On focus and the perfect aspect¹

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1 Overview

A well-known property of the perfect aspect is that it gives rise to different readings.

- UNIVERSAL (U): entails that the eventuality holds at the RT introduced by tense (1a).
- EXPERIENTIAL (E): does not entail that the eventuality holds at the RT introduced by tense (1b).
- (1) a. For 5 years, Esme has been married. (U) \models Esme is married
 - b. Esme has been married. (E) $\not\vDash$ Esme is married

It has previously been claimed that for a U-perfect reading to arise, the presence of an overt adverbial is necessary (Iatridou et al., 2001).

Novel observation 1: U-perfect readings obtain *without* an overt adverbial 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 $[BEEN]_F$ married. $(U) \models Esme$ is married.

This observation leads to the following questions:

- How does focus interact with the perfect aspect?
- What does this tell us about how the availability of different perfect readings are constrained, and what unifies the overt adverbial (1a) with the focus (2) cases?

Novel observation 2: Focused sentences like (2) imply that the eventuality has held for a long interval (**length implication**).

- We derive this implication as a case of **domain focus** (Shank, 2004; Chierchia, 2013; Iatridou & Zeijlstra, 2021; Jeong & Roelofsen, 2023), where the domain in question is of an existential quantifier introducing **the left boundary** (**LB**) of the perfect time span (PTS).
- **Domain Focus:** The domain of a quantifier in a sentence bears the focus feature F.

Based on this, we propose that perfect readings are constrained by competition with the simple present:

• U-perfect readings only surface in sentences with focus (2) and adverbs (1a) because, by <u>specifying</u> the LB of the PTS, the U-perfect is rendered more informative than its simple present counterpart.

¹We are grateful to Roumyana Pancheva, Maziar Toosarvandani, Jess Law, Aidan Katson, and Hedde Zeijlstra for helpful comments and discussions, as well as the attendees of UC Berkeley's Syntax & Semantics Circle for their feedback.

• In broad focus cases, when there is no overt adverbial, the U-perfect is ruled out because it is semantically equivalent to the simple present (1b).

Roadmap of sections:

- §2 Adverbs and readings of the perfect
- §3 Focus licenses the U-perfect
- §4 The length implication as domain focus
- §5 Competition between the U-perfect and the simple present
- §6 Conclusion

2 Adverbs and readings of the perfect

There are at least four readings of the perfect attested: experiential, universal, resultative, and "hot news" (Comrie, 1976; McCawley, 1981).

In the current talk, we will be focusing on the U- vs. E-perfect distinction.

The distinction between U- vs. E-perfect has been shown to be semantic in nature (3).

(3) Sam has been in Boston since 7:00. (E, U)

(Mittwoch, 1988)

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These readings have been shown to be dependent on the presence of an overt adverbial:

- (4) **Adverb Generalization:** U-perfect readings only arise in the presence of certain overt adverbs (Iatridou et al., 2001).
 - Adverbials that yield a **U-reading:** always, ever/at least since, fronted for
 - Adverbials that yield an **E-reading:** before, n times

Below, we motivate this empirical generalization for stative and eventive predicates.

2.1 Statives

For stative predicates, both E-perfect (5a) and U-perfect (5b) readings are available.

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

In sentences which contain an overt adverbial (e.g., *ever since* in (5b)), the universal inference is entailed (6).

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

However, when an adverbial is not overtly present like in (7), the universal inference is not entailed (Iatridou et al., 2001).

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

2.2 Eventives

For eventive verbs, there is a slight complication: universal readings only arise with progressive morphology (Iatridou et al., 2001; Pancheva, 2003).

- Examples like (8) have motivated prior accounts to trace the U- vs. E-distinction to viewpoint aspect (Iatridou et al., 2001; Pancheva, 2003), a move that we adopt here.
- (8) a. Lola has climbed a mountain for two months. (E, #U)
 - b. Lola has been climbing a mountain for two months. (#E, U)

For eventive verbs, like statives, it is also the case that without an overt adverbial, the universal inference is cancelable:

- (9) 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, universal readings are available with both stative predicates and eventive verbs with progressive morphology. However, for the universal inference to be entailed, an overt adverb seems to be required.

