The Interruption Puzzle with the Persian Imperfective

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Abstract

Persian morphologically distinguishes the imperfective (IMPF) from the progressive (PROG), with the latter aspect being morphologically derived from the former and exclusively used to describe an 'event in progress'. This paper motivates a puzzle which arises from PROG's ability to describe interruptions, whereas IMPF is generally odd in such contexts. We propose an analysis according to which IMPF ensures that the ongoing occurrence of an eventuality is beyond the actual time in the actual world, while PROG functions as a modal, accommodating interruptions in non-actual worlds.

Keywords: imperfective, progressive, aspect, event semantics, Persian

1 Introduction: the interruption puzzle

In Persian, the are at least two ways to describe an in-progress event. In the examples below, the a- and b-sentences provide the same answer to the question "what was he doing?" and the c-sentences provide the same answer to the question "what were you doing?". In (1), the verb consists of the prefix *mi-*, which is an aspectual marker, as well as the past stem of the verb and the person-number suffixes. In (2), on the other hand, the predicate is a verbal complex consisting of the verbal form in (1), as well as the verb *dāštan* 'to have' with person-number agreement.

(1) a. Ali dāyere.i **mi-kešid**
Ali circle.INDEF ASP-draw.PST.3SG
'Ali was drawing a circle.'

b. Ali **naqāši mi-kešid**
Ali painting ASP-draw.PST.3SG
'Ali was painting.'

c. Anna Karenina (ro) **mi-xund-am**
Anna Karenina (DO) ASP-read.PST-1SG
'I was reading Anna Karenina.'

(2) a. Ali **dāšt** dāyere.i **mi-kešid**
Ali have.PST.3SG circle.INDEF ASP-draw.PST.3SG
'Ali was drawing a circle.'

b. Ali **dāšt** **naqāši** **mi-kešid**
Ali have.PST.3SG painting ASP-draw.PST.3SG
'Ali was painting.'

c. **dāšt-am** Anna Karenina (ro) **mi-xund-am**
have.PST-1SG Anna Karenina (DO) ASP-read.PST-1SG
'I was reading Anna Karenina.'

Interestingly, when describing an interrupted event, speakers strongly prefer to use the construction with the verbal complex and (sometimes) find the other form infelicitous. For example, compare (3) with (4). In (3a)/(3b), we understand that when the pen's ink ran out, the events of drawing a circle/painting ceased to develop further. In (3c), the most natural inference is that the earthquake led the speaker to stop reading *Anna Karenina*. The sentences in (4) are much less acceptable, however. Why should this be the case? That is, why is there a contrast between (3) with (4), when these two constructions can be used to describe in-progress events as in (1) and (2)?

(3) a. Ali **dāšt** dāyere.i **mi-kešid** ammā johar.e xodkār tamum
Ali have.PST.3SG circle.INDEF ASP-draw.PST.3SG but ink.EZ pen finished
šod
become.PST.3SG
'Ali was drawing a circle, but the pen's ink ran out.'

b. Ali **dāšt** **naqāši** **mi-kešid** ammā johar.e xodkār tamum
Ali have.PST.3SG painting ASP-draw.PST.3SG but ink.EZ pen finished
šod
become.PST.3SG
'Ali was painting, but the pen's ink ran out.'

c. **dāšt-am** Anna Karenina (ro) **mi-xund-am** ke zelzele
have.PST-1SG Anna Karenina (DO) ASP-read.PST-1SG COMP earthquake
umad
come.PST.3SG
'I was reading Anna Karenina when the earthquake happened.'

(4) a. *?*Ali dāyere.i **mi-kešid** ammā johar.e xodkār tamum šod
Ali circle.INDEF ASP-draw.PST but ink.EZ pen finished become.PST.3SG
'Ali was drawing a circle but the pen's ink ran out.'

b. *?*Ali **naqāši** **mi-kešid** ammā johar.e xodkār tamum šod
Ali painting ASP-draw.PST but ink.EZ pen finished become.PST.3SG
'Ali was painting but the pen's ink ran out.'

c. *?*Anna Karenina (ro) **mi-xund-am** ke zelzele umad
Anna Karenina (DO) ASP-read.PST-1SG COMP earthquake come.PST.3sg
'I was reading Anna Karenina when the earthquake happened.'

To the best of our knowledge, no one has asked this question, let alone address it, giving rise to what we call *the interruption puzzle*. We note that the data above is not a red herring;

the observed contrast is robust in Persian. For example, as shown in (5), it is maintained across sentential boundaries.

