# Approximating the limit: the interaction between *quasi* 'almost' and some temporal connectives in Italian*

Patrícia Amaral Fabio Del Prete

**Abstract** This paper focuses on the interpretation of the Italian approximative adverb *quasi* 'almost' by primarily looking at cases in which it modifies temporal connectives, a domain which, to our knowledge, has been largely unexplored thus far. Consideration of this domain supports the need for a scalar account of the semantics of *quasi* (close in spirit to Hitzeman's 1992 semantic analysis of *almost*). When paired with suitable analyses of temporal connectives, such an account can provide a simple explanation of the patterns of implication that are observed when *quasi* modifies locational (e.g. *quando* 'when'), directional (e.g. *fino* 'until' and *da* 'since'), and event-sequencing temporal connectives (e.g. *prima* 'before' and *dopo* 'after'). A challenging empirical phenomenon that is observed is a contrast between the modification of *fino* and *da* by *quasi*, on the one hand, and the modification of *prima* and *dopo* by the same adverb, on the other. While *quasi fino* and *quasi da* behave symmetrically, a puzzling asymmetry is observed between *quasi prima* and *quasi dopo*. To explain the asymmetry, we propose an analysis of *prima* and *dopo* on which the former has the meaning of the temporal comparative *più presto* 'earlier', while the latter is seen as an atomic predicate denoting temporal succession between events (Del Prete 2008). We show that the same pattern of implication observed for *quasi prima* is attested when *quasi* modifies overt comparatives, and propose a pragmatic analysis of this pattern that uniformly applies to both cases, thus providing new evidence for the claim that *prima* is underlyingly a comparative. A major point of this paper is a discussion of the notion of scale which is relevant for the semantics of *quasi*; in particular, we show that the notion of Horn (entailment-based) scale is not well-suited for handling modification of temporal connectives, and that a more general notion of scale is required in order to provide a uniform analysis of *quasi* as a cross-categorial modifier.

*Semantics is almost more pointless than art!*
(Said to one of the authors of this paper by a native speaker of English, after the author explained his area of research)

## 1. Introduction

This paper focuses on the interaction of the Italian approximative adverb *quasi* 'almost' with temporal connectives, a domain which, to our knowledge, has been largely unexplored thus far. A range of empirical data is considered, in which *quasi* co-occurs with temporal adverbials headed by the temporal connectives *quando* 'when', *fino* 'until', *da* 'since', *prima* 'before', and *dopo* 'after'. Starting from the consideration of sentences where *quasi* modifies temporal PPs, measure phrases, and spatial PPs, we argue for a semantic analysis of *quasi* which is based on the claim that an ordered set of alternatives (a scale) must be accessible for *quasi* to be interpretable (Hitzeman 1992 and Penka 2006 make a similar claim for *almost*). More specifically, we assume that the alternatives are