2.3 Prior accounts of the Adverb Generalization

Iatridou et al. (2001) account for the distribution of perfect readings across adverbials by proposing that:

- The perfect aspect introduces an interval known as the **Perfect Time Span (PTS)**, whose right boundary (RB) is the RT from tense, in line with other Extended Now accounts (see McCoard, 1978; Dowty, 1979).²
- For any sentence with the perfect aspect, a "perfect-level" (i.e., PTS modifying) adverb is present, either overtly or covertly.
- For the U-perfect reading to obtain, the perfect-level adverbial must be durative.
 - **Durative** adverbials: the eventuality holds of every subinterval of the PTS (e.g., ever since).
- In sentences without an overt adverb (e.g., "Esme has been married"), a covert perfect-level adverbial appears instead.
- These covert adverbials are always inclusive.
 - **Inclusive** adverbials: the eventuality holds for a proper subset of the PTS (e.g., before).
- Therefore, when there is no overt adverb present, a covert inclusive adverb forces an E-reading.

While this approach successfully captures the Adverb Generalization and the data which motivated it, we provide novel data which shows that the distribution of perfect readings is more nuanced.

²We focus on the role of adverbs in this section, but Iatridou et al. (2001) also show how viewpoint aspect contributes to the U- vs. E-readings. For perfective eventive verbs, the eventuality is bounded, and thus incompatible with inclusive adverbs, leading them to never have a U-reading.

3 Focus licenses the U-perfect

A universal inference arises without an adverb when there is focus on the perfect participle (2).

- (2) A: Esme recently got married. / Esme is going to be married on Sunday.
 - B: Wait, Esme has $[BEEN]_F$ married. $(U) \models Esme$ is married.

We present **three pieces of evidence** below that this inference is an entailment in these sentences, i.e. that such sentences are U-perfects:

First, the universal inference is not cancelable with narrow focus (10a), unlike broad focus (10b).

- (10) a. A: Sadie is sick right now.
 - B: #Huh? Sadie has [BEEN]_F sick, but she's not anymore.
 - b. A: How is Sadie?
 - B: Well, Sadie has been sick, but she's not anymore.

(\sim Iatridou et al., 2001)

Second, predicates that denote permanent properties are normally infelicitous when they appear under the perfect without an overt adverbial (11).

(11) #Bess has been dead.

 $(\sim Klein, 1992)$

- The experiential reading implies that it's possible for the property to not hold at the UT.
- This contradicts the fact that these properties are permanent.

With focus on the participle, this infelicity is ameliorated, indicating the lack of an experiential reading (12).

- (12) A: I heard Bess is going to die soon.
 - B: Huh? Bess has [BEEN]_F dead. (U)

Third, this phenomenon only occurs with statives and progressive eventives.

Given that universal readings only arise with statives and progressives, this distribution is to be expected if these sentences are U-perfects.

(13) a. Copular predicate:

- A: Lola is about to be famous.
- B: Huh? Lola has [BEEN]_F famous.

b. Eventive verb, progressive:

- A: Colleen just started singing.
- B: Huh? Colleen has [BEEN]_F singing.

c. Stative verb:

- A: Louis knows the gossip now.
- B: Huh? Louis has [KNOWN]_F the gossip.

d. Eventive verb, non-progressive:

- A: Ursula is going to run soon.
- B: #Huh? Ursula has [RUN]_F.

These considerations lead to the following questions:

- How does the interaction between focus and the semantics of the perfect lead to a U-perfect reading?
- Why do the same sentences under broad focus not have a U-perfect reading?

While an analysis that utilizes covert adverbials is able to account for the broad focus cases, in order to capture the narrow focus cases, it would be necessary to ensure that the inclusive adverb is not present under narrow focus.

The account we present here does not require a covert adverbial, and thus does not require any stipulations about how this adverb interacts with focus.

4 The length implication as domain focus

The approach we take to understand the role of focus in these sentences is by analyzing the length implication.

(14) **Length Implication:** In a perfect sentence describing an eventuality *e* with a stative predicate or progressive verb, when there is focus on the perfect participle, it is implied that *e* has held for a long interval.

We derive the length implication in the following way:

- We analyze this phenomenon as an instance of domain focus (Shank, 2004; Chierchia, 2013; Iatridou & Zeijlstra, 2021; Jeong & Roelofsen, 2023).
- We adopt and extend the Extended Now (XN) theory of the perfect (e.g., McCoard, 1978; Dowty, 1979; Iatridou et al., 2001; etc.): the perfect introduces a PTS where both the RB and the LB are specified.
- Under our proposal, focus is on the domain of the existential quantifier introducing the LB, creating alternatives with distinct PTS lengths.
- We adopt a variant of Chierchia's (2006) theory of exhaustification, which will predict that the maximally informative alternative, the LB furthest back in the past, will be chosen.