(5) a. čerā xodkār ro az Ali gereft-i? **?(dāšt)** dāyere.i
why pen DO from Ali take.PST-2SG ?(have.PST.3SG) circle.INDEF
mi-kešid
ASP-draw.PST.3SG
'Why did you take the pen from Ali? He was drawing a circle.'

b. čerā xodkār ro az Ali gereft-i? **?(dāšt)** **naqāši** **mi-kešid**
why pen DO from Ali take.PST-2SG ?(have.PST.3SG) painting ASP-draw.PST.3SG
'Why did you take the pen from Ali? He was painting.'

c. kāš zelzele na-umade bud, **?(dāšt-am)** Anna Karenina (ro)
MOD earthquake NEG-come.PPL AUX.PST.3SG ?(have.PST-1SG) Anna Karenina (DO)
mi-xund-am
ASP-read.PST-1SG
'I wish that the earthquake hadn't happened, I was reading Anna Karenina.'

The goal of this paper is to give a compositional semantics for these two aspectual constructions that accounts for the interruption puzzle. The paper proceeds as follows. In the next section, we provide an overview of verbal morphology in Persian. We focus on how Persian expresses imperfectivity, providing a brief overview of previous research on this topic. Then, in §3, we propose a semantics for imperfective marking in Persian that can account for the puzzling data in this section. We also discuss several consequences for our analysis, particularly focusing on imperfective marking in intensional contexts. Finally, in §4, we point out a challenge for our analysis, namely that stativity appears to dissipate the interruption puzzle.

2 Imperfectivity in Persian

Persian has two main verbal stems: the past stem and the present stem. The bare past stem can combine with person-number suffixes as in (6).

(6) a. Ali raft
Ali go.PST.3sg
'Ali went.'

b. man xābid-am
I sleep.PST-1SG
'I slept.'

This is not possible with a bare present stem. Instead, it can be inflected with the aspectual marker *mi-*, which we saw in (1)-(5).[1] According to Persian grammars (e.g., Windfuhr & Perry 2010), *mi-* is an imperfective marker. This form, which we henceforth call IMPF, has a range

[1]The present stem can appear either with *mi-*, or with the subjunctive marker *be-*. For more details on the subjunctive marker see Darzi & Kwak (2015).

of imperfective meanings: it can express habituality (7a), genericity (7b), characterization (7c), etc. in addition to an event-in-progress (as seen in (1)).[2]

(7) a. Sarina footbāl bāzi mi-kard
Sarina football play IMPF-do.PST.3SG
'Sarina played football.'

b. ordak-hā toxm mi-gozār-and
dick-PL egg IMPF-put.PRES-3PL
'Ducks lay egg.'

c. Nika az ertefa mi-tarsid
Nika of height IMPF-fear.PST.3SG
'Nika was afraid of heights.'

As shown below, an IMPF form can be made more complex: a bare *dāštan* 'to have' (which we saw in (2), (3) and (5)) can be added; it agrees with the IMPF form in person and number.

(8) a. mi-raqs-am
IMPF-dance.PRES-3SG

b. dār-am mi-raqs-am
have.PRES-1SG IMPF-dance.PRES-1SG

Taleghani (2010) has shown that syntactically, this composition results in a serial verb construction. Persian grammars call this construction the progressive (henceforth PROG), as it can only express an in-progress meaning (non-episodic interpretations are not permitted with this form).[3] The first person plural paradigm of the bare and imperfective forms of the verb *raqsidan* 'to dance' is shown in table (1).[4]

Unfortunately, many traditional, prescriptive grammars do not mention the PROG-construction because it used to be confined to colloquial Persian (Khomeijani Farahani 1990). Some grammarians also discard this construction based on the assumption that the HAVE-auxiliary seems semantically redundant. As for more recent descriptive grammars of Persian, they are confined to mentioning the semantic difference noted above: PROG is limited to episodic interpretation of an event in progress, but IMPF is not.

Theoretical research on Persian aspect has provided additional insight about the difference between IMPF and PROG. One such study comes from Khomeijani Farahani (1990) (henceforth

[2]For a discussion of the range of meanings that the imperfective aspect can have accross languages, see, e.g. Comrie (1976), Dahl (1985), Smith (1991), Bybee, Perkins & Pagliuca (1994), Deo (2009), Altshuler (2014), Arregui, Rivero & Salanova (2014), Ferreira (2016), Gyarmathy & Altshuler (2020), Deo (2020).

[3]It should be noted that there are very particular contexts in which PROG can be used to express habituality:

(1) **dār-am** in ruz.ā bištar **mi-do-am**
have-1SG DEM day-PL more IMPF-run.1SG
'I am running more these days.'

