On focus and the perfect aspect[1]

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Abstract. This paper introduces two novel empirical observations about sentences containing narrow focus on the perfect participle (e.g., *Esme has* $[BEEN]_F$ *married*). First, we show that these sentences are examples of universal perfects, which entail that the eventuality described by the VP holds at the reference time. Broad-focused versions of the same sentences, on the other hand, only give rise to experiential readings. This observation is not accounted for by prior accounts of the perfect, which predict that universal readings only arise in the presence of certain overt adverbials (Iatridou et al., 2001; Portner, 2003). Second, we observe that perfect sentences with focused participles imply that the eventuality has held for a long interval. We analyze this "length implication" as an instance of domain focus that associates with covert *even* exhaustification (cf. Chierchia, 2006), where the focused domain is of the left boundary of the perfect time span. These two observations lead us to the generalization that universal readings of the perfect are only licensed when the LB is (at least partially) specified. From this, we trace the unavailability of universal readings under broad focus to competition between the present perfect and the simple present: universal readings are ruled out when semantically equivalent to the simple present. Since, by specifying the LB, both adverbials and the length implication make a universal perfect more informative than the simple present, it can surface. In sum, we argue that a full account of the perfect requires reference to both focal alternatives and competition.

Keywords: perfect aspect, domain focus, universal perfect, experiential perfect

1. Introduction

A well-known property of the perfect aspect is that it gives rise to different readings. The universal reading of the perfect (U-perfect) entails that the eventuality holds at the reference time (RT) introduced by tense, shown in (1a). In contrast, the experiential reading (E-perfect) in (1b) does not contribute this entailment and is thus compatible with eventualities which have ended.

(1) a. For 5 years, Esme has been married. (U) $\models$ *Esme is married*
b. Esme has been married. (E) $\not\models$ *Esme is married*

It has been claimed that for a U-perfect reading to arise, the presence of an overt temporal adverbial that induces the reading is necessary, like *always* or *ever since* (Iatridou et al., 2001; Portner, 2003). In this paper, we identify a case of a U-perfect that obtains *without* an overt adverbial: namely, when there is narrow focus (specifically, an H* accent) on the participle (2).

(2) *A: Esme recently got married. / Esme is going to be married on Sunday.*
B: Wait, Esme has $[\text{BEEN}]_{\text{F}}$ married. (U) $\models$ *Esme is married.*

How does focus interact with the perfect aspect, and what does this tell us about how the avail-

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ability of different perfect readings is constrained? To answer these questions, we concentrate on a specific temporal property of focused sentences like (2): they imply that the eventuality has held for a long interval, which we henceforth refer to as the "length implication". We derive the length implication as a case of *domain focus* (Shank, 2004; Chierchia, 2013; Iatridou and Zeijlstra, 2021; Jeong and Roelofsen, 2023), a phenomenon in which the domain of a quantifier in a sentence bears the focus feature F. The domain in question for the relevant perfect sentences is of an existential quantifier that introduces the left boundary (LB) of the perfect time span (PTS).

To capture their limited distribution, we propose that U-perfect readings are constrained by competition with a structurally simpler competitor, the simple present. U-perfect readings only surface in sentences with narrow focus like (2) and with overt temporal adverbials like (1a) because, by specifying the LB of the PTS, the U-perfect is rendered more informative than its simple present counterpart. In broad focus cases like (1b), when there is no overt adverbial, the U-perfect is ruled out because it is semantically equivalent to the simple present.

This paper is organized as follows. In Section 2, we provide an overview of the previous literature on the distribution of perfect readings and their interactions with adverbials. In Section 3, we argue that perfect sentences with narrow focus on the participle, like (2), constitute genuine U-perfects in the absence of an overt adverbial. In Section 4, we derive the aforementioned length implication via domain focus. Section 5 then shows how competition leads to the unavailability of universal readings under broad focus. Section 6 concludes.

2. Adverbials and readings of the perfect

There are at least four attested readings of the perfect: the experiential, universal, resultative, and "hot news" (Comrie, 1976; McCawley, 1981). In the current paper, we focus on the universal versus experiential distinction, setting aside the other possible readings.

To start, note that the distinction between the universal and experiential reading is a genuine semantic ambiguity (Dowty, 1979; Mittwoch, 1988). To demonstrate this ambiguity, consider example (3) below. Under its universal reading, Sam was in Boston at 7AM and is necessarily still in Boston at the UT. Under its experiential reading, Sam has simply been in Boston at some point after 7AM and may or may not still be there.

(3) Sam has been in Boston since 7AM. (E, U) (Mittwoch, 1988)

What determines whether a U- or E-perfect reading is possible for a given sentence? The availability of different perfect readings has been shown to be dependent on the presence of overt adverbials in the sentence, as well as on the adverbials' temporal semantics. More specifically, it has been reported that U-perfect readings arise only in the presence of overt "durative" adverbials (Iatridou et al., 2001). Throughout this paper, we will refer to this generalization as the 'Overt Adverbial Generalization'. Examples of durative adverbials (i.e., those that yield a U-reading) include *always*, *ever/at least since*, and fronted *for*. In contrast, "inclusive" adverbials such as *before* and n-*times* result in an E-perfect reading (Iatridou et al., 2001).

To show the observations that motivated the Overt Adverbial Generalization, we next discuss the distribution of U- versus E-perfects for stative VPs (Section 2.1) and eventive VPs (Section 2.2).

2.1. Statives

For stative VPs such as *be happy* in (4), both E-perfect and U-perfect readings are available. However, the particular perfect reading that arises is constrained by the temporal adverbial: *before* results in an E-perfect in (4a), whereas *ever since* results in a U-perfect in (4b).

(4) a. Ursula has been happy before. (E, #U)
b. Ursula has been happy ever since Monday. (#E, U)

The universal inference in sentences like (4b) is entailed in the presence of an overt durative adverbial. This can be seen via the contradiction in (5), where it is infelicitous to follow a U-perfect sentence with a continuation that expresses the completion of the relevant state.

(5) *A: How is Ursula?*
B: #Ursula has been happy ever since Monday, but she's not anymore.