4.1 Analogy to domain focus

Domain focus has been used to analyze the domain widening behavior of NPIs (e.g., Chierchia, 2013).

- (15) A_1 : Are you making french fries tonight?
 - B₁: No, I don't have potatoes.
 - A₂: Oh, I see. Could I borrow just a couple of potatoes to fry myself?
 - B_2 : Sorry, I don't have [ANY]_F potatoes. (\sim Kadmon & Landman, 1993)

The domain of *ANY potatoes* in B_2 , which includes all pluralities of potatoes, is focused in order to contrast with the smaller domain of *potatoes* in B_1 , which only includes large pluralities of potatoes (i.e., enough to make french fries).

Domain focus has also been shown for non-NPI expressions (Shank, 2004):

- (16) A: I hear that the school dance was a success.
 - B: Yeah, everybody had a good time.
 - A: I hope the chaperones were able to enjoy themselves a bit, too.
 - B: Oh, don't worry! [EVERY] body had a good time.

 $(\sim Shank, 2004)$

As a whole, domain focus is attested for determiner NPIs (e.g., Chierchia, 2013) and regular determiners (Shank, 2004), as well as temporal NPIs (Chierchia, 2013; Iatridou & Zeijlstra, 2021; Staniszewski, 2020).

Given this, one would expect domain focus on regular temporal expressions, in addition to temporal NPIs.³

4.2 A more elaborate semantics of the perfect

To derive the length implication, we first propose a modified XN analysis of the perfect.

Because the U-perfect reading can surface in the absence of an adverbial, we do not assume that a covert adverb is present in these sentences.

Under the XN theory (e.g., McCoard, 1978; Dowty, 1979; Iatridou et al., 2001; Pancheva, 2003; etc.), the perfect introduces a PTS whose RB is the RT contributed by tense (i.e., the UT, for present perfects).

(17) a. RB(t, t') := t' is a final subinterval of t b. $[perf]^g = \lambda p_{it} \cdot \lambda t \cdot \exists t_{PTS} \cdot [RB(t_{PTS}, t) \& p(t)]$

4.2.1 A left boundary for the perfect

In addition to the RB, we propose that the perfect introduces an LB. This LB comes with a contextual domain restriction variable over times t_r , as has been proposed for temporal NPIs (cf. Iatridou & Zeijlstra, 2021; Staniszewski, 2020).

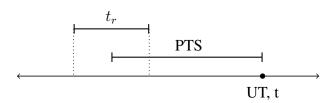
(18) a. LB(t', t) := t' is an initial subinterval of t b. $[PERF]^g = \lambda p_{it} \cdot \lambda t \cdot \exists t_{PTS} \cdot \exists t_{LB} \subseteq t_r [LB(t_{LB}, t_{PTS}) \& RB(t_{PTS}, t) \& p(t)]$

An example t_r is visualized in the diagram below.

- (i) Everyone from our class came to the show. In fact, [EVERY] Fone came to the show.
- (ii) Sadie is sick. In fact, Sadie has [BEEN]_F sick.

³Another motivating factor for a domain focus analysis comes from regular determiners, where domain focus is used for scalar implicature cancellation (Shank, 2004). In this way, examples like (i) parallel our cases like in (ii).

(19)



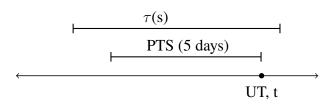
4.2.2 U-readings

The U-/E-readings arise from viewpoint aspect when it interacts with the PTS (e.g., Iatridou et al., 2001; Pancheva, 2003).

The U-reading arises when an imperfective viewpoint aspect scopes below the perfect.

- (20) $\llbracket \text{IMPF} \rrbracket^g = \lambda P. \lambda t. \exists e [t \subset \tau(e) \& P(e)]$
- (21) **U-perfect**: $[\![$ For five days, Esme has been married $]\![]^{c,g} = [\![\![$ PRS PERF for five days IMPF Esme be married $]\![]^{c,g} = \exists t. \ t = t_c \& \exists t_{PTS}. \exists t_{LB} \subseteq t_r \ [LB(t_{LB}, t_{PTS}) \& RB(t_{PTS}, t) \& \mu(t_{PTS}) = 5\text{-days} \& \exists s[t_{PTS} \subset \tau(s) \& \text{married}(e,s)]]$

(22)

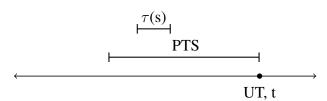


4.2.3 E-readings

For eventive verbs, the E-reading is thought to arise from a perfective aspect.