However, this is not a quirk of Persian; other languages with a specific marker for progressivity allow these readings; cf. English, where an habitual can also be used here with no changes in the truth conditions: 'I run/am running more these days'. See, e.g. Moens & Steedman (1988) for discussion.

[4]Note that Persian is a *pro*-drop language.

	Persian	Translation
Present IMPF	*mi-raqs-am*	I am dancing/I dance.
Present PROG	*dār-am mi-raqs-am*	I am dancing.
Bare Past	*raqsid-am*	I danced.
Past IMPF	*mi-raqsid-am*	I was dancing.
Past PROG	*dāšt-am mi-raqsid-am*	I was dancing.

Table 1: Paradigm of *raqsidan* 'to dance'

KF). KF argues that the two forms have distinct meanings since IMPF is associated with continuity rather than progressiveness (Khomeijani Farahani 1990: p. 35). Moreover, building on insight by Dehghan (1972), Khomeijani Farahani (1990: p. 262) proposes that PROG "presents the given situation as in progress at a given time", while IMPF merely describes continuation. KF's evidence for this view comes from the combination of these two aspectual markers with stative predicates: while IMPF with statives maintains the stative interpretation as in (9a) and (10a), adding the PROG morphology in (9b) and (10b) gives rise to an *inchoative* ('about to') interpretation.

(9) a. bache-hā az ra'd-o-barq mi-tarsid-and
child-PL of thunderstorm IMPF-fear.PST-3PL
'The children were afraid of thunderstorm.'

b. bache-hā dāšt-and az ra'd-o-barq mi-tarsid-and
child-PL have.PST-3PL of thunderstorm IMPF-fear.PST-3PL
'The children were about to get afraid of thunderstorm.' *(~when their parents came back and they calmed down)*

(10) a. Ali in šahr ro mi-šenāxt
Ali DEM city DO IMPF-know.PST.3SG
'Ali knew this city.'

b. Ali dāšt in šahr ro mi-šenāxt
Ali have.PST.3SG DEM city DO IMPF-know.PST.3SG
'Ali was getting to know the city.' *(After five years, finally ~)*

Based on such data, KF further argues that the notion of 'progress' cannot be part of the meaning of IMPF, but it comes from the dynamic predicate (in cases such as (1) where IMPF gives rise to an in-progress meaning). What IMPF semantically contributes, KF contends, is that the eventuality is continuous.[5]

The distinction between a continuous imperfective aspect and a progressive one has its roots in Comrie (1976), which proposes a hierarchy of aspectual distinctions that categorizes non-habitual continuous aspect into progressive and non-progressive (see Fig. 1).

[5]There are other works that try to analyze the distinction between these two forms in terms of semantic nuances in expressing imperfectivity and durativity. For instance, Taleghani (2008) points out that in the PROG construction, the auxiliary *dāštan* 'to have' expresses the duration of the activity. As *mi-* also semantically contributes duration, the PROG construction would have two representations of continuity. Taleghani does not explain this apparent redundancy.

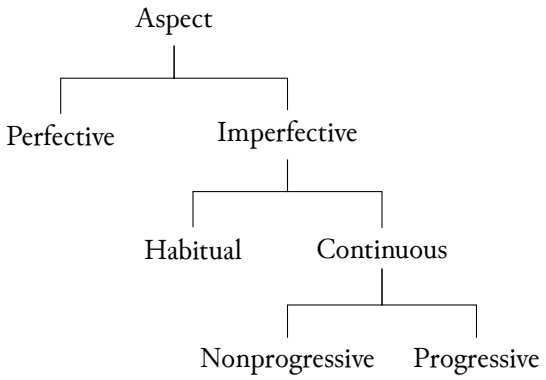


Figure 1: Comrie (1976)'s hierarchy of aspectual distinctions

While non-progressives are not explicitly discussed in Comrie's seminal work, it appears that what Comrie means by non-progressive is imperfective marking where habituality or progression are not involved, i.e. a stative description. This has remained the main distinction between continuous aspect and progressive aspect. For example, in a review paper on continuous and progressive aspects, Mair (2012) claims that "while the progressive is usually reserved for dynamic verbs and predicates, non-progressive continuous aspectuality additionally covers stative predicates". The empirical motivation for assuming this distinction in aspectual realization comes from Cantonese, which has different markers for progressive and continuous aspect. For example, consider the data below. According to Matthews & Yip (2011), (11a) expresses the action of rain falling, whereas (11b) describes the weather as a continuing situation.[6]

(11) a. ngoibihn loh-**gán** yúh
outside fall-PROG rain
'It's raining outside.'

