The puzzle of quasi prima and quasi dopo
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The Phenomenon. This paper analyzes a puzzling asymmetry between the Italian temporal connectives (t-conns) prima ‘before’ and dopo ‘after’, which is observed when they are modified by the approximative adverb quasi ‘almost’. While quasi prima in (1a) is interpreted as ‘shortly after’, quasi dopo in (1b) is uninterpretable, producing an unacceptable sentence.

(1) a. L’avventura è terminata quasi prima che iniziasse.
   ‘The adventure ended almost before it started.’
   b. ?L’avventura è iniziata quasi dopo che è finita.
   ‘?The adventure started almost after it ended.’

Our solution to this puzzle relies on: (a) an analysis of quasi as a scale-sensitive particle, and (b) an asymmetric analysis of prima and dopo in which the former has the meaning of the temporal comparative più presto ‘earlier’ while the latter denotes a binary relation of temporal succession between events. On our proposal, quasi modifies the comparative morpheme ‘more’ underlying prima and quantifies over lower ranked alternatives to the semantic value of ‘more’, yielding a reversal of the relation of temporal precedence in (1a). On the other hand, dopo does not provide any element from a scale which quasi could modify, hence the unacceptability of (1b).

Scalarity of quasi. We argue that the semantics of quasi necessarily makes reference to a scale on the basis of the contrast between (2a) and (2b):

(2) a. Leo è arrivato quasi alle 3. ‘Leo arrived almost at 3 pm.’
   b. Leo è arrivato all’incirca alle 3. ‘Leo arrived around 3 pm.’

Whereas (2b) implies that Leo’s arrival occurs at some point within a time interval that has 3pm as its center, (2a) implies that Leo arrived before 3pm, i.e. the temporal adverbial alle 3 denotes a value on a scale consisting of times linearly ordered from earlier to later and quasi is sensitive to this scale (cf. Amaral [2007]). We propose a focus-based analysis of quasi (along the lines of Rooth’s [1985] account of only): the adverb modifies a sentence containing a focused constituent and the focused constituent provides a set of scalar alternatives to its semantic value. The meaning of a sentence quasi(S) is analyzed as encompassing the following two entailments, here exemplified for (2a) (we refer to them as polar component and proximal component, after Sevi [1998] and Horn [2002]):

(i) negation of the modified sentence (polar component):
   (3) Quasi(Leo è arrivato [f alle 3]) entails ¬(Leo è arrivato [f alle 3])

(ii) existential quantification over alternatives that are lower ranked with respect to the semantic value of the focused constituent (the limit point), and are situated closely to it, in a contextually relevant sense of ‘closeness’ (proximal component):
   (4) Quasi(Leo è arrivato [f alle 3]) entails ∃t (t < 3pm & close(t, 3pm)) (Leo è arrivato a t)

Analysis. Following Del Prete (2008), we analyse prima as the temporal comparative più presto ‘lit. more early’, and assume that quasi modifies the comparative marker più ‘more’, thus activating a set of scalar alternatives to its semantic value and selecting for a lower ranked alternative from the scale. We assume that the relevant scale includes the following sub-scale:

more > as much as > a bit less (see (5) through (7)). In (1a), the polar component is the entailment that the adventure started at least as early as it ended (see (8a) below). If the selected
alternative to more were as much as, (1a) would entail that the adventure ended at the same time as it started. This entailment is discarded on the basis of general knowledge about the temporal ordering of startings and endings, and the proximal component is instantiated through a bit less (see (8b) below). Hence, the “temporal reversal” effect observed in (1a) is explained by the fact that the alternative a bit less corresponds to a time located shortly after, not before, the time at which the adventure started.

[\text{d} \text{ is the type of degrees, } t \text{ the type of truth-values, } E \text{ the type of events, } \tau \text{ the temporal trace function, } \gamma \text{ the culmination point function, degrees of earliness are elements of the set of times } T, \ d \text{ is a degree of earliness at least as great as } d' \text{ if and only if } d \leq_T d']

(5) \quad [[\text{more}]] = \lambda P_{<d,\lambda}. \lambda Q_{<d,\lambda}. \exists d [\neg P(d) \land Q(d)]

(6) \quad [[\text{a bit less}]] = \lambda P_{<d,\lambda}. \lambda Q_{<d,\lambda}. \exists d [P(d) \land \neg Q(d) \land \exists d' [d \geq d' \land \text{close}(d, d') \land Q(d')]]

(7) \quad [[\text{presto}]] = \lambda d_{\lambda}. \lambda e_{\gamma}. \tau(\gamma(e)) \leq_T d

(8) \quad [[\text{The adventure ended almost before it started}]] = 1 \quad \text{iff}

\quad (8a) \quad \neg \exists d [\neg \exists e [\text{started}(\text{the-adventure}, e) \land \tau(\gamma(e)) \leq_T d] \land \exists e [\text{ended}(\text{the-adventure}, e) \land \tau(\gamma(e)) \leq_T d]] \quad \text{(polar component)}

\quad \quad \text{[the adventure did not end before it started]}

\quad (8b) \quad \exists d [\exists e [\text{started}(\text{the-adventure}, e) \land \tau(\gamma(e)) \leq_T d] \land \neg \exists e [\text{ended}(\text{the-adventure}, e) \land \tau(\gamma(e)) \leq_T d'] \land \exists d' [d \leq_T d' \land \text{close}(d, d') \land \exists e [\text{ended}(\text{the-adventure}, e) \land \tau(\gamma(e)) \leq_T d']]] \quad \text{(proximal component)}

\quad \quad \text{[the adventure ended shortly after it started]}

On the other hand, (1b) is bad because the modified dopo-sentence does not contain any scalar element that dopo could modify. Contrary to natural expectations about prima and dopo being mirror-images of one another, we follow Del Prete (2008) in assuming that dopo is not a temporal comparative, hence it does not encompass the comparative morpheme più. The lexical entry we assume for dopo specifies its meaning as a binary relation of temporal succession between events:

(9) \quad [[\text{dopo}]] = \lambda e_2. \lambda e_1. \tau(e_1) > \tau(e_2)

Our claim is that the meaning given in (9) is not part of any natural scale of binary relations over events, hence dopo cannot be modified by quasi.

Conclusions. This paper addresses the interaction between quasi and the meaning of temporal connectives by analyzing the asymmetry between the interpretation of quasi prima ‘almost before’ and quasi dopo ‘almost after’. Our analysis sheds light on the sensitivity of quasi to scale structure and in particular on the interaction of quasi with the semantics of comparatives. Furthermore, this paper provides further evidence for a separate semantic analysis of the t-conns prima and dopo.