In contrast, when no durative adverbial is overtly present, like in (6), a continuation that expresses completion is felicitous. The felicity of (6) shows that only an E-perfect reading arises in the absence of an overt durative adverbial, rather than a U-perfect reading.

(6) *A: How is Ursula?*
B: Ursula has been happy, but she's not anymore.

Therefore, the behavior of stative VPs under broad-focused perfects supports the Overt Adverbial Generalization, since their U-readings are restricted to sentences where durative temporal adverbials appear on the surface.

2.2. Eventives

Eventive VPs, unlike stative VPs, are contrastively marked for viewpoint aspect in English (e.g., Dowty, 1979; Lakoff, 1966). The distribution of U- vs. E-perfect readings with eventives is complicated by this aspectual morphology: namely, U-readings only arise when there is progressive morphology on the participle (Iatridou et al., 2001; Pancheva, 2003).

Consider (7). With the past participle in (7a), only an E-perfect reading is available. With the progressive participle (7b), in contrast, a U-perfect reading arises. In light of this, prior accounts have traced the distinction between U- versus E-perfect readings to the semantics of viewpoint aspect, in addition to adverbials (Iatridou et al., 2001; Pancheva, 2003). In the current paper, we will adopt the assumption that viewpoint aspect plays such a role.

(7) a. Lola has climbed a mountain for two months. (E, #U)
b. Lola has been climbing a mountain for two months. (#E, U)

With this complication in mind, we turn to illustrating the Overt Adverbial Generalization for eventives. Mirroring the stative VPs, eventive VPs also allow the universal inference to be canceled when no adverbial surfaces, as shown by (8). However, when there is an overt durative adverbial as in (8b), the universal inference is entailed.

(8) a. Louis has been crying, but he's not anymore.
b. #Louis has been crying ever since this morning, but he's not anymore.

In sum, U-perfect readings are available with both stative VPs and eventive VPs with progressive morphology. In the broad-focused examples discussed thus far, however, for a universal inference to be an entailment, an overt durative adverbial is required.

2.3. Prior accounts of the Overt Adverbial Generalization

Previous authors trace the Overt Adverbial Generalization to the contribution of overt and covert temporal quantification, introduced either by an adverbial or default existential closure (Iatridou et al., 2001; Portner, 2003). Here we outline the analysis of Iatridou et al. (2001). First, Iatridou et al. (2001) propose that the perfect aspect introduces an interval known as the PTS, whose right boundary (RB) is the RT from tense, in line with other Extended Now accounts (see McCoard, 1978; Dowty, 1979). Second, they claim that in all perfect sentences, a "perfect-level" adverbial (which modifies the PTS) is present, either overtly or covertly. These perfect-level adverbials can either be durative (e.g., *ever since*) or inclusive (e.g., *before*). Durative adverbials require that the eventuality holds of every subinterval of the PTS. Inclusive adverbials require that the eventuality holds for a proper subset of the PTS.

Using these components, Iatridou et al. (2001) are able to predict that U-perfect readings only obtain in the presence of an overt durative adverbial. For sentences containing overt durative adverbials like (4b), the subinterval property of these adverbials enforces a U-perfect reading: because the PTS includes the UT as a subinterval, the eventuality is required to hold at the UT. For sentences containing overt inclusive adverbials like (4a), in contrast, the inclusive adverbials' proper subset requirement enforces an E-perfect reading.

Finally, for sentences like (1b) which lack an overt adverbial, Iatridou et al. (2001) argue that a covert perfect-level adverbial appears instead. These covert adverbials, unlike their overt counterparts, are taken to always be inclusive. Therefore, when there is no overt adverbial present, a covert inclusive adverbial forces an E-perfect reading.[2]

3. Focus licenses the U-perfect

We now introduce data on the interaction between focus and the perfect aspect to show that the distribution of U-perfects is more nuanced than has previously been observed. As demonstrated in (9), repeated below from (2), a universal inference can arise without an overt adverbial when there is narrow focus on the perfect participle.[3]

(9) *A: Esme recently got married. / Esme is going to be married on Sunday.*
B: Wait, Esme has [BEEN]$_F$ married. $\rightsquigarrow$ *Esme is married.*

[2]We focus on the role of adverbials in this section, but Iatridou et al. (2001) also show how viewpoint aspect contributes to the contrast between U- versus E-perfect readings. For perfective eventives, the eventuality is bounded, and thus incompatible with durative adverbials, leading them to never have a U-reading.

[3]Narrow focus on the perfect auxiliary *have* has been argued in previous literature to affect the availability of different perfect readings: particularly, the distribution of the experiential versus resultative perfect (Mittwoch, 2008). We leave an in-depth investigation of this related interaction to future work.

Below, we present three pieces of evidence that sentences like (9) are genuine universal perfects, and thus constitute counterexamples to the Overt Adverbial Generalization.

First, the universal inferences of sentences like (9) are not cancelable, shown in (10). This shows that, akin to U-perfects with durative adverbials like (5), these inferences are true entailments.

(10) A: Sadie is sick right now.
B: #Sadie has [BEEN]$_F$ sick, but she's not anymore.

For many speakers of American English, B's response sounds like a contradiction: first, B states that Sadie is sick (and has been for a while), and then immediately contradicts themselves.[4]

This non-cancellability is crucial, as E-perfects can sometimes give rise to universal inferences as conversational implicatures (Iatridou et al., 2001). If (9) were such an E-perfect, then it would not constitute an exception to the Overt Adverbial Generalization. Take the following broad-focused sentence, which is an example of such an E-perfect sentence:

(11) A: How is Sadie?
B: Well, she has been sick. $\rightsquigarrow$ *She is sick.*

Just like (9), this sentence gives rise to a universal inference. Unlike cases of narrow focus, however, this inference is cancelable:

(12) A: How is Sadie?
B: Well, she has been sick, but she isn't anymore.

B's response in (11) is thus an example of an E-perfect with a universal implicature, most likely calculated via Relevance to A's question. In contrast, since the inference is not cancelable in the case of narrow-focused perfects like (10), it cannot be traced to such Gricean considerations.