b. ngoibihn loh-**jyuh** yúh
outside fall-CONT rain
'It's raining outside.' Matthews & Yip (2011)

With these data in mind, let us return to KF's account of Persian imperfective markers. What KF is proposing is that IMPF does not have (dynamic) progression in its semantics, but only continuity as a stative concept. Consequently, IMPF is effectively a stative operator. The in-progress readings in (1) result from the interaction between the semantics of the predicate and the aspectual marker. However, KF does not explain how this composition would work. Take, for instance, (1a), repeated below as (12a) and which has the same interpretation as its PROG counterpart in (2a), repeated below as (12b) and which has an in-progress meaning. If the in-progress meaning comes from the predicate *to draw a circle*, and *mi-* is a stative operator, how does their combination come to have a dynamic meaning?

(12) a. Ali dāyere.i **mi-kešid**
Ali circle.INDEF IMPF-draw.PST.3SG
'Ali was drawing a circle.'

[6]Mair (2012) proposes the following translation for (11a): 'it keeps raining outside.'

b. Ali **dāšt** dāyere.i **mi-kešid**
Ali have.PST.3SG circle.INDEF IMPF-draw.PST.3SG
'Ali was drawing a circle.'

We don't see a straightforward way of answering this question given KF's assumptions. However, we do think there is an alternative analysis that, on the one hand, assumes that the semantics of IMPF and PROG contribute (basically) the same information with respect to the nature of an event's progression, while on the other hand, allows us to explain the interpretative contrast in (9) and (10).[7] However, this analysis does not get us any closer to solving the interruption puzzle, as it assumes that IMPF and PROG are the same operators when they have an in-progress interpretation (which is a necessary ingredient of the interruption puzzle), but different in combination with stative predicates (which are under discussion by KF). Therefore, we do not pursue it further here.

In conclusion of this section, we note that there is a strand of research that attributes a functional distinction between the IMPF with an in-progress interpretation and PROG. For instance, Davari & Naghzguy-Kohan (2017) claim that since IMPF can also express an assertion or a factual statement, the use of PROG disambiguates in favor of a progressive interpretation. They take IMPF as the unmarked progressive construction[8], meaning that the PROG construction in Persian is a 'double marked' aspect. They do not spell out, however, whether this results in redundancy, mentioning only that *mi-* marks declaration, habituality, and progression of an action. Mirrazi (2022) also holds that the *dāštan* 'to have' auxiliary forces an in-progress reading of the IMPF form, which can otherwise have non-episodic interpretations. Therefore, PROG is the preferred way of talking about an ongoing event.

While such functional explanations might be on the right track – especially considering the relative youth of the PROG construction[9] and the cross-linguistically common Jespersen's Cycle with imperfectives and progressives (see Deo 2015) – the empirical evidence brought forth by the interruption puzzle shows that the semantics of these forms has diverged in the course of this functional tendency. In the next section, we describe the formal semantics of this divergence.

3 Semantics of IMPF and PROG

To account for the Interruption Puzzle, we propose that IMPF denotes a function from a predicate of events and worlds to a set of time and world pairs. As illustrated in (13), IMPF requires there to be an event-part e' which is a proper part of a P-event e in some world w. Crucially, we assume that the semantics of $Part$ ensures that some P-event e is a further development of

[7]This analysis was outlined in Dashti & Altshuler (2023). It assumes a unified semantics of imperfective (Deo 2009, 2015, Ferreira 2016), where the only difference between the episodic readings and non-episodic readings is that the former involves existential quantification over singular events, while the latter's interpretation involves quantification over plural events. According to this analysis, IMPF is underspecified for number, but PROG is strictly singular. When stative and achievement predicates combine with PROG, coercion operators are triggered to introduce temporal parts to the predicate. However, stative predicates combine with the plural IMPF, not the singular one. Therefore, the difference in the operators in (9a) and (10a) versus (9b) and (10b) accounts for their different interpretations.

[8]They suggest that it is because of this unmarkedness of IMPF that PROG cannot be negated.

[9]The first report of PROG goes back to 1888 (Nematollahi 2015), whereas IMPF is vastly attested since the Middle Persian period.

the event-part e', and that e' occurs in the actual world.[10] Moreover, the temporal trace of e' in the evaluation world w' contains the time of evaluation t, meaning that the temporal trace of e' extends beyond t in w'. Assuming that w' is the actual world (instantiated by the context), it would be contradictory to assert both that an eventuality holds beyond the time of evaluation in the actual world and that the event is interrupted in the actual world.

