

## On the Present Perfect Puzzle

A semantics for the PERFECT is proposed, which accounts for the present perfect puzzle in its cross-linguistic manifestations.

**The present perfect puzzle.** In English, the present perfect, unlike other perfects, cannot be modified by so-called ‘positional’ adverbials e.g., *yesterday*, *on Monday*, *at 10 o’clock* (see (1)) (Comrie 1976, Klein 1992, 1994, a.o.). The definiteness of the adverbials (as in Klein 1994, Giorgi and Pianesi 1998) cannot be the relevant factor, as the present perfect allows e.g., *today*, *this week*. Reichenbach 1947 addresses the unacceptability of (1a) by positing that in a perfect, the adverbial cannot modify the event time (E), only the reference time (R), which, in a present perfect, coincides with the moment of speech and thus precludes the positional adverbials. A similar account is proposed by Dowty 1979, for whom positional adverbials can only modify R or an Extended Now (XN) interval – an interval including E and having R as a final subinterval. Both these accounts run into problems with the ambiguity of non-present tense perfects (e.g., (2)), as the former can only capture one reading (2a), whereas the latter requires R in (2b) to be included in *Monday*. Allowing adverbial modification of E for (2b) (McCawley 1971, Hornstein 1990, Giorgi and Pianesi 1998, a.o.), recreates the present perfect puzzle. To complicate matters, the puzzle does not manifest itself in languages such as German, Dutch, Icelandic, or Italian (Giorgi and Pianesi 1998, Musan 2001, a.o.), where positional adverbials are accepted in the present perfect (see (3)). Notably, the perfect in these languages does not have the meaning of PAST (Giorgi and Pianesi 1998, Musan 2001) (see (4)). Another approach has been to posit that a perfect morpho-syntax can be structurally ambiguous between a relative PERFECT and a relative PAST, with only the latter structure allowing modification by positional adverbials (Binnick 1991, von Stechow 2002). The PERFECT would have an XN semantics (as in McCoard 1978, Dowty 1979, Iatridou et al. 2001, a.o.); whereas the relative PAST would yield  $E < R$ . In English-type languages then, only past, future, and non-finite perfects would be structurally ambiguous, whereas in German and the languages like it all perfects would be. While capturing the facts, this proposal still does not explain why there should be this particular cross-linguistic difference – if the non-ambiguity of the English-type present perfect is due to the fact that a relative PAST embedded under a PRESENT is semantically equivalent to an absolute PAST, then the structural ambiguity of the German-type present perfect would be a mystery. The identical morpho-syntactic expression of both PERFECT and relative PAST in the different languages (and also in languages with synthetic perfects, e.g., Latin, Turkish), is also unexplained.

**The proposal.** We posit that the semantic contribution of PERFECT in English is to locate an eventuality in an interval, the Perfect Time Span (PTS), which may extend back from the reference time (see (5)). We assume a tense-aspect architecture and interpretations as in (6) (cf. Iatridou et al. 2001 a.o.) and meanings for the relevant adverbials as in (7) (cf. Pratt and Francez 2001, von Stechow 2002, a.o.). Two structures could in principle be available for a present perfect modified by a positional adverbial – the adverbial could modify the tense time (as in (8a)) or the PTS (as in (8b)). Modification of the  $vP$  is not possible for type reasons. (8a) is inconsistent because  $t_c$  cannot be in yesterday<sup>c</sup>. By implicature,  $t < t_c$  or  $t_c \not\subset t$  in (8b) is interpreted as  $t_c \not\subset t$ , because if  $t < t_c$ , PAST would have been used, rather than the PERFECT. (8b) is thus also unacceptable as  $t_c$  cannot be in yesterday<sup>c</sup>. In contrast, both LFs for a past perfect (see (9)) are well-formed. (9a) generates a reading where the dancing event is prior to or possibly included in yesterday<sup>c</sup>; (9b) is responsible for the reading where the dancing happened yesterday<sup>c</sup>. For German-type languages, which allow positional adverbials in present perfects, we assume a slightly weaker meaning for the perfect: no part of the PTS may be after the local evaluation time (see (10)) (cf. Musan 2001 for German). In a present perfect, adverbial modification of the reference time will be precluded, just as in the case of the English (8a). As predicted, the relevant interpretation is not available in (3). Modification of the PTS would yield a consistent interpretation, unlike the case of English (8b), because the weaker semantics would allow the PTS to overlap with, but not properly include, the reference time (see (11)).