We treat E-readings with statives as stemming from a lower perfective aspect, parallel to eventives.

- It has been long debated whether statives are compatible with the perfective aspect (De Swart, 1998; Mari & Martin, 2007; Bary, 2009; etc.).
- Our treatment of statives here is in line with other work on statives in similar configurations (Iatridou et al., 2001; Iatridou & von Fintel, 2019; Rouillard, 2024).
- For an alternative approach to stative E-perfects that uses a neutral imperfective, see Pancheva (2003).
- (23) $[PRFV]^g = \lambda P.\lambda t. \exists e [\tau(e) \subseteq t \& P(e)]$
- (24) **E-perfect**: [Esme has been married] c,g = [PRS PERF PRFV Esme be married] c,g = $\exists t. \ t = t_c \& \exists t_{PTS}. \exists t_{LB} \subseteq t_r \ [LB(t_{LB}, t_{PTS}) \& RB(t_{PTS}, t) \& \exists s[\tau(s) \subseteq t_{PTS} \& married(e,s)]]$



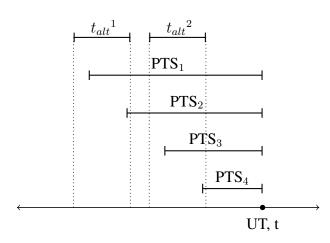
4.3 Deriving the length implication

In our analysis, focus is on the domain of the quantifier that introduces the left boundary (i.e., t_r).

- We assume an alternative semantics for focus (Rooth, 1992)
- Unlike cases of domain focus with NPIs (Chierchia, 2013; Iatridou & Zeijlstra, 2021; Jeong & Roelofsen, 2023), however, we do not assume the alternatives are subdomains of t_r (subintervals), but merely just different possible times.
 - This follows from a basic alternative semantics for focus and does not require new stipulations.
 - These are not alternatives that are grammatically associated with the perfect, but are instead alternatives that arise from regular focus composition.
- [26) [Esme has [BEEN]_F married]] foc = [PRS PERF[t_r]_F IMPF Esme be married]] foc = { $\exists t: t=t_c \& \exists t_{PTS}. \exists t_{LB} \subseteq [t_{alt}] [LB(t_{LB},t_{PTS}) \& RB(t_{PTS},t) \& \exists s[t_{PTS} \subset \tau(s) \& married(e,s)]] | [t_{alt}] \in D_i$ }

An example of two such alternatives are below:

(27)



These alternatives are in a partial order of informativeness.

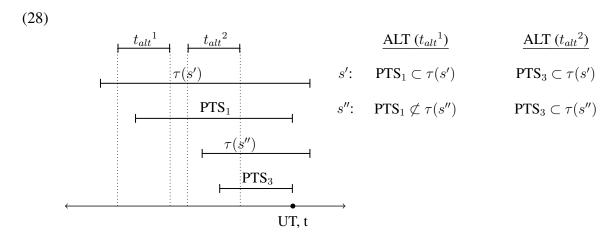
4.3.1 Non-overlapping domains

The alternative containing a t_{alt} that is further back in the past is the more informative one, as in (28).

Consider the alternatives t_{alt}^{1} and t_{alt}^{2} in the diagram below.

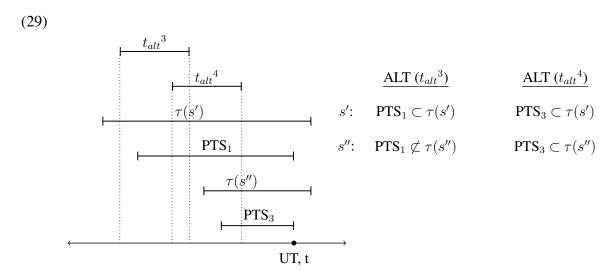
The alternative with t_{alt}^{1} entails the alternative with t_{alt}^{2} , but not the reverse.

