and Crowley (2022), in particular, do not assign any semantic contribution to X-marked conditionals, and thus they fall short of accounting for (iii)-(v).

I conclude that although the approaches reviewed here have their strengths and weaknesses, none can fully capture the points mentioned in (i)-(v).

3.4 Summary

The morphological, semantic, and pragmatic properties of X-marking across languages are too similar to be accidental. I maintain what has been the tradition in the linguistic literature on X-marking since Iatridou (2000), that the task of a theory of X-marking should be to derive the semantic, and pragmatic properties of X-marking from their linguistic ingredients. A successful theory should ideally define a cross-linguistically uniform role to the recurring X-marking morphology, i.e. past, while explaining variations among languages with respect to properties of X-marking.

We have seen that both Farsi and English X-marked conditionals can appear in contexts where the antecedent is true. Therefore, the antecedent falsity associated with X-marked conditionals should be derived pragmatically in both languages. However, the cases where an X-marked conditional can be felicitously used without

implying the falsity of its antecedent are different in Farsi and English. In Farsi this option is limited to past oriented past imperfective X-marked conditionals. Moreover, both languages show that there are cases where the antecedent falsity inference is hard or impossible to cancel. A theory of X-marking should be able to explain and derive different degrees of strength for the counterfactuality implication associated with X-marked conditionals.

We have also observed that the antecedent of past imperfective X-marked conditionals in Farsi, which presumably only contain one layer of the past morphology can have a past orientation. Therefore, I have concluded that a theory of X-marking should allow for one layer of the past tense morphology to convey a temporal past meaning while simultaneously making its contribution to X-marking. This is only possible under a uniform past approach to X-marking. An ideal theory of X-marking should also explain why this option is not available to other languages like English.

In the next chapter, building on Farsi data, I will develop an account of conditionals that can better tackle these tasks.

CHAPTER 4

An Anchor semantics for conditionals

Building on the Farsi facts that were introduced in Chapter Three, my main goal in this chapter is to explain cross-linguistic variation in the strength of the antecedent falsity inference associated with X-marked conditionals and the temporal orientation of their antecedent. I have argued that the past orientation of X-marked conditionals containing only one layer of past necessitates a uniform past approach. This chapter advances a uniform past approach that can derive differences between O-marked and X-marked conditionals from the contribution of past tense to determining the domain of quantification of X-marked conditionals (like *past-as-modal* approaches), while maintaining a unified temporal semantics for past tense morphology (like *past-as-past* approaches). Therefore, this approach will be a marriage between what are called *past-as-past* and *past-as-modal* approaches by Schulz (2014). I will argue that a version of Arregui's account that is coupled with an accompanying account of O-marked conditionals in Anchor Semantics (Kratzer 2020) delivers the necessary features of a middle-ground approach.

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 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). In many languages as in Farsi, however, the information carried by the two tenses will be packed into the temporal morphology found in conditional antecedents.

I then demonstrate how this proposal accounts for the pattern of Farsi conditionals. I motivate a view in which Farsi and English differ with respect to properties of tense in antecedents of conditionals associated with the expression of counterfactuality. I then frame the typological picture arising from the addition of Farsi data.

4.1 Anchor semantics for conditionals

This section has three parts. In the first part, I introduce the main ingredients of Anchor Semantics for modals Kratzer (2020) and sketch the semantics of conditionals in this framework. The discussions in this part is heavily built on Kratzer (2020). In the second part of this section, I turn to the semantics and pragmatics of O-marked conditionals within the framework of Anchor Semantics. I also provide an analysis of the difference between the two types of O-marked conditionals in Farsi (present tense and zero tense conditionals). Lastly, I present my proposal about the semantics of X-marked conditionals.

4.1.1 Preliminaries

A uniform past approach maintains that past tense morphology always contributes temporal information. In the presuppositional theory of tenses that I have adopted in this dissertation, the contribution of deictic tenses is to put temporal constraints on the value of variables ranging over situations contained in the aspectual phrase the tense combines with. There is no deictic constraint on the situations zero tenses refer to. The denotation of deictic tenses (present and past) and zero tense which

were given in (22), are repeated below.

(273) a. $[\![\mathbf{present}_i]\!]^g = \lambda P_{\langle s,t \rangle}.\ \lambda s : \tau(s) \circ \tau(s_i).\ P(s) = 1$, where s_i is the speech situation by default.[1]

   b. $[\![\mathbf{past}_j]\!]^g = \lambda P_{\langle s,t \rangle}.\ \lambda s : \tau(s) \prec \tau(s_j).\ P(s) = 1$, where s_j and is the speech situation by default.

   c. $[\![\varnothing]\!]^g = \lambda P_{\langle s,t \rangle}.\ P$

Assuming a Kratzerian view of conditionals, I take *if*-clauses to restrict the domain of modals. I adapt the proposal of Anchor Semantics (Kratzer 2020) for modals according to which the quantification domain of modals is determined by taking a situation from the actual world and considering the set of possible worlds that have an exact match of that situation. Following Kratzer (2013, 2020) (who adopts the terminology of Hacquard (2006)), let us refer to this situation as the *anchor* of the modal. Let us further assume that modals take an anchor situation as their first arguments. The quantification domain of a universal modal, then, is the set of all[2] the possible worlds that have a counterpart of the anchor situation.

(274) **Factual Domain Projection**

   For any part of a (maximal) situation s, $f_{act}(s)$ is the set of possible (maximal) situations that have an *exact match*[3] of s.

   (Kratzer 2020)

Now that we have introduced a situation variable, we have to say something about possible values of this variable. Like other variables, the value of the anchor

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[1]This is the denotation of the English present tense. We have seen that the denotation of the Farsi present tense, given below, is different.

(i) $[\![\textsc{present}_i]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s : \tau(s_i) \preceq \tau(s).\ P(s) = 1.$

[2]Adopting the Psst! restriction of Lewis (1996), Kratzer (2020) clarifies that *we are ignoring worlds with hallucinations, manipulated brains in vats, and countless other deviation from normality-until forced to face those possibilities."*

[3]The exact match of s is a counterpart of s, assuming the most stringent counterpart relation.

situation depends on its place in the structure. In an unembedded sentence, the anchor situation takes its value from the evaluation situation. As Kratzer (2020) puts it *"modal anchors are the kinds of things that can be made salient and referred to in realistic utterance situations"*. Given the importance of the value of the anchor situation, Kratzer (2020) gives this consequence of Anchor Semantics a name.

(275) **Modal Anchor Impact**

The anchor situation of a modal is identical to the evaluation situation[4] of the smallest constituent that contains the modal and its scope.

(Kratzer 2020)

As the value of the modal anchor is a contextually salient situation, we expect a considerable amount of indeterminacy in the semantics of modal claims. That is somewhat true, but we also have intuitions about the truth-conditions of modal claims. Thus, anchor situations cannot be just any situation. (Kratzer 2020) proposes that the Diversity Condition, defined in (276), constraints the choice of modal anchors.

(276) **Diversity Condition**

Choose an anchor so that the projected domain has both worlds where the modal's prejacent is true and worlds where it is false.

(Kratzer 2020)

If the quantification domain of all modals satisfy the Diversity Condition, all statements with necessity modals will be false, as the truth-conditions of necessity modals require its prejacent to be true in all the worlds of its domain. This undesirable consequence of the Diversity Condition can only be avoided if the domain of a necessity modal is further restricted to exclude worlds in which the

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[4]It's important to note that the evaluation situation is not necessarily the speech situation. *"Evaluation arguments are possible situations with possible worlds as limiting case"* (Kratzer 1989, 2020).

prejacent is false. Therefore, we need to assume that the domain projected from the anchor situation can be lexically, or contextually restricted. Modal restrictions, which I assume to be projected into syntax as an argument of the modal, provide a tool to ignore certain possibilities. Again, if modal claims are to be informative at all, we cannot ignore just any possibilities. We need some principles that help us systematically determine which worlds can be excluded from the domain of modals. (Kratzer 2020) proposes that *contextual restrictions have to be provided from the prospective common ground*, which is the common ground as it stands after the claim in question has been made and negotiated (Stalnaker 2014; Mandelkern 2020). Given the importance of this component of Kratzer's proposal, let us give it a name:

(277)   **Prospective contextual Modal Restrictions**

       Modal restrictions have to be provided from the prospective common ground.

Before going through the relation between modal restrictions and prospective common ground, I should say more about the notion of prospective common ground and a related theoretical notion that I will also make use of: the projected common ground. The common ground prior to a new utterance represents the set of propositions commonly accepted by all participants in the discourse. Utterances are proposals to update the common ground so as to include the uttered proposition (Stalnaker 2014). They do not automatically update the common ground (Stalnaker 2014). Proposals need to be negotiated and resolved for the update to go through. Not all proposals get accepted. There may be disagreements between participants. A proposition might have already been proposed by a participant in discourse without being yet among the shared beliefs of all participants. Farkas & Bruce (2010) propose a discourse representation model in which there is a component that keeps track of unnegotiated propositions (what they call *Table*). I adopt a similar model proposed by Biezma & Goebel (to appear). Since we do not

need all the tools in their discourse model, I will only present a simplified version. The only tools in the model we need are a Stalnakerian common ground, which is the set of commonly accepted propositions in a conversation (by all conversants), and a *waiting room* $\mathscr{F}_c$ to track proposals pending evaluation. It is either empty (if there is nothing awaiting evaluation), or it encodes a copy of the current local context together with the modification proposed (this is the *projected context*). Let us represent the *context set* corresponding to the propositions in the actual common ground with Cs, and the *projected context set* representing the set of all worlds that are in the intersection of all the propositions in the projected common ground with $Cs_{\mathscr{F}}$.

(278) A context c is a tuple $\langle Cs, \mathscr{F} \rangle$ whose elements are characterized as:

    a. $l_c = Cs'$ is a local context.

        i. $Cs = \{w : w \in \bigcap CG\}$, where CG is the Stalnakerian Common Ground

    b. $\mathscr{F}_c$ is either a local context or $\varnothing$. Call $Cs_{\mathscr{F}}$ the projected context.

<div align="right">Adapted from Biezma & Goebel (to appear)</div>

Let us see how context updates proceed with an example. When there is nothing pending evaluation (as in a discourse initial situation), the waiting room is empty. Now assume that A asserts the sentence *it is raining*, with propositional content p relative to this initial context with an empty waiting room. Utterances of declaratives are proposals to update Cs whose effect is to remove worlds not compatible with the new proposition (signaled by $\oplus$ in Biezma & Goebel (to appear)). This is what will be recorded in the waiting room $\mathscr{F}$. Let us call the projected common ground reflecting the changes to the actual common ground proposed by this new utterance *prospective common ground*.

(279) **ASSERT:** $c_1 + \ulcorner \textsc{assert}(\text{ it is raining })\urcorner = \langle Cs_{c_1}, l_{c_1} \oplus [\![\text{ it is raining }]\!]\rangle$

a. $\mathscr{F}_{c_1} = \varnothing$

b. $l_{c_1} \oplus \llbracket$ it is raining $\rrbracket = Cs_{c_1} \cap \llbracket$ it is raining $\rrbracket$

$\Rightarrow$ prospective context set $Cs_{\mathscr{F}_1}$

The difference between projected and prospective common ground is their relation to the time of utterance. The prospective common ground is the common ground *after* the new utterance has been made, which reflects the modification proposed by the newly asserted proposition. The projected common ground is the common ground against which the new utterance is made. That is, the common ground *prior* to the new utterance, which is modified based on previously asserted but unnegotiated propositions. For instance, if the sentence *'we cancel the trip'* is asserted after *'it is raining'* and before *'it is raining'* is accepted by all participants in discourse, $Cs_{\mathscr{F}_1}$ in (280) will be the *projected context* against which *'we cancel the trip'* is uttered. This distinction will be important for the discussion of factual conditionals in Section 4.1.2.2.

(280)   **ASSERT:** $c_2 + \ulcorner$ ASSERT$($ we cancel the picnic $)\urcorner =$

$\langle Cs_{c_2}, (l_{c_2} \oplus \llbracket$ we cancel the picnic $\rrbracket\rangle$

a. $\mathscr{F}_{c_2} = l_{c_1} \oplus \llbracket$ it is raining $\rrbracket = Cs_{c_1} \cap \llbracket$ it is raining $\rrbracket$

$\Rightarrow$ projected context set $Cs_{\mathscr{F}_1}$

b. $l_{c_2} \oplus \llbracket$ we cancel the picnic $\rrbracket = Cs_{\mathscr{F}_1} \cap \llbracket$ we cancel the picnic $\rrbracket$

$\Rightarrow$ prospective context set $Cs_{\mathscr{F}_2}$

Following Stalnaker (2014) and Mandelkern (2020), Kratzer (2020) maintains that an unembedded claim with a necessity modal should have "*the pragmatic effect of proposing to adjust the current common ground (if required) so that the adjusted, prospective common ground entails restrictions that make the claim true.*"

Without adding more, the proposal predicts weak truth-conditions for modal claims. Let us see why. A Stalnakarian common ground is the set of propositions

that are presupposed to be true. But what is presupposed to be true doesn't have to be true. As Kratzer puts it, '*the context set representing a Stalnakarian common ground does not have to include the actual world.*' A scenario where the presuppositions of the context are not all true shows the need to modify the current proposal.

Imagine a context in which Matt presupposes wrongly that rain is the only explanation for wet shoes. Suppose further that John stepped in a puddle close to his apartment. Matt lives in the same building, and sees him in the hallway. He looks at John's shoes and whispers (281) to his friend.

(281)   It must be raining outside.

We first need to determine the value of the anchor situation. The value of the anchor situation comes from the evaluation situation. The modal claim is not embedded, thus the value of the anchor situation is a contextually salient situation. A plausible anchor s_0 supplied from the context in which (281) is uttered, could be a present temporal slice of John's actual appearance. The domain projected from s_0 would be the set of possible worlds that have exact matches of the present temporal slice of John's actual appearance. The projected domain from this anchor has worlds where it is raining outside, and worlds where it is not raining outside. The Diversity Condition is therefore satisfied. By uttering the modal statement (281), Matt acknowledges the possibility that it is not raining outside. At the same time, he is proposing to adjust the common ground so as to eliminate this possibility. Without sharing his belief that wet shoes can only be explained by rain (according to Matt's belief, wet shoes completely rule out worlds in which it is not raining), the statement is odd. But let us assume that his friend holds the same belief. If all it takes for a modal statement to be true is that the prejacent is true in all of the worlds in the domain as determined by the anchor and contextual restrictions taken from the prospective common ground, (281) is predicted to be true. This prediction is incorrect. We judge Matt's statement as false in spite of

his beliefs. To avoid this problem, we must add that for a modal claim with a strong necessity modal *must* to be true, the world of the anchor situation has to be in the context set[5]. Given the conditions that the modal restriction p comes from the prospective common ground, and the world of the anchor is in the context set, it follows that modal restrictions have to be compatible with presuppositions of the factive common ground. The domain of quantification of *must* is the prospective *factive* common ground, that is the common ground whose presuppositions are all true, and where the consequent has been negotiated.

Following Kratzer (2020), I take (282) as the denotation of *must*. (283) represents the truth-conditions of Matt's statement in (281).

(282) $\llbracket \Box \rrbracket^{c,g} = \lambda s.\ \lambda p : p \cap C \neq \emptyset.\ \lambda q.\ (\underline{w_s \in C}\ \&\ \forall w(w \in f_{act}(s) \cap p \rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s''))))$

<div align="right">(Adapted from Kratzer (2020))</div>

(283) $\llbracket \text{It must be raining outside} \rrbracket^{c,g} = \lambda s.\ [\underline{w_s \in C}\ \&\ \forall w(w \in f_{act}(s) \cap p \rightarrow$
$\exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')$
$\&\ \text{it is raining outside}(s'')))]$

a. Building the domain

$\lambda q.\ (\underline{w_{s_i} \in C}\ \&\ \forall w(w \in f_{act}(s) \cap (g(j)) \rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq$
$w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s''))))$

i. Anchor situation

$\llbracket s_i \rrbracket^{c,g(i/s)} = g(i) = \mathsf{s}_i$

ii. Modal restriction

$\llbracket p_j \rrbracket^{c,g} = g(j) = [\lambda s : \{\ \text{wet shoes in } s\}]$

b. Prejacent

$\lambda s.\ \text{it is raining outside}(s)$

---

[5]Kratzer (2020) states the condition as follows: *"the prejacent must be true in the world of anchor"*.

c. Combining the modal, anchor and prejacent

$\underline{w_s \in C}$ & $\forall w(w \in f_{act}(s) \cap (g(j))) \rightarrow \exists s' \exists s''(s' \leq w$ & $s'' \leq w$ &

$Match(s',s)$ & $R(s'',s')$ & it is raining outside$(s'')))$

The relation *Match* in the formula is the analogue of Arregui's *modal part of-* relation.

(284)   Given two situations s_i and s_j, we will use $\leq_m$ to talk about the 'modal part of' relation, and define it as follows: $s_i \leq_m s_j$ iff s_i has a counterpart in s_j (i.e. there is some s_t such that s_t is a counterpart of s_i and $s_t \leq_m s_j$)

(Arregui 2009)

R represents a contextually supplied relation that maps the match of the anchor situation to a situation where the modal's prejacent is evaluated. The truth-conditions states that in all the worlds projected from the anchor situation ($\forall w(w \in f_{act}(s_0))$) and in which the modal restriction p holds ($\cap p$), the match of the anchor situation bears the contextual relation R to a situation in which the prejacent q is true. The constraint that the context (C) includes the world of anchor (w_s) together with the condition that modal restrictions should come from prospective Common Ground keeps the truth-conditions of the modal claim strong.

We have now the necessary ingredients of the Anchor Semantics to develop our semantics of conditionals. The only thing we need to add is that the modal restriction in conditionals has an overt realization as the *if*-clause. Following Kratzer (1979, 2012), I assume that there is a covert necessity modal in the structure of bare conditionals. I take this modal to be strong like *must*, thus the semantics of bare conditional '*if p, q*' will be the same as (282).

Adding the semantic contribution of the antecedent proposition in a compositional manner, we will have the following as the truth-conditions of a bare conditional sentence.

(285) $[\![$ if p, q $]\!]^{c,g}= \lambda s.\ \underline{w_s \in C}\ \&\ \forall w(w \in f_{act}(s)\ \&\ \exists s'''.\ s''' \leq w.\ p(s''') \rightarrow$

$\exists s'\exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s'')))]$

(286) *The structure of necessity modals and bare conditionals*
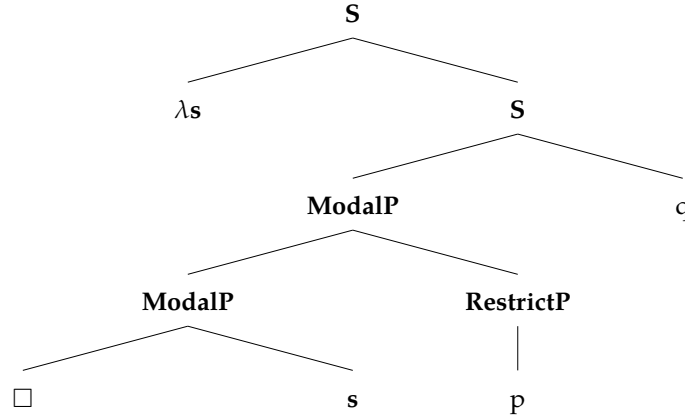
To see how this works, consider the example (287) in a context where it is wrongly presupposed that rain is the only explanation for wet shoes. Matt and his friend are in a windowless space. They want to go for a walk and are discussing if it is raining outside. Matt asserts (287).

(287) If John enters with wet shoes, it is raining outside.

Again, we need to know the value of the anchor situation. The conditional in (287) is not embedded, so the value of the anchor situation should come from the evaluation situation of the conditional. The role of the anchor situation is to anchor the interpretation of the conditional to facts salient in the evaluation situation. A plausible anchor s_0 coming from the evaluation situation of (287), could be a present temporal slice of Matt's actual knowledge state. The domain projected from s_0 (the set of worlds that have exact matches of the anchor situation s_0) satisfies the Diversity Condition, as there will be worlds in the domain in which it is raining outside, and worlds in which it is not raining outside. By using the conditional in (287), Matt conveys that he is ignoring the possibility of John's not entering with wet shoes, and claims that the consequent is true in all remaining worlds in the

domain. Given the assumption that bare conditionals contain the a strong modal, they also come with the constraint that the world of anchor is in the context set. This constraint together with our assumption that modal restrictions come from the prospective common ground entails that the antecedent has to be compatible with the presuppositions of factive common ground. The prospective factive common ground does not validate Matt's statement because it cannot completely rule out possibilities that are compatible with the if-clause (John wearing wet shoes) but where the consequent is false (it's not raining outside); thus, the conditional is predicted to be false.

Having set up the necessary tools, I can now move on to the semantics of O-marked and X-marked conditionals. My goal is to show how quantification domains of O-marked and X-marked conditionals are constructed from their modal anchors and additional restrictions coming from the if-clause and the context, delivering their truth-conditions.

4.1.2 O-marked conditionals

I start with giving an overview of the semantics of O-marked conditionals. I will then turn to the differences between the two types of O-marked conditionals: factual and hypothetical conditionals.