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generated through focus on some constituent α, which is the expression intuitively modified by *quasi*, and that the ordering of the alternatives is constrained by the semantics of α and by the context of utterance. The structure of the paper is as follows. In section 2 we look at a number of sentences in which *quasi* modifies expressions of different syntactic categories, and show that the interpretation of these sentences makes reference to a scale of some sort, intuitively conveying the meaning of approximation to a limit point along the same scale. On this basis, we propose to analyze *quasi* as a scalar adverb, and contrast it with other adverbials denoting approximation, such as *all'incirca* 'about' and *più o meno* 'more or less', which do not trigger a scalar interpretation in the same sense. Section 3 draws a parallel between *quasi* and the focus sensitive particle *solo* 'only', and suggests that the former is a focus sensitive particle as well. We show that not only does *quasi* pass general tests of focus sensitivity, but more specifically it patterns as a focus-functional adverb, in the sense of Beaver & Clark (2003). To this end, we use two diagnostics that Beaver & Clark adopt for proving focus-functionality of *only*: the expression modified by *quasi* cannot be a phonologically weak element, and it cannot be extracted through syntactic movement. In section 4 a semi-formal characterization of the meaning of *quasi* is proposed, in which *quasi* requires that a constituent α of its containing sentence S be in focus, α intuitively providing a limit point, and that a scale $SC_\alpha$ of alternatives to α's semantic value be available. On this preliminary characterization, the meaning of *quasi* encompasses two components: (a) a focus sensitive negation of the proposition *p* expressed by S without *quasi*, and (b) the entailment of a proposition which is derived from *p* by replacing α's semantic value (the limit point) with a lower ranked alternative which is close to it on $SC_\alpha$ (see Sevi 1998, Horn 2002, and Penka 2006 for similar two-components analyses of *almost*; Rapp & von Stechow 1999 for its German counterpart *fast*). The meaning of *quasi* is distinguished from the meaning of the non-scalar approximative adverbial *all'incirca* with respect to each one of these components. In section 5 we consider some potential counterexamples to the claim that *quasi* is inherently scalar, namely sentences in which the adverb modifies verbal and adjectival predicates, and we argue that these examples show scalar interpretations as well. In section 6 we systematically look at data in which *quasi* interacts with the temporal connectives *quando*, *fino*, *da*, *prima*, and *dopo*, and provide empirical generalizations concerning the observed effects of this interaction. One major finding of this section is a puzzling asymmetry between the interpretation of *quasi prima* and *quasi dopo*, which is unexpected if one thinks of the temporal connectives *prima* and *dopo* as being mirror-images of one another. Section 7 is devoted to a critical examination of previous semantic analyses proposed for English *almost*, and shows that they cannot account for the empirical data that we considered in the previous sections. A major result of this section is a discussion of the notion of scale which is relevant for the semantics of *quasi*. In particular, we show that the notion of Horn scale, based on the entailment relation (Horn 1972), is not well-suited for handling our data, and that a more general notion is required if one is willing to provide a uniform analysis of *quasi* as a cross-categorial modifier. Section 8 proposes a formally explicit account of the meaning of *quasi* which directly builds on the semi-formal characterization from section 4. We further provide formal analyses for the meanings of the temporal connectives considered in section 6; we follow Del Prete (2008) in providing a non-uniform analysis for *prima* and *dopo*, in order to explain the previously observed asymmetry between *quasi prima*

and *quasi dopo*. The proposed formal account fully explains the empirical generalizations from section 6, with the exception of *quasi prima*, whose interpretive pattern is only partly explained within our semantic framework. Finally, in section 9 we provide a pragmatic account of some interpretive effects that are observed when *quasi* modifies overt comparatives, and extend it to the examples of *quasi prima*. This extension directly presupposes the analysis of *prima* previously given, and provides further evidence for the claim that *prima* is semantically a temporal comparative. Section 10 presents the conclusions and some open issues.

## 2. The scalarity of *quasi*

In this section we focus on a contrast between the adverb *quasi* and adverbial phrases like *all'incirca* 'approximately' and *più o meno* 'more or less'. These expressions can all be classified as adverbs that denote approximation:[1] intuitively, they are used to convey approximation to some value. However, *all'incirca* and *più o meno* differ from *quasi* in an important respect.

Compare the sentences in (1) with those in (2).

(1) a. Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

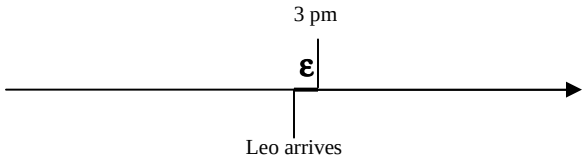
b. Leo è alto quasi 180 cm.
'Leo is almost 180 cm tall.'

(2) a. Leo è arrivato all'incirca / più o meno alle 15.
'Leo arrived approximately / more or less at 3 pm.'

b. Leo è alto all'incirca / più o meno 180 cm.
'Leo is approximately / more or less 180 cm tall.'

Sentence (1a) in isolation is interpreted as implying that it was *not yet* 3 pm when Leo arrived (i.e. the time of Leo's arrival *precedes* 3 pm), and it further conveys that the time at which Leo arrived *closely* approximates 3 pm (from the left, in a left-to-right representation of the ordering of times from earlier to later). This situation is diagrammed in Fig. 1a.