Second, narrow-focused perfect sentences that lack adverbials are felicitous with VPs that describe permanent eventualities like *dead* in (13a), similarly to universal perfects like (13c). In contrast, their broad-focused counterparts, like (13b), are infelicitous with such VPs.

(13) a. A: I heard Bess is going to die soon.
B: Huh? Bess has [BEEN]$_F$ dead.
b. #Bess has been dead. (~ Klein, 1992)
c. Bess has been dead for five years now.

The oddness of (13b) can be traced to an implication of the E-perfect: namely, that it is possible for the eventuality to *not* hold at the RT. In the case of (13b), the relevant implication is that it is

[4]Crucially, in our judgment, the infelicity of (10) only arises when a default focal accent (H*) is used, and not with other contours (e.g., *rise-fall-rise*) on *been*.

(i) A: Sadie is sick right now.
a. B: #Sadie has BEEN$^{H^*\ \ L}$ sick, but she's not anymore.
b. B: Sadie has *been*$^{H^*\text{-}L\ L\text{-}H\%}$ sick, but she's not anymore.

possible for Bess to be alive at the UT after being dead in the past, which contradicts our world knowledge about death (unless, say, reanimation is possible, in which case (13b) is perfectly felicitous). The fact that (13a) is felicitous and does not give rise to this implication indicates that it is not an experiential perfect.

Third, the only narrow-focused perfects that possess parallel features to our basic case in (9) are those which are compatible with a universal reading: that is, those with statives and progressive eventives. Below, we provide examples of this distribution with a copular predicate (14a), a lexically stative predicate (14b), and a progressive eventive (14c).[5] Each of these three examples mirrors (9): they are used to temporally contrast with a previous sentence, and they give rise to both a universal inference and length implication. In contrast, when a non-progressive eventive participle is focused, like in (14d), it is infelicitous in the same type of context, and it doesn't give rise to a universal inference or length implication. The distribution in (14) is to be expected if these narrow-focused sentences are U-perfects, since universal readings arise only with statives and progressive eventives.

(14) a. **Copular predicate:**
A: Lola is about to be famous.
B: Lola has [BEEN]$_F$ famous.

b. **Stative predicate:**
A: Louis knows the gossip now.
B: Louis has [KNOWN]$_F$ the gossip.

c. **Eventive, progressive:**
A: Colleen just started singing.
B: Colleen has [BEEN]$_F$ singing.

d. **Eventive, non-progressive:**
A: Ursula is going to run soon.
B: #Ursula has [RUN]$_F$.

These three pieces of evidence show that sentences like (9) are genuine U-perfects.

This set of data cannot be captured by an analysis that posits default covert temporal quantification over the PTS, such as a covert inclusive adverbial (e.g., Iatridou et al., 2001). While such an analysis is able to derive the absence of a U-perfect reading under broad focus, it would not be able to account for these cases of narrow focus without incorporating some mechanism whereby the covert adverbial is suppressed in the presence of focus on the participle. The account we present here, in contrast, does not require a covert adverbial at all, and thus does not require any stipulations about how this adverbial interacts with focus.

4. The length implication as domain focus

In order to understand how a focused participle enables a U-perfect reading, we must first understand the role that focus is playing in these sentences more generally. The approach that we take to understand this role is to analyze the aforementioned length implication. An informal description of the length implication is provided in (15).

(15) **Length Implication:** In a perfect sentence describing a (stative) eventuality *e*, when there is focus on the perfect participle, it is implied that *e* has held for a long interval.

[5]Note that the behavior of stative VPs like *know* (14b) indicates this phenomenon is not limited to the verb *be*. This will be crucial for our analysis, which traces the phenomenon to general grammatical mechanisms rather than lexical peculiarities. It also indicates that the sentences we are investigating are not examples of "stressed *been*", or *BIN*, in AAE, which has its own lexical relationship to aspect (Rickford, 1975).

For example, (16), repeated from (2), implies that Esme has been married for a while.

(16) A: Esme recently got married.
B: Wait, Esme has [BEEN]$_F$ married. $\rightsquigarrow$ *Esme has been married a long time.*

Note that focusing the participle only has the capacity to *lengthen* the run time of the eventuality described. One cannot use focus to contrast in the reverse direction, such as to assert that Esme has only been married for a short time:

(17) A: Esme got married a long time ago.
B: #No, Esme has [BEEN]$_F$ married.

In this section, we analyze this implication as the effect of *domain focus*, where the domain of a quantifier serves as the base for generating focal alternatives (Shank, 2004; Chierchia, 2013; Iatridou and Zeijlstra, 2021; Jeong and Roelofsen, 2023). The derivation, in brief, consists of the following components: first, we adopt and modify the Extended Now (XN) theory of the perfect (e.g., McCoard, 1978; Iatridou et al., 2001), where the perfect introduces a temporal interval (the PTS). Under our account, the PTS not only has its right boundary (RB) specified, as in previous work, but also its left boundary (LB). We propose that focus is on the domain of the existential quantifier introducing the LB, which generates focal alternatives with distinct PTS lengths. We then propose a variant of Chierchia's (2006) theory of exhaustification which predicts that the maximally informative alternative in a contextually restricted subset C of the focal alternatives is asserted. We will show that the maximally informative alternative is the one that is only compatible with the longest PTS in C, and, in turn, the longest run time for the described eventuality.

4.1. Domain focus

We claim that focus in examples like (16) activates domain alternatives. To motivate this, we provide two independent arguments for this claim: first, we identify a gap in the observed distribution of domain focus, and second, we discuss parallels between the relevant narrow-focused perfect sentences and other cases of domain focus.

Domain focus has most famously been used to analyze the "domain-widening" behavior of NPIs (Chierchia, 2013; Jeong and Roelofsen, 2023). Consider the following example, modified from Kadmon and Landman (1993):

(18) A_1: Are you making french fries tonight?
B_1: No, I don't have potatoes.
A_2: Oh, I see. Could I borrow just a couple of potatoes to fry myself?
B_2: Sorry, I don't have [ANY]$_F$ potatoes. (~ Kadmon and Landman, 1993)

In A's response (A_2), A has mistakenly taken B to have said that they don't have *large quantities* of potatoes. In other words, A has taken the domain of the implicit existential quantifier over *potatoes* in B_1 to only include large pluralities of potatoes. As a response to this mistaken assumption, B uses focus on *any* to indicate that the correct domain is wider than this assumed

one and includes *all* pluralities of potatoes. In this way, focus on an NPI like *any* can generate alternative *subdomains* which contrast with the asserted statement (Chierchia, 2013).