4.1.2.1 Overview

Let me illustrate how the domain of an O-marked conditional is constructed with a familiar example from Stalnaker (1975), given in (288). The discussion presented here is adapted from Kratzer (2020) who discusses a non-conditional version of this example with *must*. Assume (288) is asserted by Holmes, a consultant on a big murder case, where after a long investigation, the butler and the gardener are the

only remaining suspects.

(288) If the butler didn't do it, the gardener did.

First we need to know the value of the anchor situation. The conditional is not embedded, so the anchor situation should come from the situation of the evaluation. The anchor situation also picks up the local evaluation time which in unembedded cases is the time of utterance. A plausible anchor s_0 coming from the situation in which (288) is uttered, could be a present temporal slice of Holmes' actual process of investigation and reasoning that led Holmes to come to conclusion that the murderer is either the butler or the gardener.

The domain projected from s_0 would then be the set of possible worlds that have exact matches of the present temporal slice of Holmes' actual process of investigation and reasoning, as it relates to this murder case. The projected domain from this anchor has worlds where the butler did the murder, and worlds where the gardener did it. The Diversity Condition is therefore satisfied. Holmes conveys that his process of investigation and reasoning does not completely rule out the gardener's innocence. The if-clause conveys that he is ignoring the possibility that the butler is the murderer. The truth-conditions of (288) is given in (289).

(289) $[\![$If the butler didn't do it, the gardener did$]\!]^{c,g} = \lambda s.\ [w_s \in C\ \&$

$\forall w(w \in f_{act}(s)\ \&\ \exists s'''.\ s''' \leq w.\ \text{the butler didn't do it } (s''') \rightarrow$

$\exists s'\exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&$

the gardener did it $(s'')))]$

The truth-conditions in (289) state that in all the worlds that contain an exact match of Holmes' process of investigation and reasoning, and where the common ground is adjusted so that the possibility of butler being the murderer is eliminated, the counterpart situation of Holmes' process of investigation and reasoning is linked to situations where the gardener is the murderer, with a suitable R relation.

The modal in O-marked conditionals come with the condition that the context set has to include the world of the anchor situation (the actual world). Moreover, given that modal restrictions come from the prospective common ground, it follows that the modal restriction has to be compatible with presuppositions of factive common ground. Thus, (289) amounts to saying that the consequent is true in the prospective factive common ground in which the possibility of the butler being the murderer is ignored.

There are other possibilities Holmes is ignoring. For instance, the possibility that he might have done some mistake in the process of investigations, and have wrongly ruled out a possible suspect. Nevertheless, he's proposing to adjust the common ground so as to make his claim true. Trusting his expertise, his interlocutors might accept his proposal, or reject it by bringing up the possibility that someone else, the butcher for instance, might be the murderer. In this case, worlds in which the butcher did the murder should be added to the current common ground, making Holmes' claim false.

4.1.2.2 Factual vs. hypothetical conditionals

We are not done yet. Farsi has taught us that morphosyntax can subdivide the category of O-marked conditionals into factual and hypothetical conditionals. It is the properties of tense in the antecedent of conditionals that determine the interpretation of O-marked conditionals. Conditionals with zero tense in their antecedent are interpreted as hypothetical conditionals (the interpretation that is normally assigned to traditionally-called 'indicative' conditionals). Conditionals whose antecedents contain present tense are interpreted as factual. The contrast between the two types of O-marked conditionals was illustrated with a series of examples in Chapter Two and Three.

The trees in (290) and (291) illustrate the structures of zero tense and present

tense, ignoring the contribution of aspect for now.

(290) *The structure of zero tense conditionals*

$$
\begin{array}{c}
\text{S} \\
\lambda \mathbf{s}_k \qquad \text{S} \\
\text{ModalP} \qquad q \\
\text{ModalP} \qquad \text{RestrictP} \\
\square \qquad \mathbf{s}_k \qquad \text{TP} \\
\lambda s.\ [\![p]\!](s) \\
\text{T} \qquad \text{P} \\
\varnothing
\end{array}
$$
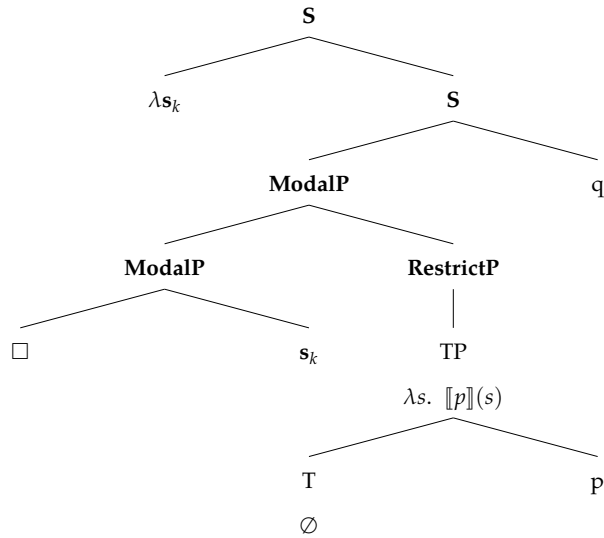
(291) *The structure of present tense conditionals*

$$
\begin{array}{c}
\text{S} \\
\lambda \mathbf{s}_k \qquad \text{S} \\
\text{ModalP} \qquad q \\
\text{ModalP} \qquad \text{RestrictP} \\
\square \qquad \mathbf{s}_k \qquad \text{TP} \\
\lambda s : \tau(s_i) \preceq \tau(s).[\![p]\!](s) \\
\text{T} \qquad \text{P} \\
\textbf{PRESENT}_i
\end{array}
$$
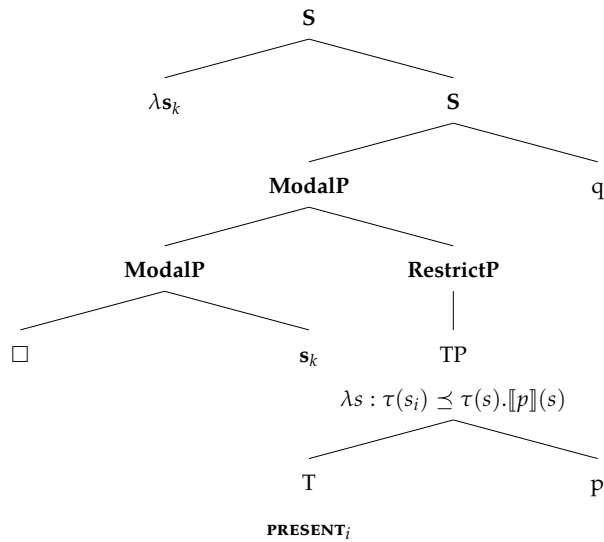
We have seen that the two conditionals differ in their felicity conditions. To refresh our minds, consider the scenario described in (292). Since in this context the truth of antecedent is open, only a zero tense conditional is felicitous.

(292) *Context: The police holds a press conference, and announces that they are inves-*
       tigating the speculation that Oswald might not be the murderer, but nothing is

certain. John and his friend are watching the press conference.

John to his friend:

a. **Zero tense Perfect O-marked**

Agar Oswald Kennedy ro na-košte **baš-ad**, kas-e
if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.∅**.3sɢ, person-ᴇᴢ
digar-i   ou ro košte ast.
another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
'If Oswald didn't kill Kennedy, someone else did.'

b. **Present tense Perfect O-marked**

#Agar Oswald Kennedy ro na-košte **ast**,   kas-e
 if   Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.ᴘʀᴇs**.3sɢ, person-ᴇᴢ
digar-i   ou ro košte ast.
another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
'If Oswald didn't kill Kennedy, someone else did.'

In contrast, when the truth of the antecedent is entailed in the context, as is the case with (293), only a present tense conditional is felicitous.

(293) a. **Present tense Perfect O-marked**

Agar do ta jang-e jahani   ettefagh   oftaade **ast**,
if   two ᴄʟ war-ᴇᴢ worldwide occurrence fall.ᴘᴘ   **ᴀᴜx.ᴘʀᴇs**.3sɢ
jang-e jahani-e   sevvom ham mi-tavan-∅-ad   ettefagh
war-ᴇᴢ worldwide-ᴇᴢ third   also ɪᴍᴘꜰ-can-ᴘʀᴇs-3sɢ occurrence
be-oft-ad
ɪᴍᴘꜰ-fall-∅-3sɢ
If two world wars have happened, a third world war can also happen.

b. **Zero tense Perfect O-marked**

#Agar do ta jang-e jahani   ettefagh   oftaade **baš-ad**, jang-e
 if   two ᴄʟ war-ᴇᴢ worldwide occurrence **fall.ᴘᴘ**   **ᴀᴜx.∅**-3sɢ war-ᴇᴢ
jahani-e   sevvom ham mi-tavan-∅-ad   ettefagh
worldwide-ᴇᴢ third   also ɪᴍᴘꜰ-can-ᴘʀᴇs-3sɢ occurrence
be-oft-ad
ɪᴍᴘꜰ-fall-∅-3sɢ
If two world wars have happened, a third world war can also happen.

There are, however, cases where both zero tense and present tense conditionals are felicitous in the same context. As we saw in (143), repeated here in (294), both zero tense and present conditionals are felicitous in contexts where the antecedent proposition has been already asserted, but it is not yet accepted by all participants in discourse. In the example (294), for instance, the context is not automatically updated to entail that Oswald wasn't the murderer, just because the police has said so. Participants might disagree, and reject this claim. The zero tense conditional is felicitous as long as the context doesn't yet entail the truth or falsity of the antecedent proposition, irrespective of whether or not it is already asserted. The present tense conditional is also felicitous, since the projected context in which the claim made by the police is accepted, entails the antecedent proposition.

(294) *Context: Investigation is complete. The police holds a press conference, and announces that they can confirm that Oswald wasn't the murderer. John and his friend are watching the press conference.*

John to his friend:

a. **Zero tense Perfect O-marked**

Agar Oswald Kennedy ro na-košte **baš-ad**, kas-e
 if Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.∅.3sɢ**, person-ᴇᴢ
digar-i ou ro košte ast.
another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
'*If Oswald didn't kill Kennedy, someone else did.'*

b. **Present tense Perfect O-marked**

Agar Oswald Kennedy ro na-košte **ast**, kas-e
 if Oswald Kennedy ʀᴀ ɴᴇɢ-kill-ᴘᴘ **ᴀᴜx.ᴘʀᴇs.3sɢ**, person-ᴇᴢ
digar-i ou ro košte ast.
another-ɪɴᴅꜰ him ʀᴀ kill.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ
'*If Oswald didn't kill Kennedy, someone else did.'*

To formally encode the presupposition of present tense conditionals, we need a discourse representation model that not only keeps track of presuppositions of the

context, but also keeps track of pending proposals to update the contexts. We need such a model because factual conditionals are felicitous both when the truth of their antecedent is already entailed in the context as in (293), and when the truth of their antecedent will be entailed in the projected context where pending propositions are accepted, as in (294). Felicity of zero tense conditionals, on the other hand, is only sensitive to propositions that are already entailed in the context and is not affected by pending propositions in the context. In Section 2.3 of Chapter Two, we have also seen that only present tense conditionals can be used in examples like (295), in which the antecedent proposition has been uttered by an interlocutor and the speaker of the conditional is challenging its truth.

(295) *My friend Joe, whom you haven't met, is very smart.*

 Oh yeah?

   a. **Present tense O-marked**

     agar enqadr bahuš **ast**,   čera puldar n-ist?
     if so   smart be.**PRES**.3SG why rich   NEG-be.PRES.3SG
     If he's so smart why isn't he rich?

   b. **Zero tense O-marked**

     #agar enqadr bahuš **baš-ad**, čera puldar n-ist?
     if so   smart be.∅-3SG why rich   NEG-be.PRES.3SG
     If he's so smart why isn't he rich?

I sketched the discourse model of Biezma & Goebel (to appear) I have adopted in (278), repeated here in (296).

(296) A context c is a tuple $\langle Cs, \mathscr{F} \rangle$ whose elements are characterized as:

   a. $l_c = Cs'$ is a local context.

      i. $Cs = \{w : w \in \bigcap CG\}$, where CG is the Stalnakerian Common Ground

b. $\mathscr{F}_c$ is either a local context or $\varnothing$. Call $Cs_{\mathscr{F}}$ the projected context.

<div align="right">Adapted from Biezma & Goebel (to appear)</div>

As I mentioned earlier, we distinguish between the projected common ground which is the common ground adjusted to include *previously* asserted but unnegotiated propositions), and *prospective common ground*, which represent a future common ground in which the *new* assertion has been negotiated. Here we are concerned with the projected common ground *prior* to the assertion of present tense conditionals. We have all the necessary tools to encode presuppositions of the deictic and zero tenses in Farsi. I propose that deictic tenses (represented by TENSE$^+$) in Farsi presuppose that the proposition is *settled* in a context set relative which the utterance is made (either projected context (the local context) or the actual context). The relevant notion of settledness is defined below.

(297) **Settledness**

A proposition p is settled relative to a context Cs if and only if p is entailed in Cs or if $\neg p$ is entailed in Cs.

Zero tense presupposes that the proposition is *unsettled* in the actual context set, that is neither its truth nor its falsity is entailed in the context set. The definition of unsettledness is given below.

(298) **Unsettledness**

A proposition p is unsettled relative to a context Cs if and only if neither p is entailed in Cs nor $\neg p$ is entailed in Cs.

Presuppositions of present tense and zero tense O-marked conditionals are given in (299a) and (299b), respectively.[6]

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[6]Following the literature on '*mood*', I have defined the felicity conditions of present tense and zero tense O-marked conditionals in terms of presupposition. However, I have not provided any argument for their presuppositional nature. An in-depth study of the nature of the felicity

(299) **Presuppositions of O-marked conditionals**

    a. **[if p-TENSE$^+$,q]** is felicitous if

       $Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected

       context set $(Cs_{\mathscr{F}})$ or the actual context set (*'settledness'*)

    b. **[if p-∅,q]** is felicitous if

       $Cs \cap r \neq Cs$ where $r = \{p, \neg p\}$ and Cs is the actual context set

       (*'unsettledness'*)

There are two points I need to clarify. First, I should note that the presuppositions defined above are familiar from the proposals about presuppositions of indicative mood (Farkas 2003) and subjunctive mood (Mari & Portner 2018). At this point it seems that these presuppositions can be attributed to the contribution of mood. But I will show that conditionals that have morphological specifications of so-called indicative mood (carrying the tensed variant of imperfective aspect), but tense in their antecedent is not interpreted deictically, do not carry settledness presupposition. I will come back to this in Section 4.2.1.2.

Another thing I need to mention is that there is no O-marked conditionals in Farsi that carry past tense morphology in their antecedent[7]. In Chapter Two, I have reported that German-like languages, in which the current relevance seems to force the use of the present perfect, represent a pattern where it is infelicitous to use the simple past in the antecedent of conditionals to describe a past situation. The example (127), repeated here as (300) illustrates this fact about Farsi (see the

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conditions associated with deictic and zero tense clauses is outside the scope of this dissertation and requires exploring other environments in which both present tense and zero tense can occur, such as the complement of *think* and *negated know*.

   [7]Following Ippolito (2003, 2006, 2013); Arregui (2005, 2007, 2009); Mackay (2019a), I'm assuming that X-marker past is structurally outside of the antecedent, and is only morphologically realized in the antecedent.

examples given in (129) for German, 130) for Dutch). Instead, the present perfect has to be used in such contexts .

(300) *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 AXU.PRES.3SG
       'If John danced yesterday, Mary danced too.'

So, although (299a) is the presupposition of deictic tenses in Farsi, in practice we only see it with present tense in the antecedent of conditionals. Why past tense in these languages cannot be *embedded* in the antecedent of conditionals is an independent question which I leave for future study. The point I want to get across is that the infelicity of past tense in antecedent of Farsi conditionals is an independent fact. If past tense was not independently infelicitous in the antecedent of factual conditionals, we would expect it to carry the same settledness presupposition defined in (299a).

Now let us see how the presuppositions in (299) work with the example in (294). First we need to know the value of the anchor situation. The conditional is not embedded, so the anchor situation should come from the evaluation situation of the conditional. The situation variable also picks up the evaluation time, which in this case is the time of utterance. A plausible anchor s_0 coming from the situation in which (294) is uttered, could be a present temporal slice of the actual situation of the police press conference that John and his friend are watching.

The domain projected from s_0 would then be the set of possible worlds that have exact matches of the present temporal slice of the police press conference. The projected domain from this anchor has worlds where someone other than Oswald killed Kennedy, and worlds where Oswald killed Kennedy. The Diversity Condition is therefore satisfied. John conveys that the police press conference does not completely rule out Oswald's innocence. The if-clause conveys that he is ignoring

the possibility that Oswald is the murderer.

Both zero tense and present tense conditionals are O-marked conditionals, and have the same truth conditions. The truth conditions of (294), as well as presuppositions of zero tense and present tense conditionals, are given below.

(301) $\llbracket (294) \rrbracket^{c,g} = \lambda s.\ [w_s \in C\ \&$

$\forall w(w \in f_{act}(s)\ \&\ \exists s'''.\ s''' \leq w.\ \text{Oswald didn't kill Kennedy}\ (s''') \rightarrow$

$\exists s'\exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')$

$\&\ \text{someone else killed Kennedy}(s'')))]$

   a. $[\textbf{if p-\textsc{present},q}]$ is felicitous if

      $Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected context set $(Cs_{\mathscr{F}})$ or the actual context set

   b. $[\textbf{if p-}\varnothing\textbf{,q}]$ is felicitous if

      $Cs \cap r \neq Cs$ where $r = \{p, \neg p\}$ and Cs is the actual context set

The truth conditions in (301) state that all the worlds that contain an exact match of the police press conference, and where the common ground is adjusted so as to the possibility of Oswald being the murderer is eliminated, the counterpart situation of the police press conference is linked to situations where someone else is the murderer, with a suitable R relation. Given the condition that the context set should include the world of anchor, (289) amounts to saying that the consequent is true in the prospective factive common ground in which the possibility of Oswald being the murderer is ignored.

The presupposition of both present tense and zero tense conditionals are met in this context. The antecedent proposition has been asserted by the police. However, the statement made by the police does not automatically update the context set. Until the claim made by the police is negotiated and accepted by all interlocutors, the context set will still have worlds in which the antecedent proposition is true and

worlds in which the antecedent proposition is false. The presupposition of the zero tense conditional is satisfied. The present tense conditional is also felicitous because the projected context, which reflects the changes to context set after the pending proposal by the police is accepted, entails the truth of the antecedent. The use of the present tense conditional adds that the information carried by the antecedent proposition already exists in the context.

One last thing to mention is that the present tense O-marked conditional whose antecedent is the opposite of the proposition asserted in the context, as in (302), is infelicitous. The zero tense O-marked conditional (303), on the other hand, is felicitous.

(302)   *Context: Investigation is complete. The police holds a press conference, and announces that they can confirm that* **Oswald wasn't the murderer***. John and his friend are watching the press conference.*

John to his friend:

Present tense O-marked

#(amma) agar Oswald Kennedy ro košte **ast**,   edalat
 (but)   if   Oswald Kennedy ʀᴀ kill-**ᴘᴘ ᴀᴜx.ᴘʀᴇs**.3sɢ justice
ejra   šode   ast.
implementation become.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ

'But if **Oswald killed Kennedy***, justice has been served.'*

(303)   **Zero tense O-marked**

(amma) agar Oswald Kennedy ro košte **baš-ad**,   edalat
(but)   if   Oswald Kennedy ʀᴀ kill-**ᴘᴘ ᴀᴜx.∅**.3sɢ justice
ejra   šode   ast.
implementation become.ᴘᴘ ᴀᴜx.ᴘʀᴇs.3sɢ

' *But if* **O***swald killed Kennedy***,** *justice has been served.'*

This seems to be a problem for our analysis of present tense conditionals. The antecedent is compatible with the presuppositions of factive common ground and it

is settled in the projected context set; thus, the present tense O-marked conditional (302) is wrongly predicted to be felicitous. Utterances are made relative a context set, which can either be the actual (global) context or the projected (local) context. There can be linguistic clues identifying the intended context set relative to which the utterance is made.

Since the antecedent (modal restriction) is entailed in the prospective common ground, by uttering (302) the speaker is proposing the common ground to become such that the police's statement is false. Had it been the projected context set relative to which the utterance was made, the prospective common ground could not have entailed the antecedent proposition. Signaling the contrast between the projected context set and the actual context set with respect to the truth of police's statement, the use of *"but"* indicated that the utterance (302) has been made relative to the actual context set in which the antecedent proposition is not settled. Since the truth or falsity of the antecedent proposition is not settled in the context set relative to which the conditional is asserted, only the zero tense conditional (303) is felicitous.

Now that I have discuss the two types of O-marked conditionals, I can move to the semantics of X-marked conditionals in Anchor Semantics.

4.1.3 X-marked conditionals

Following Arregui (2005, 2009), I take the role of the past tense in X-marked conditionals to determine the temporal specification of the anchor situation, which in turn anchors the interpretation of conditionals on particular actual world facts. The account proposed by Arregui (2009) which I adopt here ties the resolution of similarity relation invoked by X-marked conditionals (Lewis 1973; Stalnaker 1968) to the semantics of tense. According to this view, not all facts in the actual world affect the truth-value of X-marked conditional. The role of past tense in X-marked

conditionals is then to identify the features of the world relevant for similarity (Arregui 2009).