- Any PTS that is compatible with t_{alt}^1 (e.g., PTS₁) is longer than any PTS that is compatible with t_{alt}^2 (e.g., PTS₃).
- Because of the imperfective aspect in (26), the duration of the eventuality will contain the PTS, and likewise any shorter PTS (PTS₃ \subset PTS₁ \subset $\tau(s')$).
- Any eventuality that verifies an alternative with a longer PTS (PTS₁) will therefore verify an alternative with a shorter PTS (PTS₃), since it properly contains both.
- The reverse does not hold, however, if the alternative with t_{alt}^2 is true, that does not necessarily mean that the eventuality lasted far enough back in the past to overlap with any of the times in t_{alt}^1 .
- We can see these entailment relations by considering the following sentences: "Esme has been married for 5 years" and "Esme has been married for 4 years."



4.3.2 Partially overlapping domains

The alternative containing a t_{alt} that extends further in the past is the more informative one, for the same reason as non-overlapping domains.



4.3.3 Fully overlapping domains

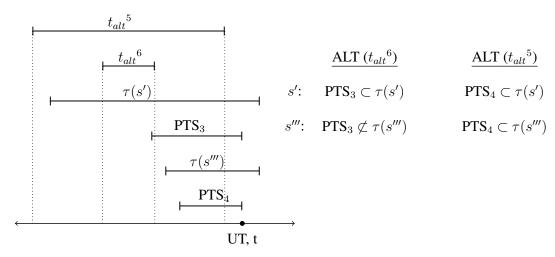
The alternative containing a t_{alt} that is narrower is the more informative one.

Consider the alternative domains t_{alt}^{5} and t_{alt}^{6} in the diagram in (30).

The focus alternative with $t_{alt}^{\ 6}$ entails the alternative with $t_{alt}^{\ 5}$, but not the reverse.

- Any PTS that is compatible with $t_{alt}^{\ 6}$ is also compatible with $t_{alt}^{\ 5}$.
- However, it is possible for the LB of a PTS that is compatible with t_{alt}^5 (e.g., PTS₄) to be closer to the UT than any PTS that is compatible with t_{alt}^6 .
- In these configurations, it is not required that the duration of the eventuality extend into $t_{alt}{}^6$, and therefore the alternative containing $t_{alt}{}^6$ can be false when the one containing $t_{alt}{}^5$ is true.

(30)



Therefore, the focus alternative with the narrowest t_{alt} and the t_{alt} furthest in the past is the most informative.

4.3.4 Exhaustification

We adopt a variant of Chierchia's (2006) system of exhaustification:

- There are two covert, focus-sensitive operators: $O(\sim \text{ only})$ and $E(\sim \text{ even})$.
- One of these operators necessarily applies for every sentence.
- The operator that is chosen depends on the structure of the alternatives.
- For our case, because the alternatives are partially ordered, E is chosen (31).

(31)
$$\llbracket E_{ALT} \rrbracket = \lambda p.p \& \forall q \in ALT : p \subseteq_c q$$
 $(p \subseteq_c q = p \text{ contextually entails } q)$

- *E* requires that *p* is the most informative, as a consequence of *p* contextually entailing every alternative *q*.
- Thus, for our focused perfects, E requires the actual t_r (in p) to correspond to the alternative that has the LB furthest in the past (i.e., the longest PTS).⁴

⁴What counts as the "longest PTS" for any given sentence? Since the focal alternatives are determined by the context, this will depend on the meaning of the sentence, as well as contextual and world knowledge.

5 Competition between the U-perfect and the simple present

Now that we have analyzed the role of focus in these sentences, we can tackle our two guiding questions, repeated here:

- How does the interaction between focus and the semantics of the perfect lead to a U-perfect reading?
- Why do the same sentences under broad focus not have a U-perfect reading?

So far, we've seen U-perfect readings arise with adverbials (1a) and with narrow focus on the participle (2).

The common thread between these two cases is that in both, the LB of the PTS is specified to some extent, either explicitly by an adverb or via the length implication.

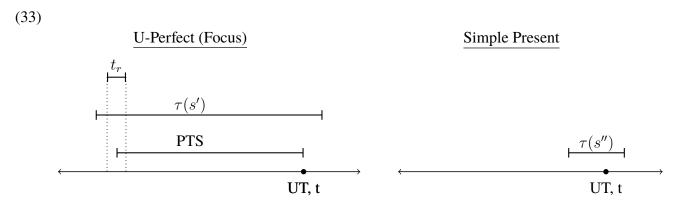
We thus propose that the reason the U-reading is available in these cases, but not in broad focus (1b), is due to competition with a 'simple present' alternative.