Prior authors have claimed that domain focus is relevant for temporal NPIs as well. For example, both Chierchia (2013) and Iatridou and Zeijlstra (2021) argue that the temporal NPI *in years* is inherently focused. Another example of a focused temporal NPI is given below with *ever*:

(19) A_1: Lola hasn't been to the dentist.
B: What about last year?
A_2: Lola hasn't $[\text{EVER}]_F$ been to the dentist.

Here, B has mistakenly taken A to have said that Lola hasn't been to the dentist this year. In other words, she has taken the domain of intervals that the perfect quantifies over in A_1 to only include intervals during the current year. A thus focuses *ever* in order to assert that the correct domain includes *all* intervals.

Domain focus has also been observed on non-NPI quantificational expressions (Shank, 2004). Consider the following case of focus on *every*:

(20) A_1: I hear that the school dance was a success.
B_1: Yeah, everybody had a good time.
A_2: I hope the chaperones were able to enjoy themselves a bit, too.
B_2: Oh, don't worry! $[\text{EVERY}]_F$body had a good time. (~ Shank, 2004)

In A's response (A_2), A has mistakenly taken B to have said that every child at the dance had a good time. In other words, they has taken the domain of *every* in B_1 to include only schoolchildren. In response, B uses focus on *every* to indicate that the correct domain includes adults. Just like with focusing NPIs, focusing a regular determiner can activate domain alternatives with which the statement contrasts.

As a whole, domain focus is attested for determiner NPIs (18) (e.g., Chierchia, 2013), temporal NPIs (19) (Iatridou and Zeijlstra, 2021), as well as regular determiners (20) (Shank, 2004). Given this distribution, one would expect to see domain focus with regular temporal quantifiers. What we propose here is that examples like (16) fill in this observational gap in the literature.

Another argument for analyzing the focus in (16) as domain focus comes from a functional parallel with known cases of domain focus. Like these cases, focusing the perfect can be used to cancel a domain-based scalar implicature (cf. Shank, 2004). Compare the pair below:

(21) a. Everyone from the class came to the show. In fact, $[\text{EVERY}]_F$one came.
b. Sadie has been sick today. In fact, Sadie has $[\text{BEEN}]_F$ sick.

The initial sentences of both (21a) and (21b), on their own, may lead to scalar implicatures about entities/times outside of the relevant quantificational domains. In particular, the initial sentence of (21a) may imply that people outside of the class did not come to the show, while the initial sentence of (21b) may imply that Sadie was not sick prior to today. Focusing both *every* in (21a) and the participle in (21b) cancels these implicatures by generalizing the prior statement to a larger domain. In both cases, the fact that the relevant focal contrast is with the previous smaller

domain, whether of entities (21a) or intervals (21b), indicates that focus is generating domain alternatives.

4.2. A more elaborate semantics of the perfect

To derive the length implication as a result of domain focus, we must identify which domain is focused in the relevant perfect sentences. This requires an analysis of semantics of the perfect.

Under the XN theory of the perfect (e.g., McCoard, 1978; Dowty, 1979; Iatridou et al., 2001; Pancheva, 2003), the perfect introduces a PTS whose final subinterval (its RB) is the RT contributed by tense. An XN-theoretic semantics for the perfect is given in (22). For present perfects, the RB of the PTS would thus be the UT under the semantics in (22).

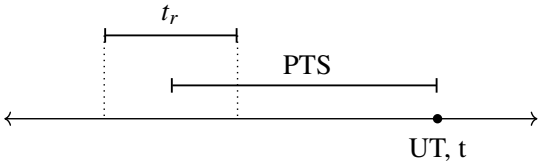
(22) a. RB(t, t′) := t′ is a final subinterval of t
b. $[\![\text{PERF}]\!]^g = \lambda p_{it}.\lambda t.\exists t_{PTS}.[RB(t_{PTS},t) \,\&\, p(t)]$

We modify the semantic entry in (22b) by proposing that in addition to the RB, the perfect also introduces a left boundary (LB) of the PTS, as shown in (23). The LB, defined in (23a) as the initial subinterval of the PTS, comes with a contextual domain restriction variable over times t_r. Such domain restriction variables have likewise been proposed for cases of domain focus with temporal NPIs (cf. Iatridou and Zeijlstra, 2021; Staniszewski, 2020).

(23) a. LB(t′, t) := t′ is an initial subinterval of t
b. $[\![\text{PERF}]\!]^g = \lambda p_{it}.\lambda t.\exists t_{PTS}.\exists t_{LB} \subseteq \boxed{t_r}\, [LB(t_{LB},t_{PTS}) \,\&\, RB(t_{PTS},t) \,\&\, p(t)]$

To illustrate, an example t_r is visualized in the diagram in (24). Because t_r constrains the possible LBs of the PTS, the initial subinterval of the PTS must fall within the bounds of t_r.

(24)



Following past authors, we take the contrast between U- versus E-readings of the perfect to arise from how viewpoint aspect interacts with the PTS (e.g., Iatridou et al., 2001; Pancheva, 2003). More specifically, we take the U-perfect reading to stem from the semantics of the imperfective viewpoint aspect, and the E-perfect reading from the semantics of the perfective.

4.2.1. U-perfect readings

To achieve a U-perfect reading for eventive and stative VPs, an imperfective viewpoint aspect scopes below the perfect. A semantics for the imperfective is given in (25).[6] In (25), the imperfective expresses that the duration of the eventuality contains a time *t*.

[6]We note that the semantics for the imperfective in (25) is a simplification, as the imperfective is often treated as modalized (Dowty, 1979). Further, in English, the relevant viewpoint aspect for eventive VPs is more accurately characterized as progressive, a subtype of the imperfective aspect (Arregui et al., 2014). Regardless, however, the account of perfect readings outlined here is also compatible with these alternative, more-detailed approaches.