While I remain agnostic about the exact position of this past tense, I adopt the dominant view in the literature that past tense is not structurally inside the antecedent. It can be so low as to only c-command the anchor situation, or so high to c-command the whole conditional (depending on the theory of tense one adopts). What matters is that its meaning contribution directly affects the value of the anchor situation, so it has to c-command the anchor situation. In the remainder of this chapter, I assume the following structure for X-marked conditionals in which past tense c-command the whole conditional(Ippolito 2003, 2006, 2013; Arregui 2005, 2007, 2009, a.o.).

(304)   *The structure of X-marked conditionals*
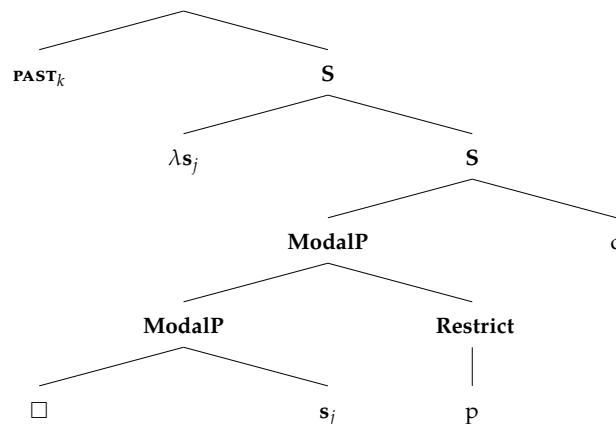
On the face of it, the only difference between X-marked and O-marked conditionals is the temporal specification of their anchor situation. The pastness of the anchor situation, however, affects the semantics and pragmatics of X-marked conditionals. Unlike present anchor situations coming from the evaluation situation, they do not invoke the condition that the world of the anchor has to be in the context set.[8] Thus, they have weaker truth conditions, as given below.

[8]Past anchor situations are also responsible for invoking similarity relation in the semantics of X-marked conditionals (Arregui 2009).

(305) $[\![(304)]\!]^{c,g} = \lambda s : \underline{\tau(s_j) \prec \tau(s)}.\ [\forall w(w \in f_{act}(s_j) \cap p \to \exists s' \exists s''(s' \leq w\ \&\ s'' \leq$

   $w\ \&\ \ Match(s',s_j)\ \&\ \ R(s'',s')\ \&\ \ q(s'')))](s)$

The question is: Why is there a connection between the temporal specification of the anchor situation and the condition that the world of the anchor has to be in the context set (which together with the Prospective Contextual Modal Restrictions results in the condition that the antecedent has to be compatible with the factive context set). Although I admit that this is to a degree stipulative, I believe that the Anchor Semantics framework provides us with necessary tools to be able to better motivate the pragmatic constraint often assumed on O-marked conditionals (Stalnaker 1975; von Fintel 1998; Mackay 2019a). Note that the condition is invoked when the conditional is not embedded under a past tense, and thus the value of anchor situation is identical to the evaluation situation (Modal Anchor Impact). We can assume that in unembedded cases the anchor situation is *the maximal evaluation situation* (*world of evaluation*). Factual Domain Projection requires all worlds that maximally match the actual world to be considered. The initial domain of modals, therefore, will be all worlds that are in the factive context set. In contrast, past tense in X-marked conditionals indicates that the value of anchor situation is a past situation which by definition is not a maximal situation. This will invoke a local notion of similarity, where only certain facts in the actual world matter and the rest do not matter (Arregui 2009). I will, however, continue to simply stipulate that O-marked conditionals come with the condition that the world of the anchor has to be in the context set and leave it a subject for future research to systematically motivate this constraint.

Do O-marked conditionals also have a present tense c-commanding the anchor situation and specifying its temporal location (as illustrated in (306))? or do they lack a higher tense and the anchor situation simply takes its temporal specification

from the situation of utterance? These are empirical questions on which there is no consensus (See discussion in (Abusch 1997; Condoravdi 2001; Mackay 2019a)).

(306) *An option for the structure of O-marked conditionals*
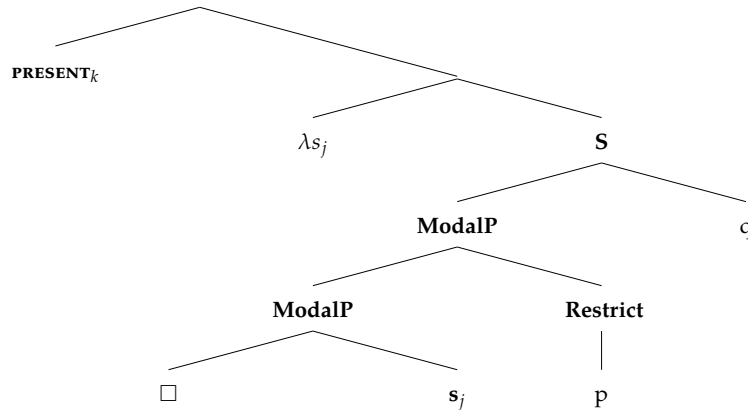
Note that the result for the temporal location of the anchor situation will be the same. Since the only thing that is important to my analysis is for the anchor situation of O-marked conditionals to be a present situation, and both options (having a present tense scoping over O-marked conditionals or not) produce the same result in this regard, I will set this issue aside in the rest of this dissertation.

Let us summarize the relation between the temporal specification of the anchor situation and restrictions on the domain of quantification. When the anchor situation of modals is a present situation, the context set is required to include the world of anchor. Together with the Prospective Contextual Modal Restrictions, given in (277), this amounts to saying that the antecedent has to be compatible with the information of factive context set. When the anchor situation of modals is a past situation, there is no such constraint. This renders weaker truth conditions for X-marked conditionals.

Time of anchor & the domain of quantification

(307)   a. Present anchor: $w_s \in C$

b. Past anchor: None

Let me illustrate the effect of having a past anchor situation with the example (308) from Arregui (2009). Suppose (308) is asserted by Ana, who has two cats at home. Suppose further that Ana has a friend called Sara who is very allergic to cats.

(308)   If Sara had visited my house last Monday, she would have sneezed.

First we need to know the value of the anchor situation. The conditional is not embedded, so the anchor situation should come from the evaluation situation of the conditional. Given the contribution of the past tense, it should be a past situation which is part of the history of the actual world. A plausible anchor s_j is a past temporal slice of Sara's actual state of body. The domain projected from s_j would then be the set of worlds that have exact matches of this past temporal slice of Sara's actual state of body. The projected domain from this anchor has worlds in which Sara sneezed and worlds in which she didn't. Sara's allergy doesn't make her sneeze all the time. Therefore, the Diversity Condition is satisfied. Ana conveys that Sara's actual state of body doesn't completely rule out the possibility of Sara not sneezing. The if-clause conveys that she is ignoring the possibility that Sara didn't come to her house. The truth-conditions of (308) is given in (309).

(309)   ⟦ If Sara had visited my house last Monday, she would have sneezed. ⟧$^{c,g}=$

$\lambda s : \tau(s_j) \prec \tau(s).\ [\forall w(w \in f_{act}(s_j)\ \&\ \exists s'''.\ s''' \leq w.$

Sara has visited my house last Monday $(s''') \rightarrow \exists s'\exists s''(s' \leq w\ \&\ s'' \leq w$

$\&\ Match(s', s_j)\ \&\ R(s'', s')\ \&$ Sara has sneezed $(s'')](s)$

The truth-conditions in (309) state that in all the worlds that contain an exact

match of the past temporal slice of Sara's actual state of body, and once the possibility of her not going to Ana's house is eliminated, the counterpart situation of the past temporal slice of Sara's actual state of body is linked to situations where Sara has sneezed, with a suitable *R* relation.

But when we discussed O-marked conditionals, we said that we can't ignore just any possibilities, and that the modal restrictions have to come from the prospective common ground. Are we in trouble if it is already presupposed in the common ground that Sara didn't go to Ana's house last Monday? No, this is where the pastness of the anchor situation plays its role. All it takes for an X-marked conditional to be true is for the restriction to completely exclude all worlds in which the consequent is false.

To see how this difference between O-marked and X-marked conditionals plays out, consider the famous Oswald-Kennedy contrasts where the O-marked conditional (310a) is judged true, and the X-marked (310b) is false.

(310)   a. If Oswald didn't kill Kennedy, someone else did.   (*O-marked*)

      b. If Oswald hadn't kill Kennedy, someone else would have.   (*X-marked*)

The anchor situation for the O-marked conditional (310a) has to come from the evaluation situation, thus has to be a present situation. Let us take the actual situation of police's investigating Kennedy's murder in the present as the anchor situation. The domain projected from this anchor has worlds in which Kennedy's murderer is Oswald and world's in which Kennedy's murderer is some one else. Therefore, the Diversity Condition is satisfied. Given that it is common ground that Kennedy is dead, all of the worlds in the prospective factive common ground are worlds in which Kennedy has been murdered. The if-clause restriction excludes all the worlds in which Oswald killed Kennedy. Therefore, the conditional claim is true.

Now let us consider the X-marked conditional in (310b), which comes with the past temporal constraint on the value of the anchor situation. Assume that the anchor situation is the actual past situation of Kennedy's having enemies. The domain projected from this anchor satisfies the Diversity Condition, as there will be world in the domain where the consequent is true, and world in which it is false. The claim is that once the possibility of Oswald being Kennedy's murderer is ignored, all the remaining worlds are worlds in which Kennedy is killed by someone other than Kennedy. This is false because this restriction alone cannot exclude all of the worlds in which the consequent is false. However, worlds in which Kennedy wasn't murdered at all are not necessarily excluded by the if-clause restriction. Therefore, (310b) is false.

Let me illustrate the difference between O-marked and X-marked conditionals with another example. Consider the contrast given in (311).

(311)   It is not snowing in Boston now.

      a. #If it is snowing in Boston now, it will be cloudy.   (*O-marked*)

      b. If it was snowing in Boston now, it would be cloudy.   (*X-marked*)

The truth conditions for the two conditionals are given below. Note that the two conditionals only differ in the temporal information of their anchor situations.

(312)   a. **O-marked**

        ⟦ If it is snowing in Boston now, it will be cloudy ⟧^{c,g} =

        $\lambda s.\ [w_s \in C\ \&\ \forall w(w \in f_{act}(s)\&\ \exists s'''.\ s''' \leq w.$

        it is snowing in Boston now $(s''') \rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&$

        $Match(s',s)\ \&\ R(s'',s')\ \&$ it is cloudy in Boston $(s'')))]$

      b. **X-marked**

        ⟦ If it was snowing in Boston now, it would be cloudy ⟧^{c,g}=

        $\lambda s : \underline{\tau(s_j) \prec \tau(s)}.\ [\forall w(w \in f_{act}(s_j)\&\ \exists s'''.\ s''' \leq w.$

it is snowing in Boston now $(s''') \rightarrow \exists s' \exists s''(s' \leq w \ \& \ s'' \leq w \ \&$

$Match(s', s_j) \ \& \ R(s'', s') \ \& \ $ it is cloudy in Boston $(s'')))](s)$

First we need to know the value of the anchor situation for each of these conditionals. Let us start with the O-marked conditional. Since the conditional is not embedded, the value of its anchor situation comes from the situation of utterance. A plausible anchor for the O-marked conditional in (311a) can be a present temporal slice of Boston's actual geographic coordinates. The domain projected from s_0, would then be the set of possible worlds that have exact matches of the present temporal slice of Boston's actual geographic coordinates. The projected domain from this anchor has worlds where it is cloudy in Boston now, and worlds where it isn't. The Diversity Condition is therefore satisfied. The speaker conveys that Boston's actual geographic coordinates does not completely rule out the possibility of sky being non-cloudy. The if-clause conveys that the speaker is ignoring the possibility that it is not snowing in Boston now. But we have seen that not all possibilities can be ignored. The restriction should come from the prospective common ground where the consequent is negotiated. Since the context set has to include the world of the anchor, and it is not snowing in the world of anchor, the prospective common ground cannot have snowy worlds in them. Therefore, (311a) is infelicitous. Moreover, in the absence of other restrictions that can eliminate non-cloudy worlds, the claim in the consequent cannot be true in the world of the anchor. (311a) is also predicted to be infelicitous in contexts entailing that it is not cloudy in Boston now, since the condition that the consequent has to be true in the world of anchor cannot be satisfied in such cases. Therefore, (311a) can only be felicitously uttered where both the consequent and the antecedent are compatible with the common ground at the time of the utterance. I should also note that in contexts entailing that it is cloudy in Boston now, (311a) is predicted to be infelicitous. O-marked conditionals require the world of anchor to be in the context

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set. All worlds in the context set are cloudy worlds. Therefore, in such contexts the Diversity Condition cannot be satisfied irrespective of what anchor we choose.

Now let us consider the X-marked conditional in (311b). The anchor is a past situation. A plausible anchor can a past temporal slice of Boston's actual geographic coordinates. The domain projected from s_0, would then be the set of possible worlds that have exact matches of the past temporal slice of Boston's actual geographic coordinates. Just like O-marked conditionals, the projected domain from this anchor has worlds where it is cloudy in Boston now, and worlds where it isn't. The Diversity Condition is therefore satisfied. The speaker conveys that Boston's actual geographic coordinates does not completely rule out the possibility of sky being non-cloudy. The if-clause conveys that the speaker is ignoring the possibility that it is not snowing in Boston now.

In this case, however, whether or not snowy worlds are independently eliminated from the current common ground does not affect the felicity of (311b). Since the anchor is a past situation, the condition that the context set includes the world of the anchor is not invoked. (311b) is predicted to be felicitous in contexts entailing that it is cloudy in Boston now, as long as the if-clause restriction completely rules out the possibility of the consequent being false.

4.2 Accounting for Farsi and English contrasts

Now that I have laid out my proposal about the semantics and pragmatics of X-marked conditionals, I can demonstrate how this proposal tackles the complex pattern of X-marking in Farsi and English. I will start with the discussion of antecedent falsity inference, and then turn to the issue of temporal orientation of antecedents.

4.2.1 Strength of counterfactuality

My aim here is to account for observations we made earlier about the antecedent falsity inference associated with X-marked conditionals in English and Farsi. We have seen that X-marked conditionals in both languages can appear in contexts where the antecedent is true ((233) in English, and (236) in Farsi). Farsi and English, however, differ in which environments allow for X-marked conditionals to be felicitously used without implying the falsity of their antecedent. In Farsi, this option is limited to the past oriented past imperfective X-marked conditional. Moreover, there are cases in both English and Farsi where the antecedent falsity inference is hard to impossible to cancel.

4.2.1.1 English

I start by discussing cases where English X-marked conditionals are used without implying the falsity of their antecedents. In Section 3.3.2 of Chapter Three, we have seen three such cases (Future Less Vivid conditionals, modus tollens arguments, and Anderson-examples). I also explain Stanley Peters' example where both O-marked and X-marked conditionals are equally felicitous.

Future Less Vivid

Let us start with Future Less Vivid cases. Consider the examples below.

(313)   a. **O-marked**

   If I win the lottery tomorrow, I will buy a house.

   b. **X-marked**

   If I won the lottery tomorrow, I would buy a house.

First we need to know the value of the anchor situation for each of these conditionals. Let us start with the O-marked conditional. Since the conditional is not

embedded, the value of its anchor situation comes from the evaluation situation. Thus, it is a present situation. We have to pick the anchor situation so that the domain projected from it satisfies the Diversity Condition. That is, the projected domain has to have worlds where I will buy a house and worlds where I won't buy a house. A plausible such anchor can be a present slice of the actual situation of me having a particular lottery ticket (either a winning or a losing one). The projected domain then will be the set of worlds that have an exact match of the present slice of the actual situation of me having a lottery ticket. The if-clause conveys that in making the modal claim, I am ignoring the possibility that I won't win the lottery. O-marked conditionals require the world of anchor (the actual world) to be included in the context set. Given that the consequent is a claim about the future, and that the the truth of the antecedent is still open, the requirement that the context set includes the world of anchor is not in principle violated. So, (313a) is predicted to be felicitous. While this prediction is borne out, speakers seem to prefer its X-marked counterpart in (313b). Why is that? To answer this question, we should first see why (313b) is felicitous.

The anchor for the X-marked conditional has to be a past temporal slice of an actual situation in the history of the evaluation situation. Let us assume that the anchor for (313b) is a past temporal slice of the actual situation of me having a particular lottery ticket. The projected domain then will be the set of worlds that have an exact match of the past slice of the actual situation of me having a lottery ticket. The domain projected from this domain satisfies the Diversity Condition, as it includes worlds where I will buy a house and worlds where I won't buy a house. The use of a modal claim conveys that the anchor situation does not completely rule out the possibility of me not buying a house. The if-clause conveys that I am ignoring the possibility that the I won't win the lottery. In the case of X-marked conditionals, all it takes for (313b) to be true is that worlds where I won't buy a

house are completely ruled out by ignoring the possibility that the I won't win the lottery.

Given that O-marked and X-marked conditionals can express the same propositional content, I follow Leahy (2011, 2018) in taking them to be potential contextual equivalents in some contexts, as in (313). As we have said in Section 4.1.3, O-marked conditionals render stronger truth-conditions because they presuppose that the world of anchor is the context set whose effect is that the antecedent is compatible with the information of factive context set. X-marked conditionals presuppose nothing. Like Leahy (2011, 2018), we can derive the antecedent falsity (unlikelihood) implicature associated with X-marked conditionals from the Principle of Maximize Presupposition (Heim 1991).

(314) **Maximize Presupposition**

If ϕ and ψ are contextually equivalent alternatives, and the presuppositions of ψ are stronger than those of ϕ, and are met in the context of utterance, one must use ψ in c.

Let us apply Leahy's insight to the example (313). The O-marked conditional (313a) and the X-marked conditional (313b) carry the same assertoric information but the O-marked conditional is a stronger alternative. Assuming that the speaker obeys the principle of Maximize presupposition, the use of the X-marked conditional implies that the speaker does not believe the stronger alternative is true; thus, we infer that the speaker believes that the antecedent is likely to be false.

Modus tollens arguments

Now consider the contrast in the felicity of O-marked and X-marked conditionals in the modus tollens argument (Stalnaker 1975), given in (315).

(315)   *The knife was clean.*

a. But if the butler had done it, we would have found blood on the kitchen knife. (*X-marked*)

b. # But if the butler did it, we found blood on the kitchen knife.

(*O-marked*)

Therefore, the butler did not do it.

The anchor situation for O-marked conditionals is a present temporal slice of an actual situation part of the evaluation situation. The anchor situation should be chosen in a way that the Diversity Condition will be satisfied. That is, the projected domain should have both worlds where we found blood on the knife, and worlds where we didn't. Given that the context has made it salient that the knife was clean, finding a salient situation in the context from which bloody knife worlds project seem like a challenge, to say the least.[9] Even if we assume that such a situation can be found, since the worlds where we found blood on the knife are already excluded from the context, there can't be any prospective factive common ground in which the consequent is true. Thus, the O-marked conditional is correctly predicted to be infelicitous.

The anchor for X-marked conditionals, on the other hand, is a past situation. A plausible anchor can be a past temporal slice of the actual murder situation. The domain projected from this anchor would then be the set of possible worlds that have exact matches of the past temporal slice of the actual murder situation. This domain satisfies the Diversity Condition as there would be worlds in which we found blood on the knife, and worlds where we didn't. All it takes for (315a) to be true, is for the if-clause restriction to completely rule out worlds in which the consequent is false. Assuming that interlocutors agree that the butler couldn't have had time to clean the knife after the murder, the conditional claim can be accepted

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[9]von Fintel (1998) also explains the infelicity of O-marked conditionals in modus tollens arguments in terms of violation of *consequent variety* which is the equivalent of the Diversity Condition.

to be true.

Anderson-examples

Similar reasoning is behind the contrast in the felicity of O-marked and X-marked conditionals in Anderson-example, given below. Stalnaker (1975) notes that the O-marked conditional in (316b) cannot be used to reason for the truth of the antecedent.

(316) a. If Jones had taken arsenic, he would have shown just exactly the symptoms that he does in fact show.   (*X-marked*)

      b. #If Jones took arsenic, he shows just exactly the symptoms that he does in fact show.   (*O-marked*)

The anchor for O-marked conditionals is a present slice of an actual situation that is part of the evaluation situation. The anchor should be chosen in such a way that the Diversity Condition is satisfied. That is, the projected domain from the anchor has to include worlds in which Jones shows his current symptoms, and worlds where he shows different or no symptoms. Similar to what we said about the modus tollens case in the previous section, since Jones' current symptoms are salient in the context, it is not possible to find an anchor situation that satisfies the Diversity, which is why (316b) is infelicitous.

The anchor situation of the X-marked conditional has to be a past situation. Let us take as the anchor a past temporal slice of Jones' actual state of the body. The domain projected from this anchor would then be the set of possible worlds that have exact matches of the past temporal slice of Jones' actual state of the body. This domain satisfies the Diversity Condition as there would be worlds in which Jones shows his current symptoms, and worlds where he shows different or no symptoms. The current context that entails his current symptoms does not affect

the projected domain from a past situation. All it takes for the X-marked conditional (316) to be true, is for the if-clause restriction to completely rule out worlds in which he shows different or no symptoms. Assuming that interlocutors agree that taking arsenic can only lead to the symptoms under discussion, the X-marked conditional (316) can be accepted to be true.