(13) IMPF $\rightsquigarrow \lambda P \lambda t \lambda w' \exists e \exists e' \exists w[t \subset \tau(e', w') \wedge Part(e', e) \wedge P(e, w)]$

As for PROG, we propose that it imposes a further restriction on the denotation of IMPF, as it concerns the world variable. As shown in (14), PROG saturates the world variable w', instantiating it with some possible world. In doing so, PROG modalizes the semantic contribution of IMPF: it ensures that the temporal trace of e' extends beyond the world of evaluation (which needs not to be the actual world). This solves the interruption puzzle: unlike IMPF, PROG allows the eventuality in question to develop further in some possible world, even if interrupted in the actual world.

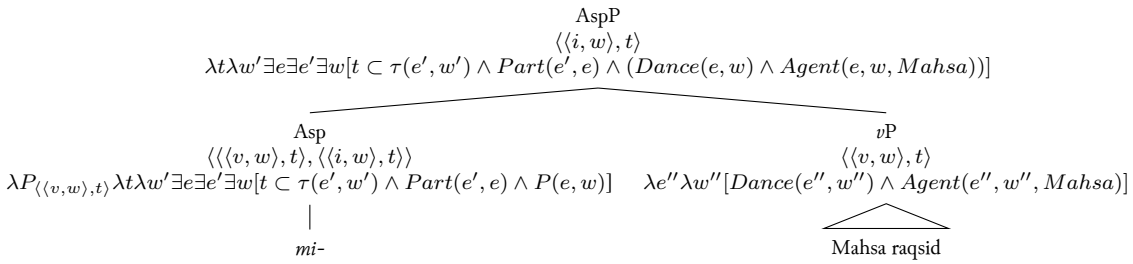
(14) PROG $\rightsquigarrow \lambda Q \lambda t \exists w[Q(t, w)]$

Let's now apply our proposed denotations to a concrete example:

(15) Mahsa mi-raqsid
Mahsa IMPF-dance.PST.3SG
'Mahsa was dancing.'

Our proposed denotation of IMPF (*mi-*) can be composed with the denotation of *v*P *Mahsa - raqsid* ('Mahsa - danced') in the following way:[11]

(16)



(17) a. $[\![$ Mahsa - raqsid $]\!] \rightsquigarrow \lambda e'' \lambda w''[Dance(e'', w'') \wedge Agent(e'', w'', Mahsa)]$
b. $[\![$ Mahsa mi-raqsid $]\!] \rightsquigarrow$
$\lambda t \lambda w' \exists e \exists e' \exists w[t \subset \tau(e', w') \wedge Part(e', e) \wedge (Dance(e, w) \wedge Agent(e, w, Mahsa))]$

[10] Progressives and in-progress uses of imperfective aspect are often defined and discussed in terms of the imperfective paradox, namely the lack of completion entailments. We remain agnostic about how to account for the imperfective paradox; previous accounts can be adopted for our analysis to further constrain the $Part$ relation proposed here (see Zucchi 2020 for a recent overview of various approaches to the imperfective paradox.). While our discussion focuses on continuation rather than completion, the interruption puzzle data in Persian shows that one has to be careful in not conflating continuation with completion.

[11] We assume a syntax where *v*P is the complement of the AspP and the subject is the specifier of *v*P. Tense would be higher, binding the t variable. For an account of ordering of morphemes in Persian verbal morphology, see Darzi & Anosheh (2010).

We assume that in (17b), the variable t (which is abstracted over) is saturated by the tense, which we assume is higher up in the structure. Moreover, we assume that the variable w' (which is abstracted over) is also saturated higher up in the structure. In the current case, where there are no higher operators that bind this variable, w' will stand for the actual world. Given these assumptions, what (17b) tells us is for a time t (i.e. the reference time, determined by the context and constrained by the tense) and world w' (in this case, the actual world), there are events e and e' and a world w, such that:

1. e in w has the properties of Mahsa dancing;
2. e' is a non-final part of e;
3. t is a proper subset of the temporal trace (or 'run time') of e' in w'.