(25) $[\![\text{IMPF}]\!]^g = \lambda P.\lambda t.\exists e[t \subset \tau(e)\ \&\ P(e)]$

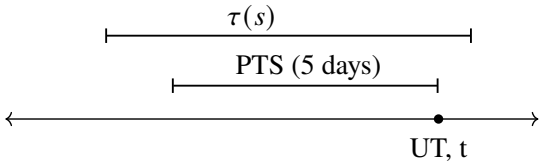
Crucially, when the imperfective appears beneath the perfect, *t* corresponds to the PTS. Per the semantics of the imperfective in (25), this means that the PTS is contained by the duration of the eventuality. The truth conditions of a U-perfect sentence are given in (26), demonstrating this containment relation. (25) entails that t_{PTS} is a subset of the duration of Esme's being married.

(26) $[\![\text{For 5 days, Esme has been married}]\!]^{c,g} = [\![\text{PRS PERF for 5 days IMPF Esme be married}]\!]^{c,g}$
$= \exists t.\ t = t_c\ \&\ \exists t_{PTS}.\exists t_{LB} \subseteq t_r\ [LB(t_{LB}, t_{PTS})\ \&\ RB(t_{PTS}, t)\ \&\ \mu(t_{PTS}) = 5\text{-days}\ \&\ \exists s[$
$t_{PTS} \subset \tau(s)\ \&\ \text{married}(e,s)]]$

In present perfect sentences, a consequence of this containment relation is that, by extension, the duration of the eventuality must also contain the UT. In other words, it is entailed that the relevant eventuality holds at the UT, resulting in a U-reading.

To visualize this, a configuration that satisfies the truth conditions in (26) is provided in (27). In (26), the state of Esme being married spans both the PTS and, subsequently, the UT.

(27)



4.2.2. E-perfect readings

In contrast with U-perfect readings, we take E-perfect readings to arise from a lower perfective aspect, which we assume is present for both eventive and stative VPs.

Before proceeding, we note that it has been debated whether stative VPs are compatible with the perfective aspect in the first place (De Swart, 1998; Mari and Martin, 2007). Stative VPs, by virtue of being unbounded, have been argued to be incompatible with a 'boundedness requirement' imposed by the perfective (Mari and Martin, 2007). That being said, our treatment of stative VPs here is in line with other work that references the perfect, where E-perfect statives are analyzed as containing the perfective (von Fintel and Iatridou, 2019; Rouillard, 2026). We set this debate aside for the purposes of the current paper. For an alternative approach to stative E-perfects that instead uses a neutral imperfective, see Pancheva (2003).

A semantics for the perfective is given in (28). Reversing the containment relation of the imperfective, the perfective instead expresses that a time *t* contains the duration of an eventuality.

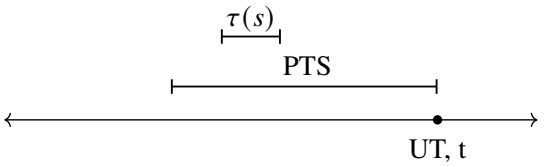
(28) $[\![\text{PRFV}]\!]^g = \lambda P.\lambda t.\exists e\ [\ \tau(e) \subseteq t\ \&\ P(e)\ ]$

The truth conditions of a stative E-perfect are shown in (29). As a result of the temporal relation introduced by the perfective, E-perfect sentences are true when the duration of the eventuality (here, Esme's being married) is contained by the PTS. By virtue of this, present tense E-perfects are compatible with states which have ended prior to the UT, unlike the U-perfect.

(29) $[\![$ Esme has been married $]\!]^{c,g}$ = $[\![$ PRS PERF PRFV Esme be married $]\!]^{c,g}$ = $\exists t.\ t = t_c$ & $\exists t_{PTS}.\exists t_{LB} \subseteq t_r$ [LB(t_{LB}, t_{PTS}) & RB(t_{PTS}, t) & $\exists s[\tau(s) \subseteq t_{PTS}$ & married(e,s)]]

Like before, we display a configuration in (30) that satisfies the truth conditions in (29). Here, however, the state of Esme being married only holds over a subinterval of the PTS. This derives the key difference between the U- and E-perfect in the present tense: while the eventuality necessarily holds at the UT under the U-perfect, this requirement is absent for the E-perfect.

(30)



4.3. Deriving the length implication

Now that we have an analysis of the perfect, we present our theory of domain focus and show how it derives the length implication. In our analysis, focus is on the domain of the quantifier that introduces the LB of the PTS, the contextual domain restriction variable t_r. As an example, the LF for (16) is shown in (31). Note that since we are dealing with a universal reading, IMPF is present in the structure.

(31) [PRS [PERF$_{[t_r]_F}$ [IMPF [Esme be married]]]]

In order to interpret this structure, we assume an alternative semantics for focus (Rooth, 1992). Unlike cases of domain focus with NPIs, however, we do not assume that the alternatives are subdomains of t_r (i.e., subintervals), but merely just different possible times: in other words, we use the default algorithm for generating focal alternatives. This assumption provides a conceptual differentiation between the alternatives grammatically associated with NPIs (subdomain alternatives) and alternatives associated with instances of domain focus on regular quantifiers (domain alternatives). The focus semantic value of the LF in (31) is thus as follows:

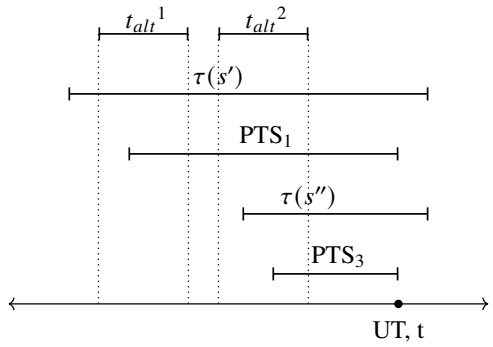
(32) $[\![(31)]\!]^{f,c}$ = { $\exists t : t = t_c$ & $\exists t_{PTS}.\exists t_{LB} \subseteq \boxed{t_{alt}}$ [LB(t_{LB},t_{PTS}) & RB(t_{PTS}, t) & $\exists s[t_{PTS} \subset \tau(s)$ & married′(e,s)]] | $\boxed{t_{alt}} \in D_i$ }

Crucially, these alternatives are partially ordered by entailment (or, informativity). For any two alternatives in the focus semantic value above, they are either semantically equivalent, or one asymmetrically entails the other. Below, we demonstrate this partial order by walking through the three possible cases of comparison: two alternatives with non-overlapping domains, partially overlapping domains, and fully overlapping domains. It will turn out that the most informative alternative is the one with the t_{alt} that is (i) the narrowest and (ii) the furthest back in the past.