Fig. 1a

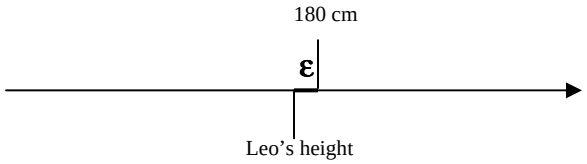



(**ε** is a small interval)

[1] Huddleston and Pullum (2002) lump together adverbs like *almost*, *approximately*, *about*, and *more or less* as modifiers that denote approximation (Huddleston & Pullum 2002, pp. 431, 437). Their classification is based on the similarities between these adverbials with respect to their syntactic distribution, and on a loose semantic criterion according to which they all introduce some degree of proximity to some value in the sentence meaning. However, the authors do not seem to make any fine-grained semantic distinction between *almost*, on the one hand, and *approximately* / *about* / *more or less*, on the other.

Sentence (1b) also has a scalar implication, namely that Leo is not so tall as to get at 180 cm (i.e. the value of Leo's height is below 180 cm), and it also conveys that Leo's height *closely* approximates 180 cm (from the left, in a left-to-right representation of the ordering of lengths from smaller values to greater values).[2] We give the relevant diagram in Fig. 1b.

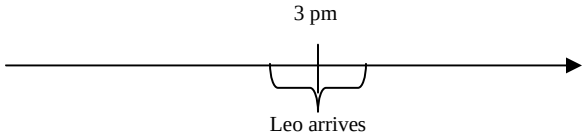
Fig. 1b




(**ε** is a small interval)

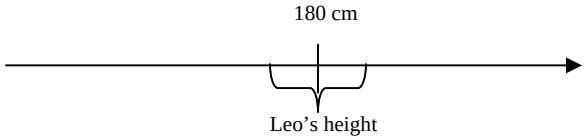
If we now look at the sentences in (2), we find a different implicational pattern. Sentence (2a) simply conveys that the time at which Leo arrived is close to 3 pm (it falls within a certain interval surrounding 3 pm that counts as small in the context of utterance), but it does not say whether the arrival time approximates 3 pm from the left or from the right. We depict this situation as in Fig. 2a.

Fig. 2a




Analogously, sentence (2b) simply conveys that Leo's height is close to 180 cm (it falls within a small interval of length values which is centered on 180 cm), without saying whether Leo's actual height approximates 180 cm from the left or from the right.[3] This is represented in Fig. 2b.

Fig. 2b




Therefore, we will say that both (1a,b) and (2a,b) convey approximate information, but still the sentences in (1) are more informative than the corresponding sentences in (2), as the former have a scalar implication that is missing from the latter: as for (1a), this is the implication that Leo arrived *before* 3 pm (or equivalently, that it was not yet 3 pm when Leo arrived); as for (1b), this is the implication that Leo's height is *below* 180 cm. On the

[2] The negative *implicatum* and the component of close approximation that we have ascribed to the meaning of (1a,b) correspond to the "polar" and the "proximal" component, respectively, into which Sevi (1998) and Horn (2002) analyze the meaning of *almost*. In this paper, we assume that these two components have the same semantic status. In particular, we analyze both as being entailments, and do not discuss the issue of whether the polar component should rather be analyzed as a presupposition or an implicature (for a thorough discussion of this issue for *almost*, see Horn 2002, 2008, Nouwen 2006, and Amaral 2007).

[3] Approximative adverbs like *all'incirca* behave as those modifying expressions that Lasersohn (1999) calls 'slack regulators'.

other hand, sentence (2a) leaves it unspecified whether Leo arrived before, after, or at 3 pm, and analogously sentence (2b) leaves it unspecified whether Leo's height is below, above, or just 180 cm: as far as the meaning of these sentences is concerned, any of these possibilities could be the one that holds in actual facts.[4]

Evidence for the fact that *quasi* conveys a scalar meaning, unlike *all'incirca*, is given by the felicity contrast between (3a) and (3b):

(3) a. Gianni ha quasi 10 anni, ed è molto eccitato per questo.
'John is almost 10 years old, and he's really excited about it.'

b.# Gianni ha all'incirca 10 anni, ed è molto eccitato per questo.
'John is approximately 10 years old, and he's really excited about it.'