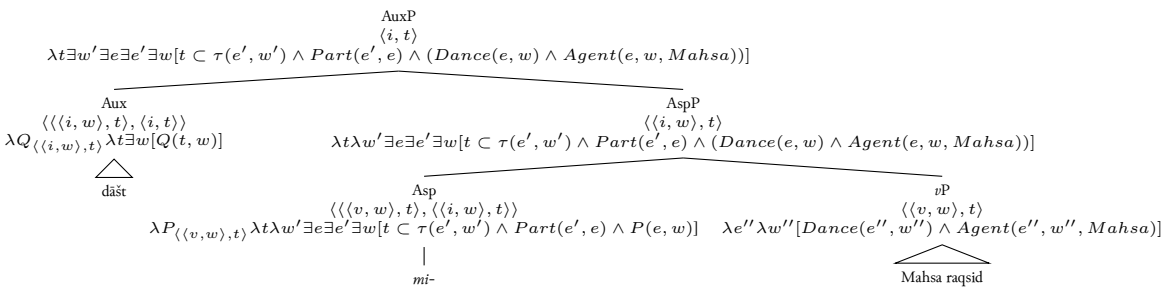
Therefore, (15) entails 1-3 below, where 3 blocks interruption:

1. In a possible world, there is an event of Mahsa dancing.
2. There is a non-final event-part of the event of Mahsa dancing in the actual world.
3. The temporal trace of that non-final event-part in the actual world contains the temporal trace of the reference time, so the non-final event-part of Mahsa dancing continues beyond the reference time.

Now, for the PROG counterpart of (15), take the example in (18), and its LF and denotations in (19) and (20) respectively:

(18) Mahsa dāšt mi-raqsid
Mahsa have.PST.3SG IMPF-dance.PST.3SG
'Mahsa was dancing.'

(19)



(20) a. $[\![$ Mahsa - raqsid $]\!] \rightsquigarrow \lambda e''\lambda w''[Dance(e'',w'')\wedge Agent(e'',w'',Mahsa)]$
b. $[\![$ Mahsa mi-raqsid $]\!] \rightsquigarrow$
$\lambda t\lambda w'\exists e\exists e'\exists w[t\subset\tau(e',w')\wedge Part(e',e)\wedge(Dance(e,w)\wedge Agent(e,w,Mahsa))]$

c. ⟦ Mahsa dāšt mi-raqsid ⟧ ⇝
$\lambda t \exists w' [\exists e \exists e' \exists w [t \subset \tau(e', w') \wedge Part(e', e) \wedge (Dance(e, w) \wedge Agent(e, w, Mahsa))]]$

As we see in (20c), what the PROG does to the denotation of IMPF is that it existentially binds w', allowing for any possible world to verify the assertion. Therefore, (18) entails 1-3 below, where 3 does not block interruption (this is so since the event-part may continue in some possible world):

1. In a possible world, there is an event of Mahsa dancing. (same as the case of IMPF)
2. There is a non-final event-part of the event of Mahsa dancing in the actual world. (same as the case of IMPF)
3. The temporal trace of that non-final event-part in some possible world contains the temporal trace of the reference time, so the non-final event-part of Mahsa dancing continues beyond the reference time in some possible world.

Note that according to this proposed semantics, the aspectual contribution comes from IMPF; PROG merely modalizes the semantic contribution of IMPF. Hence, predicates need to first combine with IMPF in order to combine with PROG. This captures the fact that verbs that do not combine with IMPF do not occur with PROG either: in Persian, the verbs *dāštan* 'to have', *budan* 'to be' and complex predicates containing them cannot combine with IMPF, and do not combine with PROG either.

(21) a. Mahsa gorbe (mi*-)dār-e
Mahsa cat IMPF-have.PRES-3SG
'Mahsa has a cat.'

b. *Mahsa dār-e gorbe mi-dār-e
Mahsa have.PRES-3SG cat IMPF-have.PRES-3SG
'Mahsa is having a cat.' (intended meaning)

(22) a. Sarina diruz tu xune (mi*-)bud
Sarina yesterday in house IMPF-COP.PST.3SG
'Sarina was in the house yesterday.'

b. *Sarina dāšt diruz tu xune mi-bud
Sarina have.PST.3SG yesterday in house IMPF-COP.PST.3SG
'Sarina was in the house yesterday.' (intended meaning)

Another prediction of our analysis is that we should be able to use IMPF in intensional contexts to describe interruptions. This is so because there is nothing in the denotation of IMPF that prevents the eventuality in question to develop in worlds other than the actual world of evaluation. This prediction is borne out in (23), where the interruption is described in the complement clause of an attitude adverb. In this case, interruption is fine with an IMPF and the PROG marker is not necessary.

(23) Ali az xiābun rad mi-šod negarān ke māšin be=š
Ali of street crossed IMPF-become.PST.3SG worried COMP car to=him
be-zan-e
SBJV-hit.PRS.3SG
'Ali was crossing the street, worried that a car may hit him.'

We end this section by noting a theoretical consequence of our analysis, namely that we undermine a claim that has been found in the literature about the IMPF form. The IMPF form can be used in the antecedent of a counterfactual conditional such as the one in (24), an observation that holds for many of the world's languages (Iatridou 2000, Deo 2020).