4.3.1. Non-overlapping domains

Comparing two alternatives with non-overlapping domains, the alternative containing a t_{alt} that is further back in the past asymmetrically entails the other. Consider ${t_{alt}}^1$ and ${t_{alt}}^2$ in (33) below:

(33)



	ALT^1	ALT^2
s'	✓	✓
s''	✗	✓

Above, the alternative with $t_{alt}{}^1$ (ALT^1) asymetrically entails the alternative with $t_{alt}{}^2$ (ALT^2). This is due to the following logic: first, any PTS that is compatible with $t_{alt}{}^1$ (e.g., PTS_1) is longer than any PTS that is compatible with $t_{alt}{}^2$ (e.g., PTS_3). Second, because of the imperfective aspect in (32), the duration of any eventuality that verifies the truth of ALT^1 (e.g., s') will contain a PTS compatible with ALT^1 (e.g., $\tau(s') \supset \text{PTS}_1$), as well as any shorter PTS compatible with ALT^2 (e.g., $\tau(s') \supset \text{PTS}_3$) since it properly contains both. In other words, when ALT^1 is true, ALT^2 is also true. The reverse does not hold, however: ALT^2 can be true when ALT^1 is false. This is the case for ALT^2-verifying eventualities like s'', which do not last far enough back in the past to overlap with any of the times in $t_{alt}{}^1$.

For an intuitive sense of these entailment relations, consider the following U-perfects.

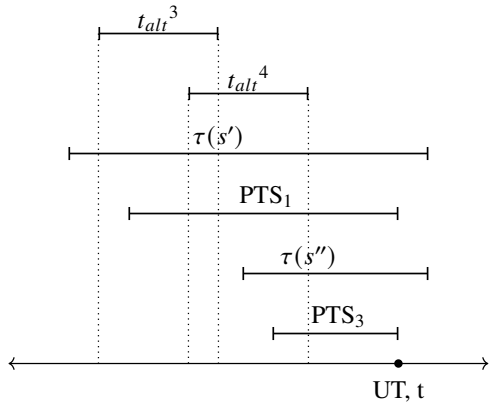
(34) a. Esme has been married ever since 1990.
b. Esme has been married ever since 2000.

When the statement with the longer PTS (34a) is true, the statement with the shorter PTS (34b) is also true. However, (34b) may be true when (34a) is false if Esme got married in, say, 1995.

4.3.2. Partially overlapping domains

Between two alternatives with partially overlapping domains, the alternative containing a t_{alt} that extends further in the past is the more informative one, for the same reasons as non-overlapping domains. Any eventuality that contains a longer PTS will contain a shorter PTS, while an eventuality that contains a shorter PTS may not last long enough to contain the longer PTS. Below is a diagram exemplifying this case, together with a table demonstrating its entailment relations:

(35)

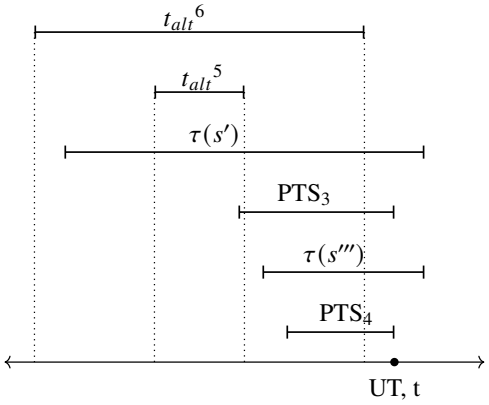


	ALT^3	ALT^4
s'	✓	✓
s''	✗	✓

4.3.3. Fully overlapping domains

Between two alternatives with fully overlapping domains, the alternative containing a t_{alt} that is narrower is the more informative one. Consider ${t_{alt}}^5$ and ${t_{alt}}^6$ below.

(36)



	ALT^5	ALT^6
s'	✓	✓
s''	✗	✓

Above, the alternative with ${t_{alt}}^5$ (ALT^5) asymmetrically entails the alternative with ${t_{alt}}^6$ (ALT^6). ALT^5 entails ALT^6 because any PTS that is compatible with ${t_{alt}}^5$ (e.g., PTS_3) is also compatible with ${t_{alt}}^6$. However, the reverse entailment relation does not hold. This is because it is possible for a PTS that is compatible with ${t_{alt}}^6$ (e.g., PTS_4) to not extend into ${t_{alt}}^5$. In these configurations, it is also not required that the duration of the eventuality (e.g., s''') extend into ${t_{alt}}^5$. Therefore, ALT^5 can be false while ALT^6 is true.[7]

These three cases show us that of all the focus alternatives in (32), the alternative with both the narrowest t_{alt} and the t_{alt} that is furthest in the past (i.e., the alternative compatible with the longest PTS) is the most informative. This holds for any sentence containing a U-perfect where focus is on the domain of the existential quantifier introducing the LB.

4.3.4. Even exhaustification

The last component we use to derive the length implication is a variant of Chierchia's (2006) system of exhaustification. This system will predict that the most informative statement among a contextually-restricted subset of the focal alternatives is asserted. This, as we have shown, will be the alternative with the longest PTS in this subset.

In this system, one of two covert focus-sensitive operators applies at the root of every sentence: E (*even*) or O (*only*). These operators are defined in (37).