Stanley Peters' example

Lastly, let us take into account Stanley Peters' example in (233), repeated here in (317), where both O-marked and X-marked conditionals are equally felicitous.

(317)   *X: Kennedy was shot by a lone gunman.*

   Y: Kennedy was shot by two gunmen.

   Z: Look guys. You gotta admit this.

   a. <u>If two gunmen had shot Kennedy, then two guns would have been found.</u> So, let's find out...   (*X-marked*)

   b. <u>If two gunmen shot Kennedy, then two guns must have been found.</u> So, let's find out...   (*O-marked*)

                                                   (von Fintel 1998)

First we need to know the value of the anchor situation for each of these conditionals. A plausible anchor for the O-marked conditional is a present slice of Z's actual process of reasoning as it relates Kennedy's death. The domain projected from this anchor will be worlds that have an exact match of the present slice of Z's actual process of reasoning. This domain does in fact satisfy the Diversity Condition, as there are worlds in the domain where two guns have been found, and worlds where two guns have not been found. Z conveys that their own process of reasoning does not completely rule out the falsity of the consequent. The if-clause

conveys that he is ignoring possibilities other than the possibility of two gunmen shooting Kennedy.

We know the mere act of asserting a propositions does not automatically update the context set, but it has to be negotiated first. In the scenario described in (317), none of X's and Y's assertions has been accepted by all interlocutors. Therefore, the context does not independently rule out any subsets of the worlds in the domain. The conditional claim is that the consequent is true in all the worlds in the prospective factive common ground where the if-clause is true. Therefore, Z's statement can be judged true, depending on whether or not the interlocutors agree that ignoring the possibility of Kennedy not being shot by the two gunmen will completely rule out the possibility of not finding two guns.

The anchor for the X-marked conditional is a past situation. A plausible anchor can be a past temporal slice of Kennedy's actual murder scene. The projected domain from this anchor satisfies the Diversity Condition. If the restriction in the if-clause can completely exclude worlds in which two guns have not been found, the conditional claim can be true.

4.2.1.2 Farsi

Having demonstrated how our proposal accounts for the distribution of X-marked conditionals in English, I will turn to explaining the Farsi facts introduced in the previous chapters.

The first point I want to establish is that X-marked conditionals in Farsi carry a deictic tense in their antecedent whose role is to specify the temporal location of the antecedent. My first argument for this view comes from the settledness presupposition. We have seen that Farsi X-marked conditionals pattern with present tense O-marked conditionals in the presuppositions of their antecedent. The morphological appearance of the imperfective marker in the antecedent of X-marked conditionals

provides further evidence for the existence of deictic tense within the antecedent. We have seen that the imperfective aspect in Farsi has two morphological representations whose distribution depends on the presence and the absence of deictic tense. In X-marked conditionals, the deictic tense variant of the imperfective morpheme *mi-* is used. Therefore, I take (318) to be the structure of X-marked conditionals in Farsi (I will provide more arguments for this choice in the next section where I discuss the typology).

(318)   *The structure of Farsi X-marked conditionals*
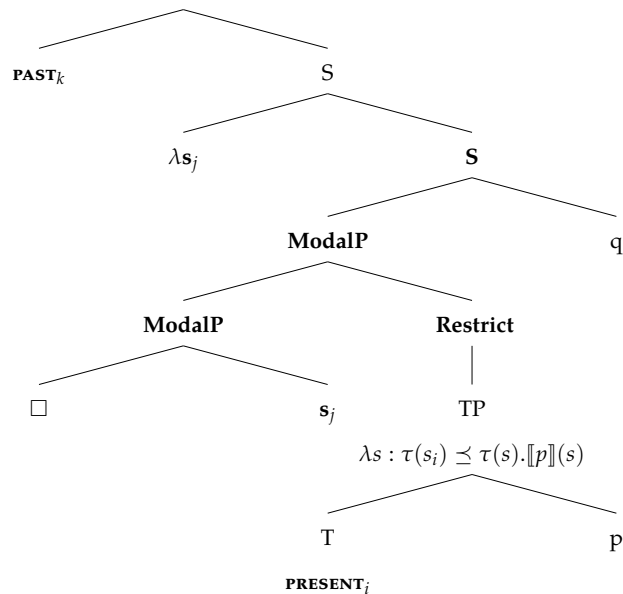
Given that Farsi X-marked conditionals have a deictic tense in their antecedent, they also come with the presupposition that the proposition is settled in the projected common ground. As I mentioned earlier, settledness is a presupposition of deictic tenses. However, since past tense does not appear in the antecedent of any Farsi conditionals to specify the temporal location of the antecedent, we only see it with present tense. Putting together the truth conditions of O-marked and X-marked conditionals, with the presupposition of the deictic and zero tenses in Farsi, we will have the followings (I put aside the contribution of aspect for the moment):

(319) **Zero tense O-marked (hypothetical)**

$[\![\lambda \mathbf{s}\ [[[\Box\ s]\ [_{\text{TP}}\ [_{\text{T}}\ \varnothing]\ [\ \mathbf{p}]]]\ [_{\text{TP}}\ \mathbf{q}]]]\ ]\!]^{c,g} =$

$\lambda s.\ [\underline{w_s \in C}\ \&\ \forall w(w \in f_{act}(s)\ \&\ \exists s'''.\ s''' \leq w.\ p(s'''))$

$\rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s'')))]$

is felicitous if

$Cs \cap r \neq Cs$ where $r = \{p, \neg p\}$ and Cs is the actual context set

  a. Agar Oswald Kennedy ro na-košte   **baš-ad**,   kas-e
      if   Oswald Kennedy RA NEG-kill-PP AUX.∅.3SG, person-EZ
      digar-i   ou ro košte ast.
      another-INDF him RA kill.PP AUX.PRES.3SG
      'If Oswald didn't kill Kennedy, someone else did.'

(320) **Present tense O-marked (factual)**

$[\![\ [\lambda \mathbf{s}\ [[[\Box\ s]\ [_{\text{TP}}\ [_{\text{T}}\ \text{PRES}]\ [\ \mathbf{p}]]]\ [_{\text{TP}}\ \mathbf{q}]]]\ ]\!]^{c,g} =$

$\lambda s.\ [\underline{w_s \in C}\ \&\ \forall w(w \in f_{act}(s)\ \&\ \exists s'''.\ s''' \leq w.\ p(s'''))$

$\rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s'')))]$

felicitous if

$Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected context set

$(Cs_{\mathscr{F}})$ or the actual context set

  a. Agar Oswald Kennedy ro na-košte   **ast**,   kas-e
      if   Oswald Kennedy RA NEG-kill-PP AUX.PRES.3SG, person-EZ
      digar-i   ou ro košte ast.
      another-INDF him RA kill.PP AUX.PRES.3SG
      'If Oswald didn't kill Kennedy, someone else did.'

(321) **X-marked**

$[\![\ [\text{PAST}_k\ [\lambda \mathbf{s}_j\ [[\Box\ \mathbf{s}_j]\ [_{\text{TP}}\ [_{\text{T}}\ \text{PRES}]\ [\ \mathbf{p}]]]\ [_{\text{TP}}\ \mathbf{q}]]]]\!]^{c,g} =$

$\lambda s : \tau(s_j) \prec \tau(s).\ [\forall w(w \in f_{act}(s_j)\ \&\ \exists s'''.\ s''' \leq w.\ p(s'''))$

$\rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s_j)\ \&\ R(s'',s')\ \&\ q(s'')))](s)$

felicitous if

$Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected context set

$(Cs_\mathscr{F})$ or the actual context set

a. Agar Oswald Kennedy ro na-košte **bud**,   kas-e
   if   Oswald Kennedy RA NEG-kill-PP **AUX.PST**.3SG, person-EZ
   digar-i   ou ro mi-košt.
   another-INDF him RA IMPF-kill.PST.3SG
   'If Oswald hadn't killed Kennedy, someone else would have.'

Future Less Vivid

We have seen that Farsi X-marked conditionals cannot have a Future Less Vivid interpretation. In a lottery scenario, only a zero tense O-marked conditional is felicitous.

(322)   *The result of the DV-lottery will be announced tomorrow.*

   a. **Imperfective X-marked**

    #agar latary ro **mi-bord-am**,   green card mi-gereft-am
     if   lottery RA **IMPF**-win-**PST**-1SG green card IMPF-get.PST-1*sg*
    'If I won the lottery, I would get a green card.'

   b. **Imperfective Zero tense O-marked**

    agar latary ro be-bar-am,   green card **mi-gir-∅-am**
    if   lottery RA **IMPF**-win-∅-1SG green card IMPF-get.PRES-1*sg*
    'If I won the lottery, I would get a green card.'

Earlier in this section, I have explained why English O-marked conditionals (313a) are predicted to be felicitous in such contexts. Farsi O-marked conditional work in the same way, so I will not repeat this. Why are Farsi X-marked conditionals infelicitous? The reason comes from the presupposition of their antecedent. The antecedent of X-marked conditionals presuppose that the antecedent proposition is settled in the projected common ground. But the outcome of the lottery is not determined yet, and no one has claimed that they know the outcome. The presupposition of the present tense in the antecedent of (322a) is not satisfied, thus it is infelicitous.

Modus tollens arguments

The felicity pattern of Farsi O-marked and X-marked conditionals in modus tollens arguments matches that of their English counterparts, so it is explained in a similar way.

(323) *knife was clean*

   a. **Pluperfect X-marked**

   agar pishkhedmat in   kar   ro kar-de bud,   ru-ye chagu xun
   if   butler   this work RA do-**PP AUX.PST**.3sG on-**EZ** knife blood
   peida šode   bud.
   found become.**PP** AUX.PST.3sG
   'If the butler had done it, blood would have been found on the knife. '

   b. **Zero tense perfect O-marked**

   #agar pishkhedmat in   kar   ro kar-de baš-ad,   ru-ye chagu xun
   if   butler   this work RA do-**PP AUX.∅**.3sG on-**EZ** knife blood
   peida šode   ast.
   found become.**PP** AUX.PST.3sG
   'If the butler had done it, blood must have been found on the knife. '

   c. #agar pishkhedmat in   kar   ro kar-de ast,   ru-ye chagu
      if   butler   this work RA do-**PP AUX.PST**.3sG on-**EZ** knife
   xun   peida šode   ast.
   blood found become.**PP** AUX.AST.3sG
   'If the butler has done it, blood has been found on the knife. '

   Therefore, the butler did not do it.

The only thing to be added to our explanation for (315) is to show how the settledness presupposition of deictic tense in the antecedent of X-marked is satisfied: the antecedent proposition has to be settled in the projected common ground. The conditional claim is that the consequent is true in all the worlds in the domain after eliminating worlds in which the antecedent is false. Since the context already entails that the consequent is false (knife is clean), the argument is only valid if the falsity of the antecedent is also entailed in the context set. If the context set had worlds

in which the antecedent is true, the conditional claim in (323a) would be false. Assuming that the argument is valid, the falsity of antecedent must be entailed in the context set; thus, the settledness presupposition of the deictic tense in the antecedent is satisfied. Moreover, as the antecedent is settled in the context set, and not merely in the projected context set, the zero tense conditional is infelicitous.[10] In fact, both zero tense (323b) and present tense (323c) O-marked conditionals are predicted to be infelicitous in the given context, because the antecedent is not compatible with the presuppositions of the factive common ground. The present tense O-marked conditional and the X-marked conditional carry the same assertoric information but the present tense O-marked conditional is a stronger alternative. Assuming that the speaker obeys the principle of Maximize presupposition, the use of the X-marked conditional implies that the speaker does not believe the stronger alternative is true; thus, we infer that the speaker believes that the antecedent is false.

Anderson-examples

Now let us consider the Anderson-example in Farsi. We have seen that Farsi pluperfect X-marked conditionals cannot be used to reason for the truth of the antecedent. Only a perfect zero tense conditional (324b) is compatible with the continuation *"We conclude, therefore, that the patient has the measles"*.

(324)   a. **Pluperfect X-marked**

#agar bimar   sorxak   gerefte   bud,   daghighan in
  if   patient measles catch-**PP AUX.PST**.3sG exactly   this
alayem-i   ke   alan neshan mi-dah-∅-ad   ra neshan
symptoms-INDF that now show   IMPF-give-PRES-3.sG RA show
mi-daad.
IMPF-give-PST-3.sG

---

[10]Note that despite the fact that the truth of consequent is already entailed, the conditional is not trivial contra Stalnaker (1975)

> *'If the patient had the measles, he would have shown exactly the symptoms he shows now.*

    b. **Zero tense perfect O-marked**

agar bimar sorxak gerefte bash-ad, daghighan in
if   patient measles catch-**PP AUX**.∅-3sG exactly   this
alayem-i   ke alan neshan mi-dah-∅-ad   ra neshan
symptoms-INDF that now show   IMPF-give-PRES-3.sG RA show
mi-dah-∅-ad
IMPF-give-PRES-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.

The infelicity of the X-marked conditional follows from the fact that the truth of the antecedent is not settled in the projected context set. Otherwise, the argument for the truth of the antecedent would be uninformative. The challenge, however, is to explain why there is a difference between Farsi and English in the felicity of their O-marked conditionals. von Fintel (1998) provides an illuminating case in English, which he attributes to Paul Portner, where the O-marked conditional is judged better than its X-marked counterpart in Anderson type of reasoning.

(325)   a. I will claim that Jones took arsenic. ??If Jones had taken arsenic, he would have shown just exactly those symptoms which he does in fact show. [So, it is likely that he took arsenic.]

    b. **Better:** I will claim that Jones took arsenic. If Jones took arsenic, he showed just exactly those symptoms which he does in fact show. [So, it is likely that he took arsenic.]   (von Fintel 1998)

This example, I believe, points to an explanation in terms of QUDs, and I offer a tentative proposal below. In the default mapping of conditionals to discourse, the antecedent is understood to set up a question under discussion (QUD), which

the consequent provides an answer to (Haiman 1978; Ebert et al. 2014; Biezma & Goebel to appear). Thus, it is the consequent that presents at-issue content in a default mapping. The QUD can be characterized as *'What is true at the selected p-worlds? / what if p?'*. The reverse of this mapping is also possible (Von Fintel 2001; Biezma 2011; Arregui & Biezma 2016). In the reverse mapping, the at-issue content is presented by the proposition in the antecedent. The QUD for the reverse mapping can be characterized as *'What are the propositions p such that for all selected worlds in which p is true, q is true? / When q?'*. The antecedent is understood as an exhaustive answer to this question. Von Fintel (2001); von Fintel (2009) argues that this is the reason behind the strengthening interpretation of certain conditionals. Take the famous example by Geis & Zwicky (1971), for instance. Only with the reversed mapping, a strengthening interpretation arises.

(326)   *QUD: Under which conditions will you give me five dollars?*

   If you mow the lawn, I'll give you five dollars.

   ⤳ If you don't mow the lawn, I won't give you five dollars.

(327)   *QUD: How can I earn five dollars?*

   If you mow the lawn, I'll give you five dollars.

   ⇸ If you don't mow the lawn, I won't give you five dollars.

As the context clarifies in (325), this mapping has been reversed here. The at-issue content is the proposition denoted by the if-clause. The QUD for this conditional can be paraphrased as *'When does Jones show the symptoms he shows? or what explains q?* The antecedent is understood to provide an exhaustive answer to this question. As we expect, they also trigger a strengthening inference that if not p, not q.

(328)   If Jones hadn't take arsenic, he wouldn't have shown the symptoms that he does in fact show.

He does in fact show the symptoms. Therefore, he took arsenic.

As von Fintel (2009) and Biezma (2011) argue, to obtain the reverse mapping we need help from context, or from linguistic devices such as focus particles. The use of zero tense in the antecedent, which signals the truth of the proposition is an open issue (unsettled), can be taken as a linguistic clue that the reverse mapping is possible. I propose that in such cases, the anchor should be chosen so that the projected domain has to satisfy the Diversity Condition with respect to the antecedent proposition. That is, it should include worlds in which the antecedent is true and worlds in which the antecedent is false. Given the reverse mapping and the presence of zero tense in the antecedent of (324b), which requires the context set to include both p-worlds and $\neg p$-worlds, we know that the Diversity Condition is satisfied. The speaker claims that the remaining worlds after eliminating $\neg p$-worlds from the projected domain from the anchor, are all worlds in which the consequent is true. Since O-marked conditionals require the context to include the actual world (the world of anchor), and the patient does in fact show the symptoms he shows, the prospective factive common ground entails that consequent is true. Therefore, (324b) is correctly predicted to be felicitous.

Stanley Peter's example

The last case we need to explain is Stanley Peters' case, where only the O-marked conditional in Farsi is felicitous.

(329)   *X: Kennedy was shot by a lone gunman.*

         Y: Kennedy was shot by two gunmen.

         Z: Look guys. You gotta admit this.

   a. **Pluperfect X-marked**

#agar do   nafar   be Kennedy šellik karde bud-and,   do ta tofang
if   two person to Kennedy shoot do.PP AUX.PST-3PL, two CL gun
peida šode   bud.
find   become.PP AUX.PST.3SG
If two gunmen had shot Kennedy, then two guns would have been found.

b. **Zero tense perfect O-marked**

agar do   nafar   be Kennedy šellik karde baš-and,   do ta tofang
if   two person to Kennedy shoot do.PP AUX.∅-3PL, two CL gun
peida šode   ast.
find   become.PP AUX.PRES.3SG
If two gunmen shot Kennedy, then two guns must have been found.

So, let's find out...

The infelicity of the X-marked conditional is due to the fact that the settledness presupposition of the deictic tense in the antecedent is not satisfied. The felicity of the zero tense O-marked conditional is explained in the same way that we explained 317. The only to thing to highlight is that the truth or falsity of the antecedent is not entailed in the context set, thus the presupposition of zero tense is satisfied.

Note that in the same context, a present tense O-marked conditional is also infelicitous, as the settledness presupposition of the deictic tense in the antecedent is not satisfied.

(330)   #agar do nafar be Kennedy šellik karde and, do tofang peida šode bud.

if one person to Kennedy shoot do.PP AUX.PST-3PL, one CL gun find become.PP

AUX.PST.3SG

If two gunmen have shot Kennedy, then two guns have been found.

(330) is felicitous in a context where the speaker only addresses Y ("*Z: Look Y. You gotta admit this.*"), signaling that they're ignoring X's utterance. With X's proposal being dismissed, the projected common ground will only contain Y's utterance; thus, the settledness presupposition is satisfied. However, (329a) remain infelicitous in this context as well. The reason is that the continuation *"let's find*

out" indicates that the antecedent is compatible with the presuppositions of the context. Since both the X-marked and O-marked conditionals express the same assertoric information and the O-marked conditional is a stronger alternative, the use of X-marked conditional is banned due to principle of Maximize Presupposition requires.

Past-oriented imperfective X-marked conditionals

How about cases where Farsi X-marked conditionals do not imply the falsity of their antecedent?

(331) *Context: Aria has borrowed Farshid's car. He calls Farshid and tells him: It's foggy everywhere. There was a turn where...*

    a. agar shans ne-mi-avar-d-am,   tah-e   darre mi-oft-ad-am.
       if   luck NEG-IMPF-bring-PST-1SG bottom-EZ valley IMPF-fall.PST-1SG
       'if I wasn't lucky, I (with the car) would fall into a valley.'

    b. #agar shans na-yavorde bud-am,   ,   tah-e
       if   luck NEG-bring-PP AUX-PST-1SG bottom-EZ valley
       darre   mi-oft-ad-am.
       IMPF-fall.PST-1SG
       'if I hadn't been lucky, I (with the car) would have fallen into a valley.'

    Farshid: Are you really calling so early in the morning to say this?

    Aria: well, I wasn't lucky...

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

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

    b. *(chon)   agar dirooz   rafte bud-am,   taxfif   mi-gereft-am.
       (because) if   yesterday go-PP AUX-PST-1SG discount IMPF-get.PST-1SG
       'Because if I had gone yesterday, I would have gotten a discount.'

As (331) and (332) show, such cases seem to be limited to **past oriented** past imperfective X-marked conditionals. To answer this question, I have to first explain

how these conditionals can have a past oriented interpretation. So, I will come back to this question after I have discussed the temporal orientation of Farsi X-marked conditionals. The first point to establish about these cases is that their contexts make it clear that their anchor situations are past situations. In the case of (331), the anchor situation is the actual past situation of the car on the dangerous turn. In the case of (332), the anchor situation is the actual past situation of Rodica's plan to go to store. Interestingly, (331) can be interpreted as implying the falsity of its antecedent as Farshid's response shows. He thought that Aria called just to tell him he survived a dangerous turn. But Aria's response clarifies that the antecedent of (331) is in fact true. Note that (331) is not construed factually, as factual conditionals are infelicitous with first person antecedents (334), unless someone other than the speaker has suggested that the antecedent proposition is true (334).