(24) agar Kian sobhune omlet mi-xord gorosne ne-mi-šod
if Kian breakfast omelette IMPF-eat.PST.3SG hungry NEG-IMPF-become.PST.3SG
'If Kian had eaten omelette for breakfast, he would have not become hungry.'

There are two main approaches to the correlation between imperfectivity and counterfactuality. The first approach assumes that the contribution of IMPF is *fake* or vacuous in such cases (Iatridou 2000). The second approach takes IMPF to contribute modal meaning (see Arregui (2005, 2007) and Mirrazi (2022) in the context of Persian), which helps to explain its occurrence in counterfactuals.

Hence there is a tension, especially if the second approach is right.[12] On the one hand, we have argued that if we want to account for the interruption puzzle in Persian, we have to assume that IMPF is not modal. And on the other hand, data like (24) suggest that IMPF may be modal after all. We don't address this tension here, merely underscoring the burden on the analyst to explain both the interruption puzzle and data such as (24).

In the next section, we consider further challenges for the analysis that we have proposed here.

4 A look at stativity

So far, in our account of the interruption puzzle, we have only looked at eventive predicates. The reason for this is that non-characterizing states – which can be interrupted – are usually described either with the verbs *budan* 'to be' and *dāštan* 'to have', which are incompatible with IMPF (and

[12]While Mirrazi (2022) has provided arguments to show that in Persian counterfactual conditionals aspectual restrictions are maintained (and therefore the contribution of aspect is 'real'), there is some evidence for assuming that the imperfective aspect in counterfactuals diverges from its typical meaning. We have shown in (21a) and (22a) that in Persian, the verbs *dāštan* 'to have' and *budan* 'to be' cannot occur with IMPF. However, in the antecedent of a counterfactual conditional, these verbs can be optionally marked by an IMPF, which might show that its contribution in these contexts is not aspectual:

(1) a. agar pā-hā-m joon (mi-)dāšt mi-umad-am *(from web)*
if leg-PL-my life IMPF-have.PST.3SG IMPF-come.PST-1SG
'If my legs has strength, I would have come.'

b. agar xune (mi-)bud-i mi-umad-am unja
if home IMPF-come.PST-2SG IMPF-come.PST-1SG there
'If you were at home, I would have come there.'

consequently PROG) morphology. Therefore, they cannot be subject to the interruption puzzle. However, stative predicates interact with the interruption puzzle in a different way: some markers of stativity may dissipate the interruption puzzle. In other words, there are certain contexts involving stativity in which it is felicitous to describe an interrupted event with IMPF. In what follows, we describe the relevant data and keep their analysis open for further research.

4.1 *when*-clauses

One case where IMPF can be used to describe an interrupted event-in-progress is when the clause is headed by *vaqti ke* 'when', which is known to interact with stativity (Moens & Steedman 1988).[13] For instance, in (25a), the event of crossing the street cannot be described with IMPF when it is to be interrupted by the event of getting hit. However, once it is embedded within *vaqti ke* 'when' as in (25b), the verb can be marked by IMPF:

(25) a. *ʔ*az xiābun rad mi-šod ke māšin be=š zad
of street crossed IMPF-become.PST.3SG COMP car to=him hit.PST.3SG
'He was crossing the street when the car hit him.'

b. vaqti (ke) az xiābun rad mi-šod māšin be=š zad
when (COMP) of street crossed IMPF-become.PST.3SG car to=him hit.PST.3SG
'He was crossing the street when the car hit him.' (literally: when he was crossing the street, the car hit him.)

It should be noted that this construction has another configurational variant: the complementizer *ke* can appear inside the clause describing an event that is to be interrupted:

(26) az xiābun ke rad mi-šod māšin be=š zad
of street COMP crossed IMPF-become.PST.3SG car to=him hit.PST.3SG
'He was crossing the street when the car hit him.'

This is a variant of cases where the main event's clause begins with 'when', such as (25b) (and not the cases where the complementizer occurs at the clause boundary, such as our typical cases of the interruption puzzle like (25a)). In general, *ke* is only a complementizer and it can optionally occur with expressions meaning 'when', as in (25b). *ke* itself cannot appear as a complementizer in the beginning of the sentence, so in (25b) one cannot omit *vaqti* 'when' and only keep *ke*. Cases like (26) show the same syntactic subordination as in (25b), in that the clause describing the main event is subordinated. The same alternation cannot happen when there is no subordination and the event interruption is expressed via coordinating conjunction *ammā* 'but':

(27) a. *ʔ*Ali naqāši mi-kešid ammā johar.e xodkār tamum šod
Ali painting IMPF-draw.PST.3SG but ink.EZ pen finished become.PST.3SG
'Ali was painting but the pen's ink ran out.'