(37) a. $[\![E_C]\!] = \lambda p.p \;\&\; \forall q \in C : p \subseteq_c q$ ($p \subseteq_c q$ = p contextually entails q)
b. $[\![O_C]\!] = \lambda p.p \;\&\; \forall q \in C : p \not\subseteq q \rightarrow \neg q$

In (37), each operator bears a variable C. This variable is coindexed with another variable introduced by Rooth's (1992) "squiggle" $\sim$ operator, and contains (due to $\sim$) a contextually restricted subset of the focal alternatives. This subset includes at least (i) the ordinary semantic

[7]Note that this logic only holds if the t_{alt}s of the two alternatives do not share a right boundary. If their t_{alt}s share a right boundary, they are semantically equivalent.

value of the sentence and (ii) one distinct alternative (Rooth, 1992).[8] E entails both its prejacent and that its prejacent contextually entails the other members of C. O entails its prejacent and that all the members of C not entailed by the prejacent are false.

We propose that perfect sentences with narrow focus on the participle are exhaustified by E, rather than O, as in (38).

(38) $[E_C\ [\sim_C\ [\textsc{prs}\ [\textsc{perf}_{[t_r]_F}\ [\textsc{impf}\ [\text{Esme be married}]]]]]]$

In Chierchia (2006), E is chosen over O for alternatives partially ordered by entailment, like the focus alternatives at play here. However, this is derived from the subdomain structure of the alternatives, for which O creates a contradiction. Since we do not utilize subdomain alternatives, we cannot rely on this method of ruling out O. Nevertheless, there are other considerations that may prevent O from applying in our proposed system. First, notice that if O were to apply instead of E in (38), it would be impossible to disambiguate what the correct value of t_r is. Applied to the alternatives in C, all O entails is that the eventuality lasted for no longer than the t_r in the prejacent p. It does not tell us what that t_r is. E, in contrast, allows a hearer to disambiguate the value of t_r as the domain that allows the prejacent p to contextually entail the other members of C. By this logic, O would be ruled out as a Retrievability, or Maxim of Manner, violation (Be unambiguous!) (Grice, 1975; Roberts, 2010). Another possibility is that E arises due to syntactic considerations: in order to syntactically license domain focus, E may need to be present in the structure (cf. Crnič, 2011). We leave open a deeper investigation into how E is licensed in these structures.

Regardless of how it is licensed, E necessitates that p is the most informative alternative among C, as a consequence of it requiring that p contextually entails every alternative in C. Thus, by the logic in Sections 4.3.1–4.3.3, E requires that p is the alternative in C with the longest PTS, and, in turn, the longest runtime for the eventuality. This is how we capture the length implication.

5. Competition between the U-perfect and the simple present

In Section 4, we showed how focus can interact with the meaning of perfect sentences by providing an analysis of U-perfects with focused participles. However, as demonstrated in Section 2, these perfect sentences behave differently from their broad focus counterparts, which do not receive a U-perfect interpretation. To account for why the U-perfect is not available with broad focus, we draw a common thread between the two contexts where U-perfects *are* available: with both durative adverbials like in (1a) and narrow focus on the participle like in (16), the LB of the PTS is (at least partially) specified. This specification of the LB occurs either via the durative adverbial itself or as a consequence of the length implication.

We propose that the reason the U-perfect reading is available in these cases, but not in broad focus cases like (1b), is due to competition with a 'simple present' alternative. This alternative is structurally simpler and is thus preferred, all else being equal. Under our account, this competition unfolds as follows: when the LB is specified to some extent, the U-perfect reading is

[8] By contextually restricting this quantification, we derive the fact that what counts as "long" depends on the world and contextual knowledge of the participants in a given context.

more informative than its simple present competitor, allowing it to surface. In contrast, when the LB is not specified, the U-perfect reading is semantically equivalent to the simple present, and therefore cannot surface. This competition is modeled via the notion of Good-Answerhood from Katzir and Singh (2015), which we show predicts the distribution of U-perfect readings.[9]

5.1. U-perfect with narrow focus versus the simple present

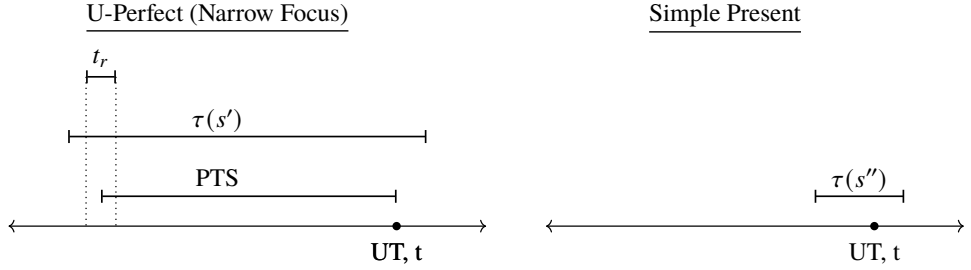
To illustrate our competition proposal, we first compare a case where the U-perfect is licensed (via narrow focus on the participle) to the simple present and show that the former is more informative than the latter. Structures and truth conditions are given for a simple present sentence in (39a) and a U-perfect under narrow focus in (39b).

(39) a. $[\![$Esme is married$]\!] = [\![$PRS IMPF Esme be married$]\!] = \exists t[t{=}t_c \;\&\; \exists s[t \subset \tau(s) \;\&\; \text{married}(e,s)]]$

b. $[\![$Esme has [BEEN]$_F$ married$]\!]^o = [\![\text{PRS PERF}_{[t_r]_F}$ IMPF Esme be married$]\!]^o = \exists t[t{=}t_c \;\&\; \exists t_{PTS}.\exists t_{LB} \subseteq t_r\ [\text{LB}(t_{LB},t_{PTS}) \;\&\; \text{RB}(t_{PTS},t) \;\&\; \exists s[t_{PTS} \subset \tau(s) \;\&\; \text{married}(e,s)]]]$

The narrow focus case in (39b) entails its simple present competitor in (39a) because, as a U-perfect in the present tense, the eventuality it describes necessarily holds at the UT. The simple present does not, however, necessarily entail the U-perfect with narrow focus. This is demonstrated in the diagram in (40): while the duration of the state s'' overlaps with the UT, thus verifying the simple present case, it does not overlap with t_r and thus cannot verify the U-perfect with narrow focus. For the truth conditions of the U-perfect case to be satisfied, a state with a sufficiently long duration to contain the PTS, like s', is required.