(333) #agar shans na-yavarde ∅-am,   tah-e   darre oftade
        if   luck NEG-bring-PP AUX-PRES-1SG bottom-EZ valley fall.PP
       ∅-am
       AUX-PRES-1SG
       If I haven't been lucky, I (with the car) have fallen into a valley.

(334) *A:You are not really smart.*

       B: Oh yeah?

       agar bahuš n-ist-am,   čera olampiad barande šo-d-am?
       if   smart NEG-be.**PRES**.1SG why Olympiad winner become-PST.1SG
       If I'm not smart, why did I win Olympiad?

Given that the anchor situations in these cases are past situations, the conditionals will be necessarily X-marked. Moreover, building on the proposal presented in 4.2.1.2 about the existence of present tense in the antecedent of X-marked conditionals, I will argue that in such cases the present tense in the antecedent is not interpreted deictically. We have said that settledness is the presupposition of deictic tenses (the reason we have only seen it with present tense is that for independent

reasons, past tense in Farsi does not appear in the antecedent of Farsi conditionals).
Therefore, when the present tense in the antecedent of X-marked conditional is
not interpreted deictically, the past oriented imperfective conditional is felicitous
in contexts where settledness is satisfied and in those where it is not.

In sum, I have argued that the strong antecedent falsity of Farsi X-marked con-
ditionals arise from the settledness presupposition of the deictic tense in their an-
tecedent. English X-marked conditionals have a zero tense in their antecedent (I
will discuss this further in the section about typology), thus they do not carry a
settledness presupposition. Unlike zero tense in Farsi, however, the English zero
tense does not require the proposition to be unsettled. They simply lack any pre-
supposition (Schlenker 2005).

As discussed in Section 3.3.2.6 of Chapter Three, Ippolito (2003, 2006, 2013)
argue that the future oriented pluperfect X-marked conditionals also strongly imply
the falsity of their antecedents. In the next section, I will discuss the differences
between future oriented pluperfect and (imperfective) past X-marked conditionals.

4.2.1.3   Pluperfect vs. (imperfective) past

We have observed that both in Farsi and English, there is a contrast in felicity condi-
tions of future oriented pluperfect and (imperfective) past X-marked conditionals.
The details of this contrast, however, are different in Farsi and English. Ippolito
(2003, 2006, 2013) take the difference between the two conditionals to be the num-
ber of the past tense morphemes, which affects the strength of counterfactuality.
Arregui (2005, 2007), on the other hand, take the contrast in felicity of the two
conditionals to arise from their aspectual differences. The data is complex and
a proper study of the contrast is outside the scope of this dissertation. While I
cannot propose an analysis of the contrast, I want to bring up some data that points
to a solution in terms of aspectual differences between the two conditionals, as

proposed by Arregui (2005, 2007).

I have argued that the antecedent falsity inference associated with future oriented pluperfect and past imperfective X-marked conditionals in Farsi are equally strong[11], and cannot be cancelled. Whether or not the the presuppositions of the antecedent are satisfied in the context of utterance, in the manner discussed by Ippolito (2013), does not play a role in the felicity of future oriented pluperfect and past imperfective X-marked conditionals in Farsi. This was shown in (268), repeated here as (335).

(335) *Mostafa is dead. He loved Larry David. A new season of "Curb Your Enthusiasm" will be released tomorrow.*

    a. **Past imperfective X-marked**

      agar Mostafa in   film ro **mi-did-id,**   kheili mi-xand-id
      if   Mostafa this film RA **IMPF**-see.**PST**-3SG very   IMPF-laugh-PST.3SG
      If Mostafa had watched this movie, he would have laughed a lot.

    b. **Pluperfect X-marked**

      # agar Mostafa in   film ro **dide bud,** kheili   mi-xand-id
      if   Mostafa this film RA see.**PP**   **AUX.PST**-3SG very

      IMPF-laugh-PST.3SG
      If Mostafa had watched this movie, he would have laughed a lot.

What is shared between the felicity conditions of the future oriented pluperfect conditionals in Farsi and English is that in a scenario where a counterpart of the situation described by the antecedent has already been realized, a future oriented pluperfect conditionals can be used. We saw this in (259b) and (269b), repeated here in (336a) and (336b).

(336) *John had chicken pox last year during the summer exam period. It was a disaster.*

---

[11]Only past oriented imperfective X-marked conditionals are felicitous in contexts where the falsity of their antecedent is not settled.

a. Bad timing. If he had been sick with chicken pox next summer instead, it would have been much better.

b. **Pluperfect X-marked**

Bejash agar tabestan-e ba'd abele morghan **gerefte bud**,
instead if   summer-EZ next pox   chicken   get-PP AUX.PST.3SG
keili   behtar bud.
much better be.PST.3SG
'*If he had been sick with chicken pox next summer instead, it would have been much better.*'

The infelicity of (337b) in the scenario described below shows that it is not enough for a counterpart of the situation described by the antecedent of a future oriented pluperfect conditional to just have been planned. It has to have already been realized in the actual world.

(337) *Team A has an important game tomorrow. Some of its best players are injured, and cannot play. They are expected to fully recover in a week.*

a. **Past imperfective X-marked**

Agar Team A hafte-ye dige bazi **mi-kard**,   mi-bor-d
If   Team A week-EZ other play **IMPF**-do.PST.3SG IMPF-win.PST.3esG
If Team A played next week, they would have won.

b. **Pluperfect X-marked**

#Agar Team A hafte-ye dige bazi **karde bud**,
If   Team A week-EZ other play do.PP AUX.PST.3SG
mi-bor-d
IMPF-win.PST.3esG
If Team A had played next week, they would have won.

In the last chapter, we have seen a problem for Ippolito's account of the contrast between future oriented pluperfect and (imperfective) past X-marked conditionals. Future oriented pluperfect X-marked conditionals in both English and Farsi show a similar pattern. As illustrated with English examples (338) and Farsi examples

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(339), pluperfect X-marked conditionals are infelicitous to make a counterfactual statement about non-existent objects.

(338)   a. If aliens came to earth tomorrow, they would kill us all.

        b. #If aliens had come to earth tomorrow, they would have killed us all.

(339)   a. **Past imperfective X-marked**

agar farda   ye asb-e   šaxdar **mi-did-am**,   xošhal
if   tomorrow a horse-ᴇᴢ unicorn **ɪᴍᴘꜰ-see-ᴘsᴛ-1sɢ** happy
mi-šod-am
ɪᴍᴘꜰ-become-ᴘsᴛ-1sɢ
If I saw a unicorn tomorrow, I'd be happy.

        b. **Pluperfect X-marked**

agar farda   ye asb-e   šaxdar **dide bud-am**,   xošhal
  if   tomorrow a horse-ᴇᴢ unicorn see-ᴘᴘ **ᴀᴜx-ᴘsᴛ**-1sɢ happy
mi-šod-am
ɪᴍᴘꜰ-become-ᴘsᴛ-1sɢ
#If I had seen a unicorn tomorrow, I would have been happy.

Given the fact that predictions of Ippolito's two past layers account are not borne out out in Farsi, and that I have independently argued that aspect in the antecedent of Farsi X-marked conditionals is real, I am more sympathetic to Arregui's account that takes the contrast between future oriented pluperfect and (imperfective) past X-marked conditionals to arise from their aspectual differences. A further argument in favor of an aspectual account of this contrast comes from the differences between past oriented pluperfect and past imperfective X-marked conditionals. While antecedents of both pluperfect and past imperfective X-marked conditionals in Farsi can describe a past situation, pluperfect X-marked conditionals are felicitous only when all referential items have a referent at the past situation described by the antecedent. For instance, since the referential DP *this movie* doesn't have a referent in any past situation where Mostafa was alive, (340b) is infelicitous.

(340)   *Mostafa died six years ago. He loved Larry David. Yesterday, we watched the new*
        season of "Curb Your Enthusiasm" which was just released the same day.

    a.   **Past imperfective X-marked**

       agar Mostafa in   film ro **mi-did-id**,   kheili mi-xand-id
       if   Mostafa this film RA **IMPF**-see.**PST**-3SG very IMPF-laugh-PST.3SG
       If Mostafa had watched this movie, he would have laughed a lot.

    b.   **Pluperfect X-marked**

       # agar Mostafa in   film ro **dide bud**,   kheili mi-xand-id
         if   Mostafa this film RA see.PP AUX.PST-3SG very IMPF-laugh-PST.3SG
       If Mostafa had watched this movie, he would have laughed a lot.

When *this movie* refers to a movie that co-existed with Mostafa as in (341b), both pluperfect and past imperfective X-marked conditionals are felicitous. Note that past oriented pluperfect X-marked conditionals, unlike future oriented ones, can be used in contexts where a counterpart of an event described by the antecedent hasn't happened.

(341)   *Mostafa died a year ago. He loved action movies. Yesterday, we watched an old*
        action movie.

    a.   **Past imperfective X-marked**

       agar Mostafa in   film ro **mi-did-id**,   kheili mi-xand-id
       if   Mostafa this film RA **IMPF**-see.**PST**-3SG very IMPF-laugh-PST.3SG
       If Mostafa had watched this movie, he would have laughed a lot.

    b.   **Pluperfect X-marked**

       agar Mostafa in   film ro **dide bud**,   kheili mi-xand-id
       if   Mostafa this film RA see.PP AUX.PST-3SG very IMPF-laugh-PST.3SG
       If Mostafa had watched this movie, he would have laughed a lot.

Ippolito's approach cannot capture the observation that pluperfect and (imperfective) past X-marked conditionals that have the same temporal orientation (i.e. future in English, past and future in Farsi) show some differences in their

felicity conditions. I do not aim to propose a full analysis of these contrasts, but an idea that seems promising to me is to attribute the source of contrasts to the semantic properties of the perfective aspect embedded under perfect, as Arregui (2007) proposes. An additional argument in favor of this view comes from the contrast between perfective and imperfective zero tense conditionals. As mentioned in Chapter Two, the choice of aspect in the antecedent results in semantic and pragmatic difference between the two conditionals. One such difference is the felicity of these conditionals in hypothesizing about non-existent object, as in (342). Similar to the contrast observed between imperfective and pluperfect X-marked conditionals in (339), the perfective zero tense conditional (342b) cannot be used to talk abut a non-existent object like unicorn. (342b) implies that unicorns exist and that there is a real possibility that they enter the room, hence the infelicity.

(342) a. agar ye asb-e   šaxdar vared-e otagh be-šav-ad,   man farar
          if   a horse-EZ unicorn enter-**ez** room IMPF-become.∅-3SG, I   flee
          mi-kon-∅-am
          IMPF-do-PRES-1SG
          if a unicorn enters the room, I will ran away.

       b. #agar ye asb-e   šaxdar vared-e otagh sho-d,   man
          if   a horse-EZ unicorn enter-**ez** room become-PERF.∅-3SG, I
          farar mi-kon-∅-am
          flee IMPF-do-PRES-1SG
          if a unicorn enters the room, I will ran away.

As discussed earlier, Arregui (2005, 2007) takes the perfective to be deictic. Since a deictic event pronoun presupposes that the event is true of some spatiotemporal region in the actual world, the felicitous use of a deictic event pronoun requires that this pronoun have a denotation in the actual world. It is also well known that perfective aspect in modal environments give rise to actuality entailment (Bhatt 1999; Hacquard 2018, a.o.). I have provided arguments that the the perfect form of verbs in Farsi that does not additionally carry an imperfective marker, embeds a perfective aspect. I leave the proper study of the role of perfective aspect

in giving rise to the contrasts observed between pluperfect and (imperfective) past X-marked conditionals in Farsi and English a topic for future research.

With this, I will move on to discussing how our proposal explains the observations we have made about the temporal orientation of antecedents of X-marked conditionals in Farsi.

4.2.2   Temporal orientation of antecedents

The three types of Farsi conditionals we have discussed have an imperfective and a perfect version. In the last chapter, I have shown that aspect in the antecedent of Farsi conditionals puts restrictions on the temporal orientation of antecedents. Conditionals whose antecedent is marked with imperfective aspect cannot refer to a past situation unless there is a deictic past tense in the structure of conditionals, which is only the case with X-marked conditionals. Conditionals with a perfect antecedent cannot describe present situations. My goal in this section is to derive the temporal orientation of antecedents of Farsi X-marked conditionals compositionally from the semantic contribution of their tense and aspect.

Let us first start with past-oriented imperfective X-marked conditionals whose structure is given below.

(343)   *The structure of imperfective X-marked conditionals*

S
$\lambda s : \tau(s_j) \prec \tau(s_k).\ [\![S]\!]^{c,g}(s)$

- **PAST$_j$**
- S
  - $\lambda \mathbf{s}_k$
  - S $\quad ([\![ModalP]\!]^{c,g}([\![q]\!]^{c,g}))$
    - **ModalP**
      - **ModalP**
        - $\square$
        - $\mathbf{s}_k$
      - **Restrict**
        - TP $\quad \lambda s : \tau(s_{i/k}) \preceq \tau(s).\forall s' : s' \leq s.[\![vP]\!](s')$
          - T $\quad$ **PRESENT$_{k/i}$**
          - **AspP** $\quad \lambda s.\forall s' : s' \leq s.[\![vP]\!](s')$
            - Asp $\quad$ **IMPERFECT**
            - **vP** $\quad [\![vP]\!]$
    - q
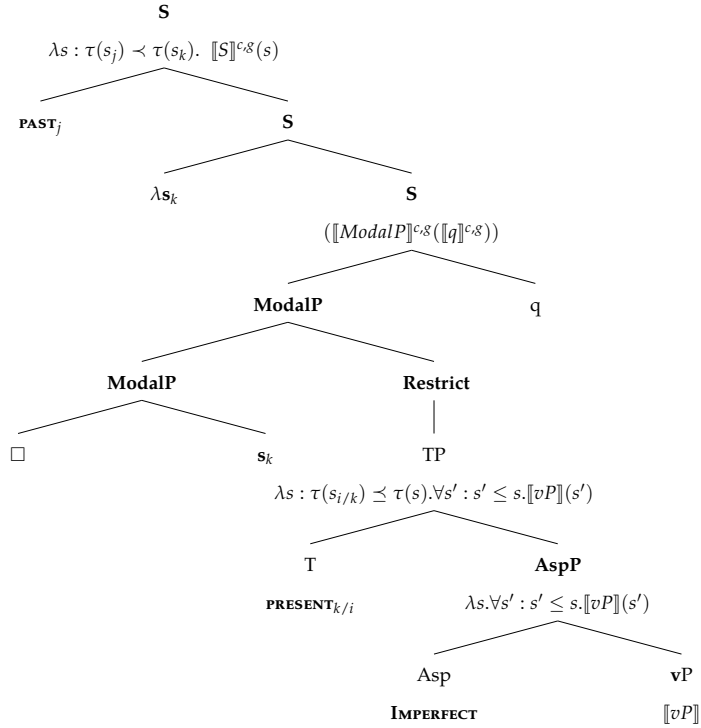
As discussed earlier and shown in (343), antecedents of Farsi X-marked conditionals contain present tense. To refresh our memory, the denotations of present tense and imperfective aspect are given in (344).

(344) a. $[\![\textbf{PRESENT}_i]\!]^{c,g} = \lambda P_{\langle s,t\rangle}.\ \lambda s : \tau(s_i) \preceq \tau(s).\ P(s) = 1.$

  b. $[\![\textbf{IMPERFECTIVE}]\!]^{c,g} = \lambda P_{\langle s,t\rangle}.\ \lambda s.\ \forall s' : s' \leq$s & there exists a contextually salient relation R such that $R(s)(s').\ P(s') = 1$

Putting these two together, the denotation of the antecedent of past imperfective X-marked conditionals will be (345).

(345) $[\![\ [_{\text{TP}}\text{PRESENT}_i\ [_{\text{ASPP}}\ \text{IMPERFECTIVE}\ [_{\text{vP}}\ P\ ]\ ]\ ]\ ]\!]^{c,g} = \lambda s : \tau(s_i) \preceq \tau(s)\ \forall s' :\ s' \leq s.\ [\![vP]\!](s') = 1$

The denotation in (345) states that the situation s described by the antecedent is a homogeneous situation (that is P is true in all of its subsituation), and it overlaps with or follows the minimal temporal slice of the contextually salient situation s_i. As discussed in Section 2.2.1 of Chapter Two, present tense in Farsi is shiftable (i.e.

it is not always deictic). It can be interpreted relative to a situation variable s_i whose value comes from either the global or the local context. When s_i takes its value from the global context of the utterance via an assignment function, the antecedent situation is interpreted as either present or future. What happens when s_i takes its value from the local context of the antecedent?

There are two ways to explain the past orientation of past imperfective X-marked conditionals. First, we can assume, following Arregui (2009), that both anchor situation and the present tense in the antecedent are in the scope of a binder.

(346) $[\mathbf{PAST}_j\ [\ \lambda \mathbf{s}_k\ [[[\Box\ \mathbf{s}_k][\ \mathbf{if}\ ....\ \mathbf{PRES}_k\ ....\ ]]\ [\ q\ ]]]]$

In this case, the antecedent situation is presupposed to overlap with/follow the minimal temporal slice of s_k, which is a past situation; thus, the antecedent can be interpreted as referring to a past situation.

Another option is to say that the situation variable s_i takes its value from the local context. I will not go through the details of local contexts Schlenker (2009), and methods by which they are computed. Following Mackay (2019b), I just assume that the local context for a conditional's antecedent is the set of worlds consistent with the modal base, here the set of worlds projected from the anchor situation, at any world in the global context. The value of the situation variable s_i will be the anchor situation which is the salient situation in the local context.

The truth conditions of present and future oriented imperfective X-marked conditionals, where the present tense is not bound and is interpreted deictically are given in (347).

(347) **Present/future oriented imperfective X-marked**

    a. Building the domain

        $\lambda q.\ (\forall w(w \in f_{act}(s)\ \&\ \exists s''' : \tau(s_i) \preceq \tau(s''')\ \&\ s''' \leq w.\ \forall s'''' : s'''' \leq s'''.[\![vP]\!]^{c,g}(s'''') \rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&$

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$R(s'',s')$ & $q(s'')))))$

   i. Anchor situation

      $[\![s_k]\!]^{c,g(k/s)} = g(k)$

   ii. RestrictP

      $\lambda s : \tau(s_i) \preceq \tau(s).\forall s' : s' \leq s.[\![vP]\!]^{c,g}(s')$; where s_i is the speech situation.

b. Consequent

   $\lambda s.\ [\![q]\!]^{c,g}(s)$

c. Combining modal, anchor, antecedent and consequent

   $\forall w(w \in f_{act}(s)$ & $\exists s''' : \tau(s_i) \preceq \tau(s''')$ & $s''' \leq w.\ \forall s'''' : s'''' \leq s'''.p(s'''')$

   $\rightarrow \exists s' \exists s''(s' \leq w$ & $s'' \leq w$ & $Match(s',s)$ & $R(s'',s')$ & $q(s''))))$

d. Combining past tense and the conditional

   $[\![[\textbf{past}_j\ [\lambda \textbf{s}_k\ [[\square\ s_k]\ [_{\text{TP}}\ [_{\text{T}}\ \textbf{pres}_i]\ [_{\text{AspP}}\ [_{\text{Asp}}\ \textbf{impf}]\ [\ \textbf{p}]]]]\ [_{\text{TP}}$

   $\textbf{q}]]]]^{c,g}$ is only defined for s_k such that $\tau(s_j) \prec \tau(s_k)$ where s_j is the

   speech situation by default; if defined, $[\![[\textbf{past}_j\ [\lambda \textbf{s}_k\ [[\square\ s_k]\ [_{\text{TP}}\ [_{\text{T}}\ \textbf{pres}_i]$

   $[_{\text{AspP}}\ [_{\text{Asp}}\ \textbf{impf}]\ [\ \textbf{p}]]]]\ [_{\text{TP}}\ \textbf{q}]]]]^{c,g} =$

   $\lambda s.\ [\forall w(w \in f_{act}(s_k)$ & $\exists s''' : \tau(s_i) \preceq \tau(s''')$ & $s''' \leq w.\ \forall s'''' : s'''' \leq$

   $s'''.p(s'''') \rightarrow \exists s' \exists s''(s' \leq w$ & $s'' \leq w$ & $Match(s',s_k)$

   & $R(s'',s')$ & $q(s'')))](s)$

   where s_i is the speech situation

   <u>felicitous if</u>

   $Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected context

   set $(Cs_{\mathscr{F}})$ or the actual context set

(348) provides the truth conditions of past oriented imperfective X-marked con-

ditionals, where the present tense is bound and interpreted relative to the past

situation s_k. Note that past oriented imperfective X-marked conditionals do not carry a settledness presupposition because present tense in the antecedent is not interpreted deictically. They do not require the proposition to be unsettled either (that is the presupposition of the morphological zero tense in Farsi). Like English X-marked conditionals, past oriented imperfective X-marked conditionals in Farsi lack any settledness presupposition.