[13] In English, when 'when' occurs with an eventive phrase, one typically infers the consequent state of the described event. For example, in 'When Teia came home, Ava left', we understand that Ava left only when Teia was already home, i.e. when the consequent state of the coming event held.

b. *ammā Ali naqāši mi-kešid johar.e xodkār tamum šod
but Ali painting IMPF-draw-PST.3SG ink.EZ pen finished become.PST.3SG
'Ali was painting but the pen's ink ran out.'

We don't know how to explain these data. Here, we merely hypothesize that stativity is a key factor for dissipating the interruption puzzle.

4.2 State before the main event

Another construction in which the interruption puzzle disappears is where a state is understood to precede the main event (which is to be interrupted). This state is a non-characterizing temporary state that encompasses the event. As shown in the data below[14], in this case, it is perfectly fine to describe the interrupted event with IMPF (the state is not understood to be interrupted). Crucially, note that if we take out the state description, the interruption puzzle would resurface.

(28) a. ru taxt=am xābide bud-am va ketāb mi-xund-am ke guši=m
on bed=my sleep.PPL AUX.PST-1SG CONJ book IMPF-read.PST-1SG COMP phone=my
zang zad
ring hit.PST.3SG
'I was lying in my bed and reading when my phone rang.'

b. nešaste bud-am va ketāb mi-xund-am ke esm=eš ro šenid-am
sit.PPL AUX.PST-1SG CONJ book IMPF-read.PST-1SG COMP name=his DO hear.PST.1SG
'I was sitting and reading when I heard his name.'

c. Homa gorosne bud va donbāl-e qazā mi-gašt ke
Homa hungry COP.PST.3SG CONJ after-EZ food IMPF-search.PST.3SG COMP
Hossein umad tu
Hossein come.PST.3SG inside
'Homa was hungry and looking for food when Hossein came in.'

In examples (28a) and (28b), the predicate preceding the interrupted event has pluperfect morphology (consisting of the past participle and the auxiliary *budan* 'to be'). Khomeijani Farahani (1990) has argued that Persian pluperfects have a stative interpretation, mainly because they are compositionally formed upon the canonical stative verb *budan* 'to be'.[15] Example (28c), on the other hand, contains the copula which is canonically stative. Therefore, we can be certain that stativity of the preceding predicate is the reason why the interrupted event may be described by IMPF. However, as before, we are not sure why this is the case.

5 Conclusion

In this paper, we have motivated the interruption puzzle by examining a previously unexplored difference between the two imperfective markers in Persian, IMPF and PROG. In particular,

[14]The first two examples are from the web.

[15]Khomeijani Farahani (1990) compares this construction to the combination of an adjective and the past tense form of the copula. But it should be noted that negation interacts differently with these constructions: with pluperfects, negation attaches to the participle and not the auxiliary, whereas the adjective + copula complex is negated by negating the copula.

we provided data which shows that although both IMPF and PROG can describe an in-progress event, PROG is preferred to IMP for describing an interrupted event-in-progress. Subsequently, we proposed an analysis of these two imperfective forms that accounts for the puzzling data. According to this analysis, IMPF ensures that the described event occurs beyond the time of evaluation in the actual world and this leads to a contradiction in case of interruption. On the other hand, PROG, which is derived from IMPF, modalizes PROG's denotation and ensures that the described event can continue in some possible world. An important consequence of our analysis is that it correctly prevents the composition of verbal predicates solely with PROG, i.e. our analysis explains why PROG must be derived from IMPF. Moreover, our analysis correctly predicts that the interruption puzzle dissipates in intensional contexts, though further work is required to explain cases in which IMPF is used in the antecedent of a counterfactual conditional. Lastly, we discussed a set of data that our analysis cannot currently capture. In particular, we argued that some markers of stativity may dissipate the interruption puzzle. The analysis of these data remains open for future investigation.

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Abbreviations

Glosses are abbreviated as follows: ASP–aspect, AUX–auxiliary, COMP–complementizer, CON–continuous, CONJ–conjunction, COP–copula, DEM–demonstrative, DO–direct object, EZ–EZAFE (nominal linker), IMPF–imperfective, INDEF–indefinite, NEG–negation, PL–plural, PPL–past participle, PRS–present tense, PROG–progressive, PST–past tense, SBJV–subjunctive mood, SG–singular.

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