(40)



Therefore, the narrow focus U-perfect asymmetrically entails, and is thus more informative than, its simple present counterpart. The same logic applies to any U-perfect with a specified LB.

5.2. A hypothetical U-perfect with broad focus versus the simple present

Now, we compare a case where the U-perfect is not available (under broad focus) to the simple present and demonstrate their semantic equivalence. We depict the structure and truth conditions

[9]By deriving the lack of U-perfect readings in broad focus via a competition-based approach, we add to a pre-existing body of literature which traces semantic properties of the perfect to competition (e.g., Pancheva and Von Stechow, 2004; Schaden, 2009). Our approach differs from these accounts, however, in that the competition outlined here is used to derive the availability of different perfect readings, rather than other perfect-related phenomena such as the present perfect puzzle in English.

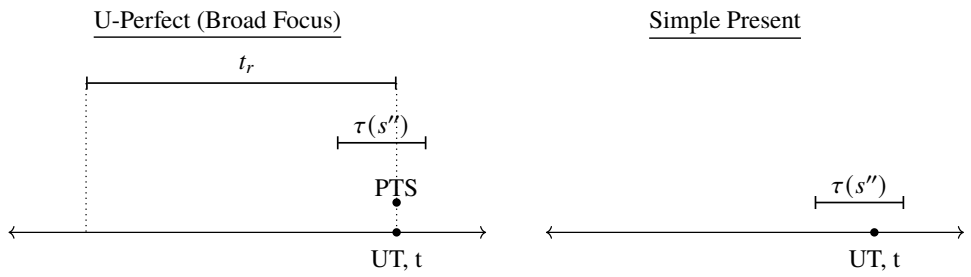
for a hypothetical (but unattested) U-perfect under broad focus in (41b). The simple present example is repeated in (41a) from (39).

(41) a. $[\![$Esme is married$]\!]$ = $[\![$PRS IMPF Esme be married$]\!]$ = $\exists t[t{=}t_c \ \& \ \exists s[t \subset \tau(s) \ \&$ married(e,s)]]

b. $[\![$Esme has been married (U)$]\!]$ = $[\![$PRS PERF IMPF Esme be married$]\!]$ = $\exists t[t{=}t_c \ \& \ \exists t_{PTS}.\exists t_{LB} \subseteq t_r \ [LB(t_{LB},t_{PTS}) \ \& \ RB(t_{PTS},t) \ \& \ \exists s[t_{PTS} \subset \tau(s) \ \&$ married(e,s)]]]

Similarly to the narrow focus example discussed before, the broad focus case in (41b) entails its simple present competitor in (41a). Unlike before, however, the simple present also entails the broad focus case. This bidirectional entailment follows from a crucial assumption we make: that in broad focus sentences, t_r includes the UT. This is in order to restrict the PTS as minimally as possible when there is no evidence to the contrary. In light of this, a configuration in which both the LB and RB of the PTS are equivalent to the UT is possible. This configuration, displayed in (42), would thus make the PTS itself equivalent to the UT. Therefore, any eventuality whose duration overlaps with the UT will verify both the simple present and the hypothetical broad focus U-perfect, as shown by $\tau(s'')$ in (42).

(42)



In sum, the simple present and broad focus U-perfect entail each other, and are thus semantically equivalent. Given their semantic equivalence, we propose that the structurally simpler competitor is preferred (Katzir, 2007; Katzir and Singh, 2015), thus ruling out the broad focus U-perfect in favor of the simple present.[10]

5.3. Modeling the competition

To model this competition, we appeal to the notion of Good-Answerhood from Katzir and Singh (2015), which prevents an assertion from being needlessly more complex than its alternatives. Note that, despite its name, this condition is intended to apply to all assertions, with assertions that fail to meet its criteria rendered as infelicitous.

(43) **Good-Answerhood**: A good answer ϕ given a question Q is a true answer that is relevant to Q with no simpler alternative ψ ($\psi \prec \phi$) s.t. ψ is true and relevant to Q. (Katzir and Singh, 2015)

[10] In Katzir (2007), structural simplicity depends on whether a form can be derived from a simplifying operation on a constituent in the structure (e.g., deletion, contraction). In our case, a simple present like (41a) can be derived from a U perfect like (41b) via deletion of PERF.

Under this principle, an alternative answer ψ is deemed simpler than an answer ϕ ($\psi \prec \phi$) based on asymmetric entailment ($\subseteq$) and structural simplicity ($\lesssim$), defined in (44a) and (44b) respectively. Put differently, ϕ only meets the condition in (43) if there is no alternative answer ψ that is equally informative but structurally simpler.

(44) a. $\psi \prec \phi = \psi \preceq \phi$ AND $\phi \not\preceq \psi$
b. $\psi \preceq \phi = [\![\psi]\!] \subseteq [\![\phi]\!]$ AND $\psi \lesssim \phi$

This condition is what leads to the unavailability of the U-perfect reading under broad focus: compared to a broad-focused U-perfect, a simple present competitor is structurally simpler and equally informative. Thus, the U-perfect is ruled out. On the other hand, when the LB is more specified, like in the narrow focus cases or in the presence of a durative adverbial, the U-perfect is rendered more informative than the simple present and meets the condition.

6. Conclusion

The current proposal advances our understanding of the perfect aspect by capturing the distribution of U-perfect readings via formal competition. First, it shows that the U-perfect surfaces only when it is more informative than a corresponding simple present competitor. To that end, we have shown that a U-perfect can be rendered more informative than its simple present counterpart either via a temporal adverbial or via narrow focus on the participle. Such an analysis makes a number of predictions for other tense and aspect phenomena. Can other temporal phenomena be better understood with reference to competition among formal alternatives? Second, we have motivated a more-articulated structure for the PTS, where the LB is explicitly specified. In doing so, we have argued that the temporal quantification over the LB of the perfect can bear domain focus. Given that domain focus has been proposed for non-temporal NPIs, temporal NPIs, and non-temporal quantifiers, the fact that a temporal quantifier can likewise exhibit domain focus fills a gap in its attested distribution.

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