In (3a), taken out of the blue, the first conjunct naturally provides a propositional antecedent to the demonstrative pronoun *questo* ('this') in the second conjunct. Possible resolutions of the anaphoric expression are 'He's really excited about *his upcoming birthday*' or 'He's really excited about *turning ten*', while these interpretations are not available in (3b). Only in (3a) does the first conjunct provide the information that Gianni is not yet 10 years old and that he is close to becoming 10 years old: intuitively, the modified expression for the age provides the limit point on a temporal path representing the succession of a human being's ages. Thus, only in (3a) does the first conjunct provide an appropriate antecedent for the continuation in the second conjunct.

It must be pointed out that the direction of the scale required by *quasi* (and *almost* alike) is in general a context-dependent aspect of utterance interpretation. This is true whenever the scale can be scanned in more than one direction. A typical example of such context-dependency is provided by Sadock (1981), who notes that a sentence like *It's almost 0º Celsius* may be interpreted either as 'It's 1º Celsius' or as 'It's -1º Celsius', "depending on whether, for example, there has jus been a heat wave or a cold snap" (Sadock 1981: 260). The difference in interpretation obtained in these two contexts, however, is not due to the meaning of *almost*, but rather to a property of the temperature scale itself. The meaning of *almost* remains the same, and in both situations it exploits the direction of the scale introduced by the context. Whereas numerical values (as in the case of temperatures) are compatible with both an ascending and a descending order, a temporal scale – such as is presupposed by (3a) – is unidirectional (unless the order of time has been subverted in a fictional context).

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[4] García-Medall (1993) proposes a distinction, for Spanish, between terms that just denote approximation and terms that also contribute scalar information. His category of "neutral" approximatives subsumes particles with a proximal meaning component but no polar component, such as *como, aproximadamente, unos, más o menos*, as in the following examples:

(i) Es como muy infantil.
'He/she is like very childish.'

(ii) El depósito está aproximadamente lleno.
'The deposit is approximately full.'

These approximative particles may modify a numeral expression (as in *Había cerca de veinte* 'There were around twenty'), but also a predicate (as in the examples above), "sin que sea pertinente en absoluto que la cercanía se refiera a algo alcanzado o a algo sobrepasado" 'without it being pertinent at all whether the notion of closeness pertains to a value which has been reached or to one which has been surpassed' (García-Medall 1993:164).

It is worth noting that *quasi* and *all'incirca* show the same difference also in contexts where they modify spatial PPs. Consider the pair (4a,b).

(4) a. Leo si trova quasi a Roma.
'Leo is almost in Rome.'

b. Leo si trova all'incirca a Roma.
'Leo is approximately in Rome.'

Sentence (4a) presupposes that a spatial path be salient in the context of utterance, and it implies that Leo is between the source of the relevant path and Rome, quite close to Rome but not yet in Rome. This is in contrast with the meaning of (4b): in (4b), we do not understand that the speaker presupposes that there be a path along which Leo is moving, and we can interpret the utterance simply as a way to approximately specify Leo's current position in space. Sentence (4b) implies that Leo is somewhere within a small region surrounding Rome, but crucially Leo could be out of Rome in any direction.
Let us elaborate on the point concerning (4a)'s presupposition that a spatial path be given in the context. In this connection, we observe that sentence (4a) could not be appropriately used as an answer to question Q in (5), if Q is naturally understood as querying where Leo is living is this period of his life. On the other hand, sentence (4b) would count as an appropriate answer to the same question.

(5) Q: Dove si trova Leo in questo periodo?
'Where is Leo in this period?'

A: # Leo si trova quasi a Roma. [= (4a)]
'Leo is almost in Rome.'

A': Leo si trova all'incirca a Roma. [= (4b)]
'Leo is approximately in Rome.'

The reported intuitions on these data provide evidence that in sentences where *quasi* modifies a (non-directional) spatial PP, a path must be accessible in the conversational context. If sentence (4a) is uttered in reply to question Q, then the context for (4a) set up by Q will not contain any path, and from this the infelicity of the reply follows. But in the same context an utterance of (4b) would count as a felicitous answer, since *all'incirca* is not scalar and does not trigger the presupposition that a scale be given in the context.