(348) **Past oriented imperfective X-marked**

$\llbracket[\textsc{past}_j\,[\lambda \mathbf{s}_k\,[[\square\ s_k]\,[_{\textsc{TP}}\,[_{\textsc{T}}\ \textsc{pres}_k]\,[_{\textsc{AspP}}\ [_{\textsc{Asp}}\ \textsc{impf}]\,[\ p]]]]\,[_{\textsc{TP}}\ q]]]\rrbracket^{c,g}$
is only defined for s_k such that $\tau(s_j) \prec \tau(s_k)$ where s_j is the speech situation by default; if defined, $\llbracket[\textsc{past}_j\,[\lambda \mathbf{s}_k\,[[\square\ s_k]\,[_{\textsc{TP}}\,[_{\textsc{T}}\ \textsc{pres}_k]\,[_{\textsc{AspP}}$

$[_{\textsc{Asp}}\ \textsc{impf}]\,[\ p]]]]\,[_{\textsc{TP}}\ q]]]\rrbracket^{c,g} =$

$\lambda s.\ [\forall w(w \in f_{act}(s_k)\ \&\ \exists s''' : \tau(s_k) \preceq \tau(s''')\ \&\ s''' \leq w.\ \forall s'''' : s'''' \leq$

$s'''.p(s'''') \to \exists s'\exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s_k)$

$\&\ R(s'',s')\ \&\ q(s''))](s)$

<u>felicitous if</u>

$Cs \cap r = Cs$ where $r = \{p, \neg p\}$ and Cs is either the projected context set $(Cs_{\mathscr{F}})$ or the actual context set

Now we can answer the question of why past oriented imperfective X-marked conditionals in Farsi do not always imply the falsity of their antecedent. We saw this in (332), repeated here in (349a).

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

   a. **Imperfective X-marked**

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

   b. **Pluperfect X-marked**

> *(chon)　agar　dirooz　　rafte　bud-am,　　taxfif　　mi-gereft-am.
> (because) if　 yesterday go-PP　AUX-PST-1SG discount IMPF-get.PST-1SG
> *'Because if I had gone yesterday, I would have gotten a discount.'*

Given the past orientation of (349a), present tense in the antecedent is not interpreted deictically, and thus (349a) does not carry a settledness presupposition. The conditional can be felicitously used in contexts where settledness is not satisfied. In contrast, the pluperfect X-marked conditional in (349b) whose antecedent contains deictically interpreted present perfect, is not felicitous in such a context.

One might ask why we cannot simply say that the tense specifying the temporal location of the antecedent of past oriented imperfective X-marked conditionals is past. There are two problems with this view. First, given that these conditionals have the same morphological representation as present and future oriented imperfective X-marked conditionals, we would have to stipulate a morphological mechanism that deletes the past tense in the antecedent. Moreover, we would need to explain why the same morphological mechanism is absent in English, as the antecedent of English simple past X-marked conditionals can never have a past orientation. The second problem with this view is that it mischaracterizes the typological picture. In the next section, I will show that these readings seem to only be available in languages that have a shiftable present tense. Finally, I want to add that since present and future oriented X-marked conditionals contain present tense and Farsi present tense is shiftable, we expect it to be able to shift in the right environment. So, irrespective of whether past tense can or cannot appear in the antecedent of X-marked conditionals, the prediction for shiftable present languages is that their X-marked conditionals (assuming that their X-marker is past) can also render past orientation when the antecedent contains present tense.

Now let us look at the pluperfect X-marked conditionals. In Section 2.2.2.2 of Chapter Two, I have argued that the present perfect is a higher aspect that can embed a perfective or an imperfective aspect. Given that imperfective aspect has

a morphological realization in Farsi, we know that a present perfect that does not carry imperfective marker embeds perfective aspect (e.g. on the basis of the same aspectual restrictions in both perfective and present perfect with the stative verb *know*, and the impossibility of having a generic or habitual reading with a present perfect that does not additionally carry an imperfective marker). In this chapter, we have seen that the same holds for the antecedent of pluperfect X-marked conditionals. Given that the antecedent of pluperfect X-marked conditionals does not carry an imperfective marker, I take (350) to be the structure of pluperfect X-marked conditionals, whose antecedent contains present tense and perfect aspect.

(350) *The structure of pluperfect X-marked conditionals*
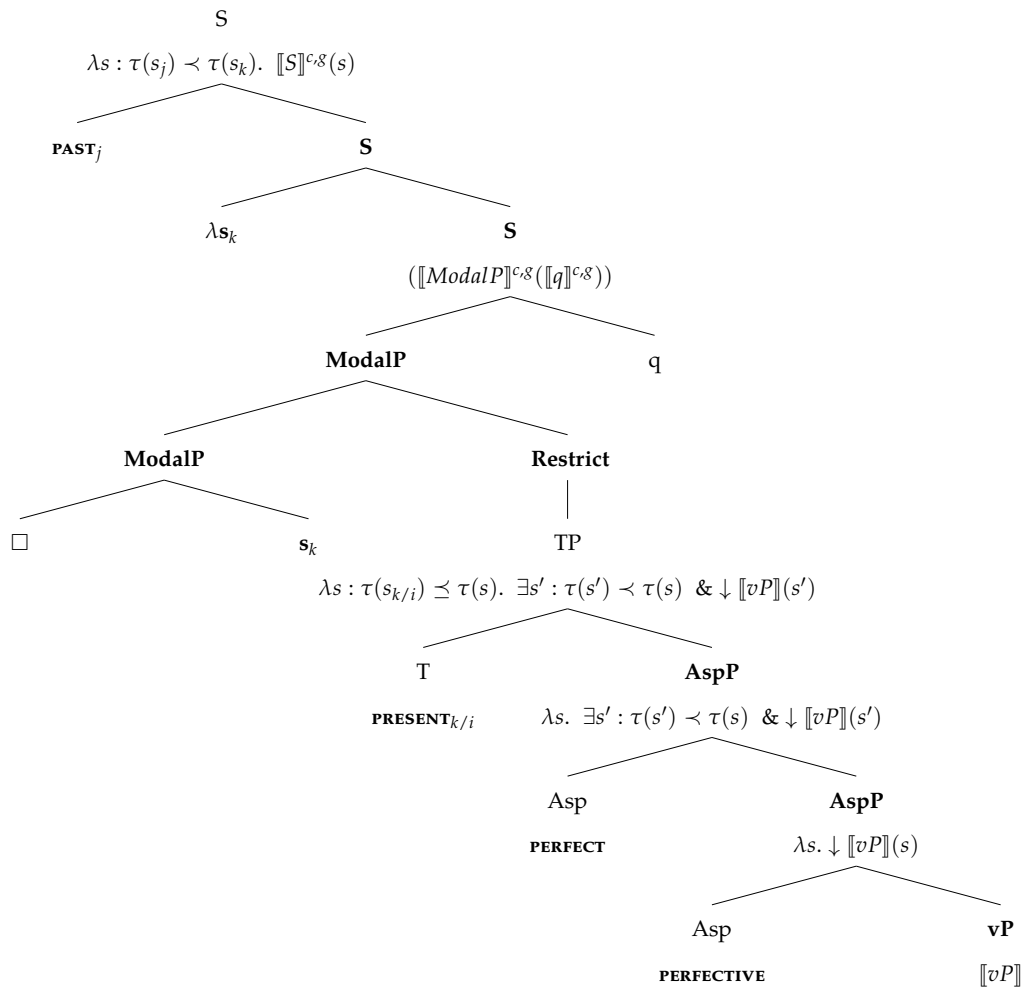
The contrast in (351) shows that the verb *know* which is generally incompatible with perfect and perfective aspect, cannot appear in the antecedent of pluperfect X-marked conditionals.

(351) a. **Imperfective X-marked**

agar Ava dirooz/emrooz/farda   javaab ro mi-dunes-t,
if   Ava yesterday/today/tomorrow answer RA **IMPF**-know-**PST**-3SG
barande-ye mosabeghe mi-šod.
winner-EZ   competition **IMPF**-become.**PST**-3SG
'*If Ava knew the answer yesterday/today/tomorrow, she would win/have won*

the competition.'

b. **Pluperfect X-marked**

*agar Ava dirooz/emrooz/farda   javaab ro daneste
if   Ava yesterday/today/tomorrow answer RA know-**PP**
bud,   barande-ye mosabeghe mi-šod.
AUX-PST-3SG winner-EZ   competition **IMPF**-become.**PST**-3SG
'*If Ava knew the answer yesterday/today/tomorrow, she would win/have won*

the competition.'

(352) shows that counterfactual generic statements cannot be expressed with a pluperfect X-marked conditional.

(352) a. **Imperfective X-marked**

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

b. **Pluperfect X-marked**

#Agar dainasur-ha-ye Dracorex gušt xor-**d**e 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 had eaten meat, their teeth wouldn't have been flat.

The denotations of perfect aspect that embeds a prefective aspect, as well as the denotation of perfective aspect is given in (353) (See Chapter Two).

(353)   a. $[\![\textsc{PERFECT}\,[\textsc{PERFECTIVE}]]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ \exists s' \colon \tau(s') \prec \tau(s)\ \&\ {\downarrow}P(s') = 1$

   b. $[\![\textsc{PERFECTIVE}]\!]^{c,g} = \lambda P_{\langle s,t \rangle}.\ \lambda s.\ {\downarrow}P(s) = 1$ where $\downarrow$ represents minimal situations.

      i.   A situation is a minimal situation in which a proposition p is true iff it has no proper parts in which p is true.

Given the denotation of present tense in (344a), and the denotation of perfect aspect in (353a), we will have (354) as the denotation of the antecedent of pluperfect X-marked conditionals.

(354) $[\![\,[_{\text{TP}}\textsc{Present}_i\,[_{\text{AspP}}\textsc{Perfect}\,[\,_{\text{AspP}}\textsc{Perfective}\,[_{\text{vP}}\text{P}]\,]\,]\,]\,]\!]^{c,g} =$
   $\lambda s : \tau(s_i) \preceq \tau(s).\ \exists s' \colon \tau(s') \prec \tau(s)\ \&\ {\downarrow}\,P(s') = 1$

According to (354), the antecedent denotes a function with a domain restricted to situations s that overlap or follow the minimal temporal slice of a contextually salient situation s_i, i.e. the speech time. The function is true of a situation s only if there is a minimal situation s' exemplifying the proposition described by the antecedent which precedes the minimal temporal slice of situation s (which itself overlaps with or follows the speech time). Again, since present tense in Farsi is shiftable, the value of s_i can come from either the global or the local context. When s_i takes its value deictically from the global context of the utterance via the assignment function, s can be either a present or future situation. Note that the result state overlaps or follows the speech time, but the situation exemplifying the proposition described by the antecedent that precedes it can be in past, present, or future. The reason the present orientation is not available is that the presence of perfective aspect, which we have seen is cross-linguistically incompatible with present oriented interpretations.

The truth conditions of pluperfect X-marked conditionals, where the present tense is not bound and is interpreted deictically are given in (355).

(355) **Past/future oriented pluperfect X-marked**

$[\![\textbf{PAST}_j\,[\lambda\textbf{s}_k\,[[\square\ s_k]\,[_{\text{TP}}\,[_{\text{T}}\,\textbf{PRES}_i]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECT}]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECTIVE}]$ $[\textbf{p}]\,]]]]\,[_{\text{TP}}\quad\textbf{q}]]]\!]^{c,g}$ is only defined for s_k such that $\tau(s_j)\prec\tau(s_k)$ where s_j is the speech situation by default; if defined, $[\![\textbf{PAST}_j\,[\lambda\textbf{s}_k\,[[\square\ s]\,[_{\text{TP}}\,[_{\text{T}}\,\textbf{PRES}_i]$ $[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECT}]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECTIVE}]\,[\textbf{p}]\,]]]]\,[_{\text{TP}}\quad\textbf{q}]]]\!]^{c,g}=$

$\lambda s.\ [\forall w(w\in f_{act}(s_k)\ \&\ \exists s''': \tau(s_i)\prec\tau(s'')\ \&\ s'''\le w.\ \exists s'''': \tau(s'''')\prec$ $\tau(s''').\downarrow p(s'''')$

$\rightarrow\exists s'\exists s''(s'\le w\ \&\ s''\le w\ \&\ \ Match(s',s_k)\ \&\ R(s'',s')\ \&\ q(s'')))](s)$

where s_i is the speech situation

<u>felicitous if</u>

$Cs\cap\ r=Cs$ where $r=\{p,\neg p\}$ and Cs is either the projected context set $(Cs_{\mathscr{F}})$ or the actual context set

Given that present tense in the antecedent can be bound and be interpreted with respect to the past anchor situation, we expect to find pluperfect conditionals whose truth conditions are like (356).

(356) **Past oriented pluperfect X-marked**

$[\![\textbf{PAST}_j\,[\lambda\textbf{s}_k\,[[\square\ s_k]\,[_{\text{TP}}\,[_{\text{T}}\,\textbf{PRES}_k]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECT}]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECTIVE}]$ $[\textbf{p}]\,]]]]\,[_{\text{TP}}\quad\textbf{q}]]]\!]^{c,g}$ is only defined for s_k such that $\tau(s_j)\prec\tau(s_k)$ where s_j is the speech situation by default; if defined, $[\![\textbf{PAST}_j\,[\lambda\textbf{s}_k\,[[\square\ s_k]\,[_{\text{TP}}\,[_{\text{T}}\,\textbf{PRES}_k]$ $[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECT}]\,[_{\text{AspP}}\,[_{\text{Asp}}\,\textbf{PERFECTIVE}]\,[\textbf{p}]\,]]]]\,[_{\text{TP}}\quad\textbf{q}]]]\!]^{c,g}=$

$\lambda s.\ [\forall w(w\in f_{act}(s_k)\ \&\ \exists s''': \tau(s_k)\prec\tau(s'')\ \&\ s'''\le w.\ \exists s'''': \tau(s'''')\prec$ $\tau(s''').\downarrow p(s'''')\rightarrow\exists s'\exists s''(s'\le w\ \&\ s''\le w\ \&\ \ Match(s',s_k)$

$\&\ R(s'',s')\ \&\ q(s'')))](s)$

According to (356), the antecedent denotes a function with a domain restricted

to situations s that overlap or follow the minimal temporal slice of s_i. The present tense is bound by the past tense which also specifies the temporal location of the anchor situation, so s_i is a past situation. The function is true of a situation s only if there is a minimal situation s' exemplifying the proposition described by the antecedent that precedes the minimal temporal slice of situation s. Since the result state s is a past situation, the situation preceding it can only be a past situation.

We cannot distinguish between (355) and (356) via the temporal orientation of these conditionals because pluperfect X-marked conditionals can describe a past situation in both cases. We expect, however, to find **past oriented** pluperfect conditionals that do not carry a settledness presupposition, as present tense in their antecedent is not interpreted deictically. The example (357) shows that we do in fact find such cases. (357) describes a rule as it held ten years ago, which might or might not hold at the present. Note that despite the fact that the truth or falsity of the antecedent is not settled, both the past oriented imperfective X-marked conditional and the past oriented pluperfect X-marked conditional are felicitous.

(357)   a. **Imperfective X-marked**

dah sal-e piš qanoon in tor-i bud ke agar
ten year-EZ before rule this case-INDF BE.PST.3SG that if
daneɣju-ha dars-ešun ro 5 sale tamum ne-mi-kard-and,
student-PL studies-their RA 5 in-years finish NEG-**IMPF**-do.**PST**-3SG,
exraj mi-šod-and
fired IMPF-get-PST-3SG
Ten years ago, the rules were such that if students didn't finish their studies

within 5 years, they would get fired.

   b. **Pluperfect X-marked**

dah sal-e piš qanoon in tor-i bud ke agar
ten year-EZ before rule this case-INDF BE.PST.3SG that if
daneɣju-ha dars-ešun ro 5 sale tamum na-karde bud-and,
student-PL studies-their RA 5 in-years finish NEG-do.**PP AUX.PST**-3SG,
exraj mi-šod-and
fired IMPF-get-PST-3SG

Ten years ago, the rules were such that if students didn't finish their studies within 5 years, they would get fired.

How about the temporal orientation of X-marked conditionals in English? We have seen that there are two proposals about the temporal orientations of antecedents of X-marked conditionals. The first approach which is defended by Ippolito (2013) take the antecedent of simple past X-marked conditionals to contain a present tense, and the antecedent of pluperfect X-marked conditionals to contain a past tense. We can explain the differences between Farsi and English regarding the availability of past orientation for X-marked conditionals that only have one layer of the past morphology by appealing to the "shiftability" property of the present tense in the two languages. Since English present tense is not shiftable, it is always interpreted relative to the evaluation situation provided by the global context of utterance. The problem with this approach is that it has to assign a denotation to English present tense in the antecedent of conditionals, which is different from its normal denotation outside of antecedent conditionals. As we have seen in Chapter Two, Klein (1992); Giorgi et al. (1997); Pancheva & Von Stechow (2004) argue that there is cross-linguistic variation in the semantics of the present tense. While present tense in Farsi can freely refer to future events, the ungrammaticality of the sentences in (59) shows that English present cannot.

(358)   a. # Fred is sick in 10 days.

        b. # It {rains/is raining} next week.   (Pancheva & Von Stechow 2004)

The antecedent of an X-marked conditional that contains an eventive predicate, however, necessarily gets a future interpretation (See Kaufmann (2005) for a relevant discussion about future interpretation of present tense in conditionals).

(359)   a. If it rains next week, we will cancel our trip.

        b. If it rained next week, we would cancel our trip.

Note that adding the assumption that modals shift the temporal location of clauses in their scope, as proposed by Enç (1996), would not help either. Given that the antecedent clause is assumed to carry present tense, for such an analysis to work we would need to further assume that English present tense is shiftable in the antecedent of conditionals.

Arregui (2005, 2007) proposes a different approach according to which the antecedent of an X-marked conditional in English contains a zero tense. It is the interaction of aspect and the future orientation of the modal that accounts for the temporal orientations of antecedents. Under Arregui's approach, X-marked conditionals in Farsi and English differ in having a present tense or a zero tense antecedents. In what comes next, I want to show that the typology of X-marking is better explained under this second approach.

4.3   SoT property and the typology of X-marking

Given that the occurrence of the past tense on the antecedent predicate of X-marked conditionals is not interpreted as a temporal constraint on the situation denoted by the antecedent, past tense morphology in X-marked conditionals has been thought to be *fake* (Iatridou 2000; Arregui 2009). There are other structures where past tenses do not contribute their deictic meaning. The sequence of tense (SoT) phenomenon is a well known example of this. The connection between X-marked conditionals and sequence of tense has been alluded to 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 SoT property is taken to be an argument against the view that takes the two phenomena to be related (Crowley 2022). However, the typological picture arising with the addition of Farsi data points to a deep connection between morphological realizations and interpretations of embedded tenses and X-marking.

Building on cross-linguistic work on the behavior of embedded tenses, Ogihara & Sharvit (2012) describe the typology as consisting of two types of languages: (i) SoT languages where a past under past can receive a simultaneous reading. (ii) Shiftable Present (non-SoT) languages where a present under past can receive a past interpretation. There is a huge body of the literature on the complex cross-linguistic pattern of the distribution and interpretation of embedded tense (Abusch 1997; Sharvit 2003; Ogihara 1994; Grønn & Von Stechow 2010, and Kauf & Zeijlstra (2018), to name a few). Here, I just want to draw attention to relations between the typology of embedded tenses to that of X-marking.

In a referential theory of tense, SoT phenomenon can be explained with the notion of zero pronouns Kratzer (1998a) which lack any deictic features, and whose morphology and interpretation depends on a real deictic pronoun in the structure. Under this view, in SoT languages an embedded past tense can be the morphological realization of a zero tense pronoun that has taken its morphological features via agreement with a higher real past tense (Demirdache & Lungu 2008, 2011; Arregui 2009).

As mentioned earlier, (Arregui 2005, 2007, 2009) makes a direct connection between SoT and X-marking, by proposing that the antecedent of X-marked conditionals in English contains a zero tense pronoun, as shown in (360).

(360) **English X-marked conditionals: PAST [if p-$\emptyset_i$, q]**

I have proposed that the antecedent of X-marked conditionals in Farsi contains a present tense (I have shown that past tense cannot appear in the antecedent of Farsi conditionals). In Chapter Two, I provided data showing that Farsi is a non-SoT shiftable present language.

(361) **Farsi X-marked conditionals: PAST [if p-pres, q]**

This seems to suggest that SoT and non-SoT languages differ in properties of

tense in the antecedent of X-marked conditionals. While SoT languages have a zero tense in the antecedent of X-marked conditionals, in non-SoT languages antecedents of X-marked conditionals carry a present tense.

(362) a. **PAST** [if p-$\varnothing_i$, q]   b. **PAST** [if p-**PRES**, q]

  SoT   Shiftable present (non-SoT)

This cannot be quite right though. Many languages, SoT (Italian) and non-SoT (Russian), use a past subjunctive in X-marked conditionals.

(363) **Russian**

  Esli by Džon umira-l,   s   nim   by-l by doktor
  if   **subj** John die.ımpf-**pst** with he.ınstr be-pst subj doctor
  'If John were dying, the doctor would be with him.' Bjorkman & Halpert (2017)

In fact, Iatridou (2000) make the following cross-linguistically robust generalization.

(364) **Past Subjunctive Generalization:**

  In languages that have a paradigm for past subjunctive such as German, the antecedent of X-marked conditionals appears in past subjunctive.