- When the LB is specified to some extent, the U-perfect reading is more informative than its simple present competitor, allowing it to surface (1a), (2).
- When the LB is not specified, the U-perfect reading is semantically equivalent to the simple present competitor, and the U-reading cannot surface (1b).
- This competition-based approach adds to an existing literature that traces semantic properties of the perfect to competition (e.g., Pancheva & Von Stechow, 2004; Schaden, 2009).
 - Our approach differs from these accounts in that the competition outlined here is used to derive
 the availability of different perfect readings, rather than other perfect-related phenomena (e.g.,
 the present perfect puzzle in English).

5.1 U-perfect with narrow focus vs. simple present

To illustrate this, we first compare a case where the U-perfect is licensed, with focus on *been*, to the simple present (32).

- (32) 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]_F married]] $^o = [PRS PERF_{[t_r]_F} IMPF Esme be married]]^o =$
 - $\exists t[t=t_c \& \exists t_{PTS}. \exists t_{LB} \subseteq t_r [LB(t_{LB},t_{PTS}) \& RB(t_{PTS},t) \& \exists s[t_{PTS} \subset \tau(s) \& married(e,s)]]]$
 - The narrow focus case "Esme has [BEEN]_F married" entails its simple present competitor "Esme is married", since, as a U-perfect, the eventuality it describes necessarily holds at the UT.
 - The simple present does not, however, necessarily entail the focus case, as demonstrated in the diagram in (33):
 - $\tau(s'')$ holds at the UT, verifying the simple present case, but does not overlap with t_r .

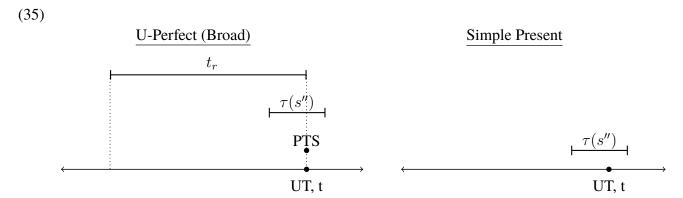


The same logic holds for any U-perfect case with a specified LB.

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

Next, we compare a case where the U-perfect is not available, with broad focus, to the simple present (34).

- (34) 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] = $\exists t[t=t_c \& \exists t_{PTS}. \exists t_{LB} \subseteq t_r [LB(t_{LB},t_{PTS}) \& RB(t_{PTS},t) \& \exists s[t_{PTS} \subset \tau(s) \& married(e,s)]]]$
 - The broad focus case "[Esme has been married]_F" entails its simple present competitor "Esme is married", like before.
 - Unlike before, however, the simple present also entails the broad focus case.
 - Crucially, we assume that t_r includes the UT in order to restrict the domain 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 would make the PTS itself equivalent to the UT.
 - Any eventuality that holds at the UT will thus verify both the simple present and the broad focus sentences, as shown by $\tau(s'')$ in (35).



Given that the broad focus case is semantically equivalent to the simple present, we propose that the morphologically simpler competitor is preferred, thus ruling out the U-perfect in favor of the simple present.⁵

⁵In 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).

5.3 Modeling the competition

To model this competition, we appeal to Katzir & Singh (2015)'s notion of **good-answerhood** in (36), a principle that is intended to apply to all assertions.

(36) **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 & Singh, 2015)

 $\psi \prec \phi$ is defined as asymmetric (i) entailment (\subseteq) and (ii) structural simplicity (\lesssim):

(37) a.
$$\psi \prec \phi = \psi \preceq \phi \text{ AND } \phi \not\preceq \psi$$

b. $\psi \preceq \phi = \llbracket \psi \rrbracket \subseteq \llbracket \phi \rrbracket \text{ AND } \psi \lesssim \phi$

- Compared to a broad focus U-perfect, a simple present competitor is a structurally simpler and equally informative statement.
- When the LB is more specified, like in the narrow focus cases or in the presence of an adverbial, the U-perfect is more informative than the simple present and can serve as a "good answer".

6 Conclusion

In sum, the current proposal advances our understanding of the perfect aspect by:

- Capturing the distribution of U-perfect readings such that it does not rely on the presence or absence of adverbials, but instead stems from formal competition.
- Motivating a more-articulated structure for the PTS, where the LB is explicitly specified.
- Showing that the perfect can bear domain focus, similar to temporal NPIs and non-temporal quantifiers.

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