Further evidence that *quasi* and *all'incirca* trigger different effects when they combine with spatial PPs is provided by the felicity contrasts in (6a,b) and (7a,b) below.

(6) a. Il Papa è quasi a Roma, ma non c'è un'ora prevista per il suo arrivo.
'The Pope is almost in Rome, but there is no time at which his arrival is expected.'

b.# Il Papa è all'incirca a Roma, ma non c'è un'ora prevista per il suo arrivo.
'The Pope is approximately in Rome, but there is no time at which his arrival is expected.'

Only in (6a) does the first conjunct convey the information that the Pope is directed towards Rome, because the lexical semantics of *quasi* requires that some scale be accessible, and in this case the most natural scale is a spatial path which is directed to and ends in Rome. So, when the hearer gets to the second conjunct, she will be able to accommodate a referent for the definite NP *il suo arrivo* ('his arrival'), i.e. the arrival of

the Pope in Rome, and the sentence is felicitous. In (6b), on the other hand, the first conjunct does not require that a path directed to and ending in Rome be given, so at the point when the hearer gets to the second conjunct, she faces a sentence which presupposes something that is not given in the immediate context, and the sentence, taken out of the blue, is infelicitous.
Now let us consider the contrast in (7a,b):

(7) a. Leo è partito da Roma ieri e adesso è all'incirca a Roma.
'Leo left Rome yesterday and he is now approximately in Rome.'

b.# Leo è partito da Roma ieri e adesso è quasi a Roma.
'Leo left Rome yesterday and he is now almost in Rome.'

Sentence (7b) is only acceptable if the context entails that Leo is returning to Rome at the time of speech, whereas (7a) does not place the same requirement on the context. This requirement of (7b) is triggered by the occurrence of *quasi* in the second conjunct, and taken together with the implication that Leo is moving away from Rome (which is contributed by the first conjunct of (7b)), explains why this sentence, uttered out of the blue, is infelicitous.

Yet other evidence for the scalarity of *quasi* as opposed to *all'incirca* is provided by the contrast in (8a,b):

(8) a. La stazione ferroviaria è quasi in periferia.
'The railway station is almost at the periphery of the city.'

b. La stazione ferroviaria è all'incirca in periferia.
'The railway station is approximately at the periphery of the city.'

Although both *quasi* and *all'incirca* may modify the spatial PP *in periferia*, the implications are not the same. Crucially, with *quasi* the location of the station is described with respect to a spatial path that has the center of the town as a starting point and the periphery as the limit or endpoint. For example, (8a) can be felicitously uttered in a context in which the speaker wants to convey that the railway station is far away from the center of the city, almost as far as the periphery. In the example with *all'incirca*, on the other hand, the station is located within a region that surrounds the periphery, with no information about whether the station is between the center and the periphery or beyond the periphery. Sentence (8b) could not be felicitously uttered in the context described above, because *all'incirca*, unlike *quasi*, does not make reference to any spatial path (*a fortiori*, it does not refer to a path departing from the center).

For completeness, we also observe that those cases are different, in which *quasi* modifies an inherently directional spatial PP. A relevant example is (9), containing a PP headed by *fino* ('until', 'up to').

(9) Leo è arrivato quasi fino a Roma.
'Leo went almost up to Rome.'

In this case, the requirement of *quasi* that a scale be accessible is satisfied sentence-internally, as the PP itself *fino a Roma* introduces a path in the semantic representation. The sentence thus has the meaning that Leo went along the relevant path up to a spatial location which was situated close to Rome and before it with respect to the same path (see Winter [2006] on the sensitivity of *almost* to scale structure with *to* vs. *until*).

In view of the reasons given above, from now on we refer to the adverb *quasi* as a scalar adverb, intending to distinguish it from non-scalar adverbs such as *all'incirca* and *più o meno*.

## 3. Similarity between *quasi* and the focus sensitive particle *solo* 'only'

There are some similarities between *quasi* and the focus sensitive particles *solo* in Italian and *only* in English, which might be exploited when one comes to developing a formal semantics account of the former. When *quasi* occurs in a sentence S, it is intuitively related to some constituent of S, in combination with which it forms a modifier-modifiee structure. For example, in sentence (9) above *quasi* is intuitively related to the PP *fino a Roma*, with which it forms a modifier-modifiee structure. If we replace *quasi* with *solo* in (9), we get a sentence in which an analogous relation between *solo* and the PP obtains, i.e. *solo* modifies *fino a Roma*. The sentence is given in (10).