- (1.) a. \*Alicia has danced on Monday/yesterday.  
b. Alicia {will have/had} danced on Monday/yesterday.  
c. Alicia must have danced on Monday/yesterday.
- (2.) Alicia had danced on Monday.  
a. = On Monday, Alicia had already danced.  
b. = At a past time R, Alicia had already danced and her dancing was on Monday.
- (3.) Hans ist gestern um zehn weggegangen. (German, Musan 2001)  
Hans is yesterday at 10 left  
Lit. 'Hans has left yesterday at 10.'  
≠ Yesterday at 10, Hans had already left.  
= Yesterday at 10, Hans' leaving took place.
- (4.) Hans ist jetzt weggegangen. (German, Musan 2001)  
Hans is now left  
'Hans has now left.'
- (5.)  $\llbracket \text{PERFECT} \rrbracket = \lambda p \in D_{it}. \lambda i \in D_i. \exists i' \in D_i [(i' < i \text{ or } i \subset i') \ \& \ p(i)]$  English-type  
where  $i \subset i'$  iff  $i$  is a final subinterval of  $i'$
- (6.)  $\llbracket \text{TP Tense} [\text{PerfP Perfect} [\text{AspP Viewpoint-Aspect} [\text{vP Aktionsart} ]]] \rrbracket$   
a. Tenses:  
Let  $c$  be the context of the utterance with  $t_c$  the speech time.  $g$  is a variable assignment.  
 $\llbracket \text{PRESENT} \rrbracket^{g,c}$  is the speech time  $t_c$ .  
 $\llbracket \text{PAST}_i \rrbracket^{g,c}$  is defined only if  $g(i) < t_c$ . If defined,  $\llbracket \text{PAST}_i \rrbracket^{g,c} = g(i)$ .  
b. Viewpoint aspects:  
 $\llbracket \text{UNBOUNDED} \rrbracket = \lambda P \in D_{vt}. \lambda i \in D_i. \exists e \in D_v [i \subseteq \tau(e) \ \& \ P(e)]$   
 $\llbracket \text{BOUNDED} \rrbracket = \lambda P \in D_{vt}. \lambda i \in D_i. \exists e \in D_v [\tau(e) \subset i \ \& \ P(e)]$   
c.  $\llbracket \text{vP} \rrbracket = \lambda e \in D_v. P(e)$
- (7.) a.  $\llbracket \text{yesterday}_{\text{Adv}} \rrbracket = \llbracket \text{ON yesterday}_{\text{NP}} \rrbracket^C = \lambda p \in D_{it}. \lambda t \in D_i. t \subseteq \text{yesterday}^c \ \& \ p(t)$   
 $\llbracket \text{on Monday} \rrbracket^C = \lambda p \in D_{it}. \lambda t \in D_i. t \subseteq \text{Monday}^c \ \& \ p(t)$   
b. cf.  $\llbracket \text{on a Monday} \rrbracket = \lambda p \in D_{it}. \lambda t \in D_i. \exists i \in D_i [\text{Monday}(i) \ \& \ i \subseteq t \ \& \ p(i)]$
- (8.) a.  $\llbracket \text{TP PRESENT yesterday} [\text{PerfP PERFECT} [\text{AspP PERFECTIVE} [\text{vP Alicia dance}]]] \rrbracket =$   
 $= \exists t [(t < t_c \text{ or } t_c \subset t) \ \& \ t_c \subseteq \text{yesterday}^c \ \& \ \exists e [\tau(e) \subset t \ \& \ e \text{ is a dancing of Alicia}]]$   
b.  $\llbracket \text{TP PRESENT} [\text{PerfP PERFECT yesterday} [\text{AspP PERFECTIVE} [\text{vP Alicia dance}]]] \rrbracket =$   
 $= \exists t [(t < t_c \text{ or } t_c \subset t) \ \& \ t \subseteq \text{yesterday}^c \ \& \ \exists e [\tau(e) \subset t \ \& \ e \text{ is a dancing of Alicia}]]$
- (9.) a.  $\llbracket \text{TP PAST}_i \text{ yesterday} [\text{PerfP PERFECT} [\text{AspP PERFECTIVE} [\text{vP Alicia dance}]]] \rrbracket =$   
 $= \exists t [(t < \text{PAST}_i \text{ or } \text{PAST}_i \subset t) \ \& \ \text{PAST}_i \subseteq \text{yesterday}^c \ \& \ \exists e [\tau(e) \subset t \ \& \ e \text{ is a dancing of Alicia}]]$   
b.  $\llbracket \text{TP PAST}_i [\text{PerfP PERFECT yesterday} [\text{AspP PERFECTIVE} [\text{vP Alicia dance}]]] \rrbracket =$   
 $= \exists t [(t < \text{PAST}_i \text{ or } \text{PAST}_i \subset t) \ \& \ t \subseteq \text{yesterday}^c \ \& \ \exists e [\tau(e) \subset t \ \& \ e \text{ is a dancing of Alicia}]]$
- (10.)  $\llbracket \text{PERFECT} \rrbracket = \lambda p \in D_{it}. \lambda i \in D_i. \exists i' \in D_i [i' \leq i \ \& \ p(i)]$  German-type  
where  $i' \leq i$  iff there is no  $i'' \subset i'$ , such that  $i'' > i$ .
- (11.)  $\llbracket \text{TP PRESENT} [\text{PerfP PERFECT yesterday} [\text{AspP PERFECTIVE} [\text{vP Hans leave}]]] \rrbracket =$   
 $= \exists t [t \leq t_c \ \& \ t \subseteq \text{yesterday}^c \ \& \ \exists e [\tau(e) \subset t \ \& \ e \text{ is a leaving of Hans}]]$