It should, however, be noted that the subjunctive has been often analyzed as the morphological realization of zero (or anaphoric) tenses (Ferreira 2017; Pica 1984; Picallo 1984; Johnson 1985; Landau 2004). As Iatridou (2000) notes, not all languages with a subjunctive have a paradigm for a past subjunctive. Farsi subjunctive forms, for instance, only show aspectual distinctions, and are unspecified for tense. This is important because only in languages with a paradigm for past subjunctive can the morphology in the antecedent of (362a) represent both the past associated with X-marking (**PAST**) and zero tense in the antecedent clause. Thus we can revise (362) as the following:

(365) a. **PAST** [if p-$\emptyset_i$, q]

SoT

past subjunctive morphol-

ogy in the antecedent

b. **PAST** [if p-**PRES**, q]

Shiftable present (non-SoT)

present tense morphology in

the antecedent

Obviously more cross-linguistic research is needed before making any defini-tive statement about the typology. However, data from languages whose patterns of embedded tenses and X-marking have been studied seems to confirm our de-scriptive generalization in (365). To show this, let me briefly discuss X-marked conditionals of three non-SoT languages that lack a paradigm for past subjunctive: Hungarian, Hebrew, and Japanese.

Bringing the data in (366), Bartos (2006) notes that Hungarian is a non-SoT language whose present tense is shiftable. The present tense on the embedded verb *alszik* in (366) indicates that the time of Marie's sleeping overlaps with the past event of Peter's saying (Cowper & Hall 2008).

(366) Péter azt   mondta, hogy Mari alszik.
       Peter it.ACC say.PST.3SG that   Marie sleep.PRES.3SG
       'Peter said that Marie was asleep.'

Lacking a paradigm for a past subjunctive, Hungarian doesn't seem to have a morphological way of realizing the structure in (365a). Instead, Hungarian has a dedicated X-marker *-nA* (von Fintel & Iatridou 2020).

(367) 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 2020)

Why doesn't Hungarian use the same strategy as Farsi for X-marking? Although I am not claiming that I have a good answer to this question, past oriented X-marked conditionals in Hungarian seem illuminating.

(368) Ha János tud-ta   **vol-na** a   választ,   Mari is   tudta
       if   János know.PST.3SG be–NA   the answer-ACC Mari too know.PST.3SG
       volna a   választ.
       be–NA the answer-ACC
       'If János had known the answer, Mari would have known the answer too.'

<div align="right">(von Fintel & Iatridou 2020)</div>

As (368) shows, when past tense morphology is added to the antecedent verb, the X-marker *-nA* can no longer attaches to the main predicate. This seems to suggests that there is a ban against co-occurrence of tense and mood morphology in Hungarian. What makes Farsi different is that the present tense morpheme in Farsi is null, and thus there's a slot for the X-marker past morpheme to be morphologically realized on the verb.

Hebrew represents a non-SoT language that uses two strategies to express X-marking in conditionals. Like Hungarian, it has a dedicated X-marker *if* (Nevins 2002; Karawani 2014), as the example (369) from Karawani (2014) shows.

(369) 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)

In addition to this strategy, Hebrew also uses its past morphology in X-marked conditionals. If our typological realization is on the right track, we expect to find the trace of a shiftable present tense in the antecedent of these conditionals in Hebrew. The example (370) shows this prediction is borne out.

(370) ʔim hayiti   yodaʔ-at   et ha-mespa   ɾim ha-zoχim,   hayiti
       if   be.**PST**.1SG know.**PTC**-SF ACC the-numbers   the-winning be.PST.1SG
       zoχa   b-a-loto.
       win.PTC-SF in-the-lottery
       If I knew the winning numbers, I would win the lottery.

       If I had known the winning numbers, I would have won the lottery.

<div align="right">(Karawani 2014)</div>

As the English translations show, the conditional statement can be a counter-factual claim about the present or the past, just like Farsi. Karawani (2014) discusses the past orientation of (370) in details, and I will not be able to do justice to her account here. Given her ambiguous past approach, she cannot attribute the past-orientation of (370) to the X-marker past which functions as a modal in her approach. Therefore, she takes *hayiti yoda?at* to be ambiguous between a past participle and a present participle. In its past orientation, it is a past participle embedded under the past X-marker, where one layer of past is morphologically deleted. Note, however, that Hebrew is not a SoT language, and thus lacks a tense deletion rule. Karawani (2014) herself mentions that the form *yoda?at*, which she calls the participle form, receives a present tense interpretation in the matrix clause (Doron 2010). It is interpreted according to the rules of sequence of tense in embedded clauses . That is, it is interpreted either as simultaneous with the matrix predicate, or with the speech time (Sharvit 2003). Therefore, I take the past orientation of (370), as further evidence that non-SoT languages can have a shiftable present in the antecedent of their X-marked conditionals.

Lastly, let us now look at Japanese, another non-SoT language. X-marked conditionals that strongly imply the falsity of their antecedent have a past marker *-ta* in the consequent(Ogihara 2008). The antecedent of these conditionals can combine with one of the fossilized conditional forms *-reba* and *-tara*.

(371) Mary-ga   asita/kinoo
       Mary-NOM tomorrow/yesterday
       {ku-**reba**/ki-**ta-ra**/#ku-**ru-to**},   kaigi-ni   de-**ta**   daroo.
       {come-**COND**/come-**PST-RA**/come-**PRES-TO**} meeting-LOC join-**PST** MODAL
       'If Mary had come tomorrow/yesterday, she would have joined.'

                                                        (Mizuno & Kaufmann 2018)[12]

Here, I want to draw attentions to the morphological appearance of *-tara* which

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[12]This is Ogihara's gloss for *ta-ra*. Mizuno & Kaufmann (2018) glossed it as COND.

as Ogihara (2008) glosses, contains the past marker *ta*. Neither Mizuno & Kaufmann (2018) nor Mizuno & Kaufmann (2018) provide a gloss for *ra*. However, this morpheme suspiciously looks like the present morpheme *ru*. Interestingly, like what we see in Farsi and Hebrew, the antecedent can have a past or future orientation (Ogihara 2008). Moreover, Japanese has another fossilized from *-ruto* which Ogihara (2008) glosses as a combination of the present tense and an unanalyzed morpheme *to*. As the example in (371) shows, *-ruto* is not possible when a counterfactual reading is intended. Ogihara (2008) gives (372) as a felicitous example with *-ruto* (a past oriented O-marked reading). He notes that the use of *-ruto* strongly suggests that there were multiple occurrences of Saburo's coming here.

(372) (Mosi) Saburo-ga   koko-ni ku-**ru-to**,   Hanako-ga
       (if)   Saburo-NOM here-to come-**PRES-TO**, Hanako-NOM
       yorokon-da(-daroo)-ne.
       be-pleased-perhaps-ENDING
       'when Saburo came here, Hanako would have been pleased.'   (Ogihara 2008)

It seems plausible to me that **ta-ra** and **ru-to** are sequences of the present and past morphemes whose semantic contribution in conditionals is hard to pin down, as is the case with the X-marker past. I leave this as a topic of future study.

To sum up, we have seen that non-SoT languages that lack a paradigm for past subjunctive develop an alternative way for X-marking. Some develop a dedicated X-marker (Hungarian, Hebrew). Those which use their past morphology for X-marking either use their shiftable present in the antecedent (Farsi, Hebrew, Japanese?), or a dedicated marker for the antecedent of conditionals (Japanese). The table below provides the typological picture emerging out of the analysis.

Cross-linguistic data suggests that the morphological option languages have at their disposal to represent past tense and zero tense morphology simultaneously (SoT, past subjunctive morphology) is directly related to the morphology appear-

past subjunctive	SoT	dedicated X-marker	shiftable present	Language
✓	✓	✗	✗	Italian
✓	✗	✗	✓	**Russian**
✗	✓	✗	✗	English, French
✗	✓	✗	✓	Modern Greek
✗	✗	✓	✓	**Hungarian**
✗	✗	✓	✓	**Hebrew**
✗	✗	✗	✓	**Japanese**
✗	✗	✗	✓	**Farsi**

Table 4.1: Typological picture for morphology of X-marking

ing in the antecedent of X-marked conditionals. Languages that do not have such an option (a subset of non-SoT languages) develop other morphological means in the antecedent of X-marked conditionals. A typological prediction we make is that languages that use deictic tenses in the antecedent of X-marked conditionals, and whose deictic tenses come with settledness presuppositions exhibit a strong antecedent falsity inference associated with X-marked conditionals. I leave this as a topic for future study.

Before ending this section, I also want to highlight that the uniform past approach has a clear advantage over the ambiguous past approach in explaining the past orientation of antecedents with one layer of past in shiftable present languages. It is not clear to me how the ambiguous past approach could maintain a temporal meaning for an X-marker past whose function is supposed to be modal.

4.4 Wishes and Weak necessity

So far, we have only talked about X-marking in conditionals. However, Iatridou (2000) makes the important cross-linguistic observation that many languages use the same morphology that appear in X-marked conditionals to talk about unattainable desires. As (373) shows, antecedent X-marking morphology appears on the complement of *wish*, and it conveys that the complement is contrary-to-fact.

(373)   I wish that I **had** a car now.

⤳ I do not have a car.

There are languages that also use consequent X-marking morphology on a desire predicate like *want* to express the meaning of *wish*, referred to as '*transparent wish*' by von Fintel & Iatridou (2020). Spanish is one such language.

(374)   a. Si fuera   más alto sería   un jugador de baloncesto.
            If be.3SG.PST.SUBJ more tall be.3SG.COND a   player   of basketball
            If s/he was taller, s/he would be a basketball player.

                                        (*X-marked conditionals in Spanish*)

b. Querría   que fuera   más alto de   lo que es.
    Want.3SG.COND that be.3SG.PST.SUBJ more tall than it that be.3SG
    I wish s/he was taller than s/he is.

                                        (*Transparent wish in Spanish*)

Providing data from a wide variety of languages, von Fintel & Iatridou (2020) conclude that the generalization (375) about the morphological commonality between X-marked conditionals and unattainable desires holds cross-linguistically. According to this generalization, consequent X-marking morphology appears on the embedding verb *want*, and antecedent X-marking morphology appears on the complement of *want*.

(375)   **The Conditional/Desire generalization**

a. X-marked conditional: if p_{ant}, q_{cons}

b. unattainable desires: I want$_{cons}$ that p_{ant}

Fintel & Iatridou (2008) and von Fintel & Iatridou (2020) show that in addition to X-marked conditionals and unattainable desires, X-marking also appears with weak necessity modals in many languages. For instance, the strong necessity modal *must* in Hungarian can take the X-marker *-nA*, and express the meaning of weak necessity. Weak necessity modals like *ought to* are distinguished from strong

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necessity modals like *must* and *obliged to*, by the fact that they are entailed by the strong necessity claim.

(376) Péter-nek el   kell-**ene** mosogat-ni-a az edény-ek-et, de senki nem
       Peter-DAT PRT must-**nA** was-INF-3SG   the dish-PL-ACC but noone not
       követeli   meg tőlle
       require-3SG.SUBJ-3.OBJ part 3.SG.ABL
       Peter ought to do the dishes, he is not obliged to.

Without *-nA* on the strong necessity modal, the sentence will be a contradiction.

(377) #Péter-nek el   kell   mosogat-ni-a az edény-ek-et, de senki nem
       Peter-DAT   PRT must was-INF-3SG   the dish-PL-ACC but noone not
       követeli   meg tőlle
       require-3SG.SUBJ-3.OBJ part 3.SG.ABL
       Peter has to do the dishes, he is not obliged to.

As von Fintel & Iatridou (2020) discuss, the generalization is too robust to be accidental. Therefore, any theory about the semantic contribution of X-marking should cover its uses in all cases where it appears: X-marked conditionals, X-marked desires, and X-marked necessity modals. They argue that the domain widening approach (Stalnaker 1968; von Fintel & Iatridou 2020) which takes X-marking to signal that the domain of quantification goes beyond the default, comes very close to the meaning contribution of X-marking. The problem, they argue, is how to derive the domain widening effect from the past tense morphology, a task that current theories cannot successfully tackle.

Given that X-marking morphology can appear on the complement of desire predicates like *wish*, where there is clearly no higher past tense in the structure, von Fintel & Iatridou (2020) argue that a theory about the role of the past morphology in X-marking should allow it to be interpreted in an embedded position relative to the modal that X-marking is associated with.

4.4.1 Farsi

X-marking does not appear with weak necessity modals in Farsi, but the expression of unattainable desires is specified by X-marking morphology on the complement of desire predicates, or on both desire predicates and its complement. There is no lexical item specific to the expression of unattainable desires in Farsi.

In what follows, I present a brief overview of the expression of unattainable desires in Farsi. Focusing on the morphology of desire expressions and their complements, I will show that Farsi provides further empirical support for the Conditional/Desire generalization (von Fintel & Iatridou 2020).

Some desire predicates in Farsi can bear X-marking morphology to convey that the content of the desire is not attainable. Firstly, there is a desire particle *kaaš* which can take either zero tense O-marked complements or X-marked ones[13]. When the complement is O-marked as in (378) and (379), the sentence conveys attainable desires of the speaker. Aspect in the complement clause restricts the temporal orientation of the content of the desire. O-marked complements with imperfective aspect describe present and future situations, as shown in (378).

(378)   *Imperfective zero tense O-marked complements*

      a.   *Context: You're hosting a party tomorrow. You hope Rodica will come.*

          kaaš be-ay-ad
          kaaš IMPF-come-∅-3SG
          I hope she comes.

                    (*attainable desire* **in the present about a** *future* **situation**)

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[13]Expressions of attainable desires are not compatible with present tense O-marked complements.

(i)   *Context: You're hosting a party tomorrow. You hope Rodica will come.*

    # kaaš mi-ay-ad
     kaaš IMPF-come-PRES-3SG

    I hope she comes.

b. *Context: Ava need to answer one more question to win the competition. You hope Ava knows the answer.*

kaaš javab   ra be-dan-ad
kaaš answer **RA IMPF**-know-∅-3sG
I hope she knows the answer.

(***attainable desire** in the present about a present **situation***)

O-marked complements with perfect aspect describe past and future situations, as shown in (379).

(379)   *Perfect zero tense O-marked complements*

a. *Context: You're entering a party. You hope Rodica is already there.*

kaaš umade   baš-ad.
kaaš come-**PP AUX.**∅-3sG
I hope she came.

(***attainable desire** in the present about a past **situation***)

b. *Context: You're hosting a party tomorrow. Rodica is out of town. You hope Rodica will come back by then to be able to attend the party.*

kaaš ta farda   umade baš-ad.
kaaš by tomorrow come-**PP AUX.**∅-3sG
I hope she comes by tomorrow.

(***attainable desire** in the present about a future **situation***)

When the complement of *kaaš* is X-marked, as in (380) and (381a), the sentence conveys that the speaker believes that their wish did not or will not come true. X-marked complements of desire predicates show the same temporal orientation as X-marked conditionals, of particular interest are the past orientation of past imperfective complements and future orientation of pluperfect complements. As the felicity of (380) in both contexts confirms, an imperfective X-marked complement can describe past, present and future situations that the speaker wishes for.

(380)   *Imperfective X-marked complements*

a. *Context: You're hosting a party tomorrow. Rodica told you she cannot come.You're now sad about this.*

kaaš mi-am-ad
kaaš **IMPF**-come-**PST**-3sG
I wish she would come.

(*unattainable desire in the present about a future situation*)

b. *Context: Ava need to answer one more question to win the competition. A new question is asked but it's about geography which Ava is not good at.*

kaaš javab   ra mi-dan-est
kaaš answer **RA** **IMPF**-know-**pst**.3sG
I wish she knew the answer.

(*unattainable desire in the present about a present situation*)

c. *Context: You hosted a party yesterday. Rodica didn't come.You're now sad about this.*

kaaš mi-am-ad
kaaš **IMPF**-come-**PST**-3sG
I wish she had come.

(*unattainable desire in the present about a past situation*)

Pluperfect X-marked complements can describe both past and future situations. As we saw with future oriented pluperfect X-marked conditional, pluperfect X-marked complements of desire expressions can only get a future oriented interpretation when the situation described by the complement has already been realized, as in (381b). In a context like (381c) where the situation described by the complement has not already been realized, the pluperfect X-marked complement is infelicitous.

(381)   *Pluperfect X-marked complements*

a. *Context: You hosted a party yesterday. Rodica didn't come. You're now sad about this.*

kaaš umade   bud.
kaaš come-**PP AUX.PST**-3SG
I wish she had come.

(*unattainable desire* **in the present about a** *past* **situation**)

b. *Context: Sam called Sara yesterday. Tomorrow is Sara's birthday. If Sam had*

called Sara tomorrow, it would have been better.

kaaš Sam farda   zang zade bud.
kaaš Sam tomorrow call   hit-**PP AUX.PST**-3SG
I wish Sam would have called tomorrow.

(*unattainable desire* **in the present about a** *future* **situation**)

c. *Context: You're hosting a party tomorrow. Rodica told you she cannot come.You're*

now sad about this.

kaaš umade   bud.
  kaaš come-**PP AUX.PST**-3SG
I wish she had come.

(*unattainable desire* **in the present about a** *future* **situation**)

In addition to desire particle *kaaš*, Farsi also has a complex predicate (which
roughly means *want*) for talking about desires. This predicate replicates the same
pattern as *kaaš*. It can take either (zero tense) O-marked or X-marked complements.
When this predicate takes an O-marked complement, as in (382), it expresses de-
sires of the speaker that are still attainable. As I mentioned earlier, aspect in the
complement clause restricts the temporal orientation of the content of the desire.
Imperfective O-marked complements can describe present and future situations

(382)   *Imperfective* *zero tense O-marked* *complement*

a. *Context: You're hosting a party tomorrow. You hope Rodica will come.*

del-am   mi-xah-∅-ad   be-ay-ad
heart-my **IMPF**-want-**PRES**-3SG **IMPF**-come.∅-3SG
I'd like her to come.

(*attainable desire* **in the present about a** *future* **situation**)

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b. *Context: Ava need to answer one more question to win the competition. You hope Ava knows the answer.*

del-am   mi-xah-∅-ad   Ava javab   ra be-dan-ad
heart-my IMPF-want-**PRES**-3SG Ava answer RA **IMPF**-know-∅-3SG
I'd like Ava to know the answer.

<div align="right">

(*attainable desire* **in the present about a** *present* **situation**)

</div>

Perfect O-marked complements expresses desires of the speaker about a past or a future situation.

(383)   *Perfect zero tense O-marked complement*

a. *Context: You're entering a party. You hope Rodica is already there.*

del-am   mi-xah-∅-ad   umade baš-ad.
heart-my IMPF-want-**PRES**-3SG come-PP AUX.∅-3SG
I'd like her to have come.

<div align="right">

(*attainable desire* **in the present about a** *past* **situation**)

</div>

b. *Context: You're hosting a party tomorrow. Rodica is out of town. You hope Rodica will come back by then to be able to attend the party.*

del-am   mi-xah-∅-ad   ta farda   umade baš-ad.
heart-my IMPF-want-**PRES**-3SG by tomorrow come-PP **AUX.**∅-3SG
I'd like to have come by tomorrow.

<div align="right">

(*attainable desire* **in the present about a** *future* **situation**)

</div>

With X-marked complements, the desire predicate *want* expresses unattainable desires. Imperfective X-marked complements can describe unattainable desires of the speaker about past, present and future situations, as shown in (384).

(384)   *Imperfective X-marked complement*

a. *Context: You're hosting a party tomorrow. Rodica told you she cannot come.*

del-am   mi-xah-∅-ad   mi-am-ad
heart-my IMPF-want-**PRES**-3SG **IMPF**-come-**PST**-3SG

<div align="center">

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</div>

I wish she would come.

(*unattainable desire* **in the present about a *future* situation**)

b. *Context: Ava needs to answer one more question to win the competition. A new question is asked but it's about geography which Ava is not good at.*

del-am mi-xah-∅-ad javab ra mi-dan-est
heart-my IMPF-want-PRES-3SG answer RA **IMPF**-know-**pst**.3SG
I wish she knew the answer.

(*unattainable desire* **in the present about a *present* situation**)

c. *Context: You hosted a party yesterday. Rodica didn't come.*

del-am mi-xah-∅-ad mi-am-ad
heart-my IMPF-want-PRES-3SG **IMPF**-come-**PST**-3SG
I wish she had come.

(*unattainable desire* **in the present about a *past* situation**)

Pluperfect X-marked complements can describe unattainable desires of the speaker about past and future situations, as shown in (385a). As noted earlier, the pluperfect X-marked complement can only get a future oriented interpretation when the situation described by the complement has already been realized, as in (385b), and it is infelicitous in contexts where the situation described by the complement has not already been realized, as in (385c).

(385) a. *Pluperfect X-marked complement*

Context: You hosted a party yesterday. Rodica didn't come.

del-am mi-xah-∅-ad umade bud.
heart-my IMPF-want-PRES-3SG come-**PP AUX.PST**-3SG
I wish she had come.

(*unattainable desire* **in the present about a *past* situation**)

b. *Context: Sam called Sara yesterday. Tomorrow is Sara's birthday. If Sam had called Sara tomorrow, it would have been better.*

del-am mi-xah-∅-ad Sam farda zang zade bud.
heart-my IMPF-want-PRES-3SG Sam tomorrow call hit-**PP AUX.PST**-3SG

I wish Sam would have called tomorrow.

(***unattainable desire** in the present about a **future** situation*)

c. *Context: You're hosting a party tomorrow. Rodica told you she cannot come. You're now sad about this.*

\# del-am   mi-xah-∅-ad   umade bud.
heart-my IMPF-want-PRES-3SG come-PP AUX.PST-3SG
I wish she had come.

(***unattainable desire** in the present about a **future** situation*)

The same predicate can also carry X-marking morphology, I will refer to this form as 'X-marked *want*'. As the generalization by von Fintel & Iatridou (2020) predicts, the X-marking morphology is the same morphology appearing in the consequent of X-marked conditionals (i.e. past imperfective).

The Conditional/Desire generalization in Farsi

(386) **Morphology in X-marked Conditional**

    a. if IMPF-p-PST, IMPF-q-PST

    b. if p-PP AUX-PST, IMPF-q-PST

(387) **Morphology in X-marked desires**

    a. I IMPF-*want*-PST that IMPF-p-PST

    b. I IMPF-*want*-PST that p-PP AUX-PST

X-marked *want* in Farsi is ambiguous between a *transparent wish* expression and a past imperfective form of this verb, and it can take either zero tense O-marked complements or X-marked ones. The combinations of this predicate and different complements give rise to a wide range of interpretations. Let us first look at cases where this predicate takes a zero tense O-marked complement. Although

judgments about these sentences vary, for most speakers (including myself) the only reading available is the expression of an attainable desire in the past. That is, X-marked *want* with an O-marked complement is interpreted as the past form of the desire predicate. The infelicity of (388b) and (389b) in the provided contexts illustrates this point.

(388)   ***past form of want*/*imperfective* *zero tense O-marked* *complement***

    a.   *Context: You're hosting a party tomorrow. You first wanted Rodica to come, but you later had a fight.*

      del-am   mi-xast   be-ay-ad
      heart-my **IMPF**-want.**PST**.3SG **IMPF**-come.∅-3SG
      I was hoping she would come.

                          (***attainable desire* in the past about a *future* situation**)

    b.   *Context: You're hosting a party tomorrow. Rodica told you she could not come. You're now sad about this.*

      #del-am   mi-xast   be-ay-ad
        heart-my **IMPF**-want.**PST.3SG** **IMPF**-come.∅-3SG
      intended: I wish she came.

                  (***unattainable desire* in the present about a *future* situation**)

(389)   ***past form of want*/ *perfect* *zero tense O-marked* *complement***

    a.   *Context: While you were entering a party yesterday, you were hoping Rodica was already there.*

      del-am   mi-xast   umade   baš-ad.
      heart-my **IMPF**-want.**PST**.3SG come-**PP** **AUX**.∅-3SG
      I was hoping she had come.

                     (***attainable desire* in the past about a *past* situation**)

    b.   *Context: You are in a party. Rodica hasn't arrived yet. You wish Rodica was already there.*

      #del-am mi-xast   umade   baš-ad.
      heart-my **IMPF**-want.**PST**.3SG come-**PP** **AUX**.∅-3SG

intended I wish she had come.

<p style="text-align:center;">(*unattainable desire* **in the past about a** *past* **situation**)</p>

Based on the data presented so far, I make the following generalization about complements of desire expressions in Farsi:

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(390)   **Generalization: Complement of Desire expressions**

X-marking (past imperfective or pluperfect morphology) on the complements of desire predicates is necessary for expressing unattainable desires.

Finally, let us look at cases where the X-marked desire *want* takes an X-marked complement. As the data presented so far show, X-marked complements always convey that the content of desire is not attainable. However, the X-marked predicate itself is ambiguous. It can either be interpreted as an expression of unattainable desires in the present '*transparent wish*', as in (391), or as the past form of the desire predicate, as in (393). Different readings can arise from the temporal relations between the desire predicate and its complement. When the complement carries imperfective aspect, the content of the desire can be in the past, present or future of the time of desire. When the X-marked predicate is interpreted as a transparent wish, the time of desire is present. Imperfective complements describe past, present, or future situations (391).

(391)   *transparent wish/ imperfective X-marked complement*

  a. *Context: You're hosting a party tomorrow. Rodica told you she could not come. You're now sad about this.*

   del-am   mi-xast   mi-am-ad
   heart-my IMPF-want.PST.3SG IMPF-come-PST-3SG

I wish she would come.

<p style="text-align:center">(*unattainable desire* **in the present about a future situation**)</p>

b. *Context: Ava needs to answer one more question to win the competition. A new question is asked but it's about geography which Ava is not good at.*

del-am   mi-xast   javab   ra mi-dan-est
heart-my IMPF-want.PST.3SG answer RA **IMPF**-know-**pst**.3SG
I wish she knew the answer.

<p style="text-align:center">(*unattainable desire* **in the present about a present situation**)</p>

c. *Context: You hosted a party yesterday. Rodica didn't come. You had fun yesterday. But now you're sad that she didn't come.*

del-am   mi-xast   mi-am-ad
heart-my IMPF-want.PST.3SG IMPF-come-PST-3SG
I wish she had come.

<p style="text-align:center">(*unattainable desire* **in the present about a past situation**)</p>

When X-marked *want* is interpreted as a transparent wish and takes a perfect complement, the content of the unattainable desire can be a situation in the past of the time of the desire, as in (392) and (392b). It can also have a future orientation when the situation described has been already realized, as in (392c). Again, the pluperfect X-marked complement is infelicitous when the situation described has not been already realized, as in (392d).

(392) ***transparent wish* / perfect X-marked *complement***

a. *Context: You hosted a party yesterday. Rodica didn't come. You're now sad about this.*

del-am   mi-xast   umade bud.
heart-my IMPF-want.PST.3SG come-PP AUX.PST-3SG
I wish she had come.

<p style="text-align:center">(*unattainable desire* **in the present about a past situation**)</p>

b. *Context: You hosted a party yesterday. Rodica didn't come. You were sad about this yesterday. You just had a fight with her, and now you're happy that she didn't come.*

del-am   mi-xast   umade bud.
heart-my IMPF-want.PST.3SG come-PP AUX.PST-3SG
I wished she had come.

*(**unattainable desire** in the past about a past situation)*

c. *Context: Sam called Sara yesterday. Tomorrow is Sara's birthday. If Sam had called Sara tomorrow, it would have been better. Sara to her friend (yesterday or today):*

del-am   mi-xast   Sam farda   zang zade bud.
heart-my IMPF-want.PST.3SG Sam tomorrow call   hit-**PP AUX.PST**-3SG
I wish(ed) Sam would have called tomorrow.

*(**unattainable desire** in the present/past about a future situation)*

d. *Context: You're hosting a party tomorrow. Rodica told you she could not come. You're now sad about this.*

del-am   mi-xast   umade bud.
   heart-my IMPF-want.PST.3SG come-PP AUX.PST-3SG
I wished she had come.

*(**unattainable desire** in the present/past about a future situation)*

When the X-marked predicate is interpreted as the past form of *want*, and it takes an X-marked complement, the sentence describes unattainable desires of the speaker in the past, as in (391). Aspect in the complement restricts the temporal relation the content of desire can have with respect to the time of desire.

(393)   ***past form of desire want/ imperfective X-marked complement***

a. *Context: You hosted a party yesterday. Rodica told you she couldn't come. You were sad about this before the party, but when the party turned out to be a disaster, and you thought that it was actually good that she didn't come.*

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del-am   mi-xast   mi-am-ad
heart-my IMPF-want.PST.3SG IMPF-come-PST-3SG
I wished she would come.

(***unattainable desire** in the past about a future **situation***)

b. *Context: You were watching Ava competing in a trivia game yesterday. Ava
needed to answer one more question to win, the last question was about geography which Ava is not good at.*

del-am   mi-xast   javab   ra mi-dan-est
heart-my IMPF-want.PST.3SG answer RA **IMPF**-know-**pst**.3SG
I wished she knew the answer.

(***unattainable desire** in the past about a then present **situation***)

c. *Context: You hosted a party yesterday. Rodica didn't come. You were sad about
this yesterday. You just had a fight with her, and now you're happy that she
didn't come.*

del-am   mi-xast   mi-am-ad
heart-my IMPF-want.PST.3SG IMPF-come-PST-3SG
I wished she had come.

(***unattainable desire** in the past about a past **situation***)

In sum, the same morphology that appears in X-marked conditionals is necessary in the complement of desire expressions to talk about unattainable desires. The data from X-marking with desire expression are important to understand the role of the past in X-marking. The past oriented interpretation of imperfective X-marked complements provides further evidence that the X-marker past can at the same contribute a temporal and counterfactual interpretation.

With von Fintel & Iatridou (2020), I conclude that a successful theory about the semantic contribution of X-marking should provide a unified analysis for its role in X-marked conditionals, unattainable desire expressions, and weak necessity modals.

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4.4.2 Explaining wishes and Weak Necessity

In the last part of this chapter, I sketch how the account we have developed so far could be extended to X-marking in weak necessity modals and wishes. I do not have a fully articulated theory of weak necessity modals and wishes within the Anchor Semantics framework that can capture all of their complexities, so my remarks remain speculative.

Under the proposal in this dissertation, the difference between X-marked and O-marked comes down to the strength of their truth-conditions. As a past anchor situation does not invoke the condition that the context set has to include the world of the anchor situation (which together with the Prospective Contextual Modal Restrictions results in the condition that the antecedent has to be compatible with the factive context set), the resulting truth conditions of X-marked conditionals are weaker than those of O-marked conditionals. Remember the denotation of strong necessity modals in the Anchor Semantics (Kratzer 2020), which requires the context set to include the world of the anchor situation (actual world).

(394)　$[\![\Box_{strong}]\!] = \lambda s.\ \lambda p\ :\ \underline{p \cap C \neq \emptyset}.\ \lambda q.\ (\underline{w_s \in C}\ \&\ \forall w(w\ \in\ f_{act}(s) \cap p\ \rightarrow$
　　　　$\exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s''))))$

Given that modal restrictions for strong modals are delivered by the prospective common ground, the requirement on the context set to include the world of anchor amounts to saying that both the prejacent and the modal restrictions of strong necessity modals should be compatible with the factive common ground.

We can assume that weak necessity modals, like X-marked conditionals, specify that their anchor situation has to be a past situation, as a result of which the restriction that the world of anchor has to be included in the context set is not invoked. Thus, the prejacent and the modal restrictions of weak necessity modals do not have to be compatible with the factive common ground.

(395) $[\![\Box_{weak}]\!] = \lambda s.\ \lambda p.\ \lambda q.\ \forall w(w \in f_{act}(s) \cap p \rightarrow \exists s' \exists s''(s' \leq w\ \&\ s'' \leq w\ \&\ Match(s',s)\ \&\ R(s'',s')\ \&\ q(s'')))$

$\underline{\text{where s is a past situation}}$

To see how our analysis can capture the occurrence of X-marking in unattainable desires, we need to develop a denotation for desire predicates in the Anchor Semantics. A proper semantics for desire predicates that takes into account all of its complexity is beyond the scope of this dissertation. Here, I just want to sketch a solution that is focused on the difference between O-marked and X-marked desires.

Following von Fintel & Iatridou (2020), I take the meaning of a desire predicate to roughly convey the following:

(396)   An agent x desires q in world w iff all of the worlds in the relevant domain D that are "best" as far as x in w is concerned are q-worlds,

where the domain of desire ascriptions D is taken to be the set of epistemically accessible worlds for the agent of the desire (Heim 1992; Von Fintel 1999).

The task is to translate this meaning in the Anchor Semantics. To encode the dependence of the modal on the agent's epistemic set, I will use Kratzer's account of perspectival nature of epistemic modality. *'Factual Domain Projection creates domains where each world has an exact match of the modal anchor. Thus, Factual Domain Projection determines for each world in the modal domain a distinguished part. We can take that part to be the center of its world. An Anchor Semantics account of epistemic modality delivers modal domains with centered worlds'* (Kratzer 2020:22). Modals can have a wide range of anchors, among which are 'epistemicky situations'- *'individuals having perceptual experiences, retrieving memories, using whatever equipment to represent the facts they come across and store the information they have gained'* (Kratzer 2020:21).

Inspired by the formalization of epistemicky anchor situations by Kratzer (2020),

I will take the anchor for desire predicates to be a temporal slice of the agent of the desire s to which the agent bears the self-identity relation R. The domain projected will be all worlds with the exact match of the anchor situation, and in which the counterpart of the agent x bears the same identity relation to matches of the anchor situation s in their respective world.

(397) $[\![want_O]\!](s)(p)(q)(x) = R_{identity}(x,s)$ & $\underline{w_s \in C_x}$ & $\forall w(w \in f_{act}(s) \cap p_{Best_x} \rightarrow$
       $\exists s' \exists s''(s' \leq w$ & $s'' \leq w$ & $Match(s',s)$ & $R(s'',s')$ & $q(s'')))$

The projected domain has to satisfy the Diversity Condition. That is, it has to include worlds where q is true and worlds where q is false. The modal restriction p allows for certain possibilities to be ignored, which in this case are worlds that are not "best" as far as x is concerned.[14] O-marked desires come with a constraint on the context set representing presuppositions held by x has to include the world of anchor s. This constraint together with our assumption that modal restrictions are delivered by the prospective common ground forces both the content of the desire and the modal restriction to be compatible with the presuppositions held by x in the common ground. That is, the best worlds cannot be picked from worlds outside the agent's epistemically possible worlds. This accounts for Heim's observation that (398) is intuitively true despite the fact that in worlds that are compatible with everything the speaker desires she actually doesn't teach at all.

(398)   I want to teach Tuesdays and Thursdays next semester.   (Heim 1992:195)

The only difference between O-marked and X-marked desires is that the domain of X-marked desires projects from a past anchor situation, and thus the world of anchor does not have to be included in the context set as projected from presuppositions held by x in the common ground.

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[14]Here, I have chosen to represent the modal restriction syntactically, just to keep the structure modals and conditionals unified. My analysis, however, does not depend on this choice.

(399) $[\![want_X]\!](\text{past}(s))(p)(q)(x) = R_{identity}(x,s) \ \& \ \forall w(w \in f_{act}(s) \cap p_{Best_x} \rightarrow$

$\exists s'\exists s''(s' \leq w \ \& \ s'' \leq w \ \& \ Match(s',s) \ \& \ R(s'',s') \ \& \ q(s'')))$

where s is a past situation

Let us see how this works with some examples.

(400) a. **Present oriented O-marked complement**

#Kaaš qad   boland baš-am
 Kaaš height tall   be.∅-1sG
I wish I am tall.   intended: **unattainable desire**

b. **Future oriented O-marked complement**

Kaaš qad   boland be-šav-am
Kaaš height tall   **IMPF**-become-∅-1sG
I hope I become tall.   **attainable desire**

c. **Present oriented X-marked complement**

Kaaš qad   boland bud-am
Kaaš height tall   be.**PST**-1sG
I wish I was tall.   **unattainable desire**

A plausible anchor for the desire particle with an O-marked complement can be a present temporal slice of the agent of the desire, i.e. the speaker to which the agent bears a self-identity relation. That is, the agent can point to a temporal slice of hers and say *"that's me"*. The projected domain from this anchor would be worlds with the exact matches of the present slice of the speaker. The counterpart of the speaker in each of these worlds bears the same self-identity relation to the match of the anchor situation (the present temporal slice of the speaker) in their respective world. The projected domain satisfies the Diversity Condition, as it includes worlds where the speaker is tall, and worlds where she is not. The domain restriction rules out worlds that are not best according to the agent of the desire. O-marked desires come with the constraint that the world of the anchor be in the context set representing the presuppositions held by the speaker in the common ground.

Thus, both the content of the desire and the modal restriction should be compatible with the agent's epistemic set. This cannot be true in the case of (400c). In the common ground, the speaker probably presupposes that she is not tall, and this is not something that can be changed. In a scenario where the speaker is still growing, an O-marked complement is felicitous, as in (400b).

With an X-marked desire, as in (400c), the anchor situation is a past temporal slice of the agent of the desire. Everything we have said about O-marked desires holds. The only difference is that the world of anchor doesn't have to be included in the context set representing the presuppositions held by the speaker in the common ground. Therefore, the modal claim can be true even the speaker presupposes that she is short, and can no longer grow taller.

4.5 Conclusion

In this chapter, I have presented the main proposal of this dissertation. Based on new observations from Farsi, I have argued that past tense in X-marking has a uniform temporal semantics. Following Arregui (2009), I have argued that the role of the past is to put a temporal constraint on the anchor situation of modals, and thus has a vital role in determining the quantification domain of X-marked conditionals. Therefore, the uniform temporal approach keeps the core of the past as modal approach alive as well. Developing a parallel semantics for O-marked conditionals, we have a system that formally derives the domain widening associated with X-marking (Stalnaker 1975; von Fintel 1998; von Fintel & Iatridou 2020).

I have accounted for differences between Farsi and English with respect to the strength of antecedent falsity inference associated with X-marked conditionals and the temporal orientation of their antecedent by demonstrating that properties of tense in the antecedent of X-marked conditionals in the two languages vary. Languages can be grouped into two main categories based on tense in the antecedent

of X-marked conditionals: zero tense languages and present tense languages. I have argued that the choice between these two options is linked to SoT properties of languages, putting aside languages that have a paradigm for past subjunctive.

(401)   a. **PAST** [if p-$\emptyset_i$, q]   b. **PAST** [if p-**PRES**, q]

          Past subjunctive, SoT   Shiftable present (non-SoT)

CHAPTER 5

Conclusion

5.1 Summary

Exploring the semantic and pragmatic contribution of tense, aspect and mood morphology occurring in the antecedent of Farsi conditionals, this dissertation has focused on two properties in which X-marked conditionals in Farsi and English (two languages with the same X-marking strategy) vary: (i) the temporal orientation of antecedents, and (ii) the strength of antecedent falsity. Such cross-linguistic variations raise new challenges for mapping the form of X-marked conditionals to their meaning.

I have argued that the past orientation of X-marked conditionals containing only one layer of past shows that one layer of the past tense morphology can convey a temporal past meaning while simultaneously making its contribution to X-marking. Cross-linguistic data suggest that the availability of such readings in a given language is linked to whether its present tense is shiftable. I have concluded that this empirical observation necessitates a uniform temporal past approach to the role of tense in X-marking.

I have then presented an analysis of conditionals in Anchor Semantics (Arregui 2009; Kratzer 2009), according to which 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). Although in many languages the information carried by the two tenses are indistinguishably packed into the temporal morphology in conditional antecedents, Farsi teaches us that they independently contribute to the semantics and pragmatics of conditionals. The main contribution of this dissertation is to show how cross-linguistic variations in X-marked conditionals can be explained by different properties of tense associated with the temporal location of antecedents, while positing that the semantic contribution of past tense in X-marked conditionals is the same across languages.

I have provided evidence showing that the antecedent of Farsi X-marked conditionals contains deictic tense which I have independently argued comes with a settledness presupposition. Due to this settledness presupposition, Farsi conditionals with deictice 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.

5.2 Outstanding Issues

The new patterns this study has uncovered have raised a number of open questions. There are at least two outstanding issues that I wish to acknowledge here.

5.2.1 The role of perfective aspect

In Chapter Three, I provided data showing that aspect maintains its typical semantics in the antecedent of X-marked conditionals. First, I showed that aspectual restrictions in Farsi that hold outside of conditional environments also hold in the

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antecedent of X-marked conditionals. Second, the presence of imperfective aspect in the antecedent of Farsi X-marked conditionals is necessary to make counterfactual generic claims.

Providing novel data from Farsi and English, I have also argued that the contrast in felicity conditions of future oriented pluperfect and (imperfective) past X-marked conditionals cannot be explained in terms of the number of the past tense morphemes, contra Ippolito (2013). Given the fact that predictions of Ippolito's two past layers account are not borne out out in Farsi, and that I have independently argued that aspect in the antecedent of Farsi X-marked conditionals is real, an account in terms of the aspectual differences of these conditional (Arregui 2005, 2007) seems more promising. Farsi data support Arregui's view that the contrast arises due to the semantic properties of the perfective aspect embedded under perfect. I have shown that Farsi conditionals whose antecedent contains perfective aspect (pluperfect X-marked and perfective zero tense conditionals) cannot be used to talk about non-existent objects. There are also semantic and pragmatic differences between perfective and imperfective zero tense conditionals in Farsi that are crucial to understand the role of perfective aspect in conditionals. This is a fascinating question which I leave as a topic for future research.

5.2.2 Morphosyntax of X-marked conditionals

This dissertation has focused on deriving the semantic and pragmatic differences between X-marked conditionals in Farsi and English. An issue I have not discussed in this dissertation is the mechanism by which the past tense associated with specifying the temporal location of the anchor situation morphologically appears in the antecedent of conditionals. Arregui (2009) explains the appearance of past tense morphology in the antecedent of English X-marked conditionals in terms of feature transmission under agreement between the zero tense in the antecedent and

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a higher c-commanding past tense. We have seen, however, the same mechanism cannot be in play in Farsi X-marked conditionals whose antecedent carries deictic tense. Given that even in languages lacking a tense deletion rule or past subjunctive paradigm past tense can still appear in the antecedent of X-marked conditionals, other mechanisms must be explored to account for the appearance of past tense morphology in the antecedent of X-marked conditionals in such languages. This is a topic for future research to elucidate.

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