(10) Leo è arrivato solo fino a Roma.
'Leo went only up to Rome.'

The analogy between (9) and (10) is only with respect to their "abstract" (modifier-modifiee) structure, not to their meaning. Indeed, sentence (9) has the meaning described above, and implies that Leo did not go up to Rome, whereas (10) means that Leo did not go any further than Rome, and implies that he *did* go up to Rome and that he might have gone up to some further point. The same similarity of abstract structure holds between the English translations of (9) and (10) reported above, i.e. in both sentences an abstract relation modifier-modifiee intuitively holds between a certain word and the PP *up to Rome*. Given these similarities between *quasi* on the one hand, and *solo* / *only* on the other, and given the common wisdom about the status of *only*, according to which it is a focus sensitive particle (Rooth 1985), we will propose to look at *quasi* as a focus sensitive particle too.

There is a set of semantic and pragmatic tests that can be used to establish whether a certain particle is focus sensitive. In this section, we first present some that show that the interpretation of *quasi* is dependent on the placement of focus. Subsequently we make use of syntactic tests that Beaver and Clark (2003) have proposed to show the special focus sensitive character of *only* (for which they use the term *focus-functionality*). We show that on these tests *quasi* patterns like *only*, thus providing evidence for the strong focus sensitivity of *quasi*.

Given the hypothesis that *quasi* is focus sensitive, we expect to observe truth-conditional effects of focus placement in sentences with *quasi*, exactly as we do observe such effects in sentences with *only*. However, in Italian it is not possible to test such effects by looking at a single sentence in which *quasi* has a fixed position at the surface, because of a preference holding in this language for the focus sensitive particle to be to the immediate left of the focused constituent.[5] As a consequence, we can only check for

[5] This restriction takes into account the fact that sentence (i), in which there is no adjacency between *solo* and *fino a Roma*, is not a fully acceptable paraphrase of sentence (ii).

(i) ? Leo è solo arrivato fino a Roma.
Leo is only arrived until to Roma

(ii) Leo è arrivato solo fino a Roma.

this kind of effects by considering minimal pairs of sentences which differ with respect to the position of *quasi* at the surface. This property of Italian is in contrast with languages like English, which do not require adjacency between the focus particle and the focused constituent, and do not have a preference for this option either. In other terms, in Italian the prosodic prominence that typically marks focus will correlate with syntactic position at the surface level. In (11a') and (11a") we give a minimal pair that shows the truth-conditional effects of focus placement for English sentences with *only*, and in (12) the corresponding minimal pair for Italian. The English sentence (11a) has two different readings, depending on whether focus is placed on the verb *run*, as represented in (11a'), or on the PP *up to my house*, as represented in (11a").[6]

(11) a. Leo almost ran up to my house.
a'. Leo almost $[\text{ran}]_F$ up to my house.
a". Leo almost ran $[\text{up to my house}]_F$.

Focus on the verb *run* results in a reading on which Leo went up to my house by a moving pace which was almost the same as a running pace, whereas focus on the PP *up to my house* results in a reading on which Leo ran up to a point which was close to my house, without reaching my house. These two readings correspond to the Italian sentences (12a) and (12b), respectively:

(12) a. Leo ha quasi $[\text{corso}]_F$ fino a casa mia. [= (11a')]
'Leo went up to my house by a moving pace which was almost the same as a running pace.'
b. Leo ha corso quasi $[\text{fino a casa mia}]_F$. [= (11a")]
'Leo ran up to a point which is close to my house, and precedes it.'

Sentences (12a) and (12b) have different truth conditions, since (12a) is true in a scenario in which Leo actually reached my house, whereas (12b) would not be true in this scenario.

Focus structure is typically manifested in discourses in which a question is raised by one of the interlocutors. In this connection, the question-answer pairs in (13) and (14) provide further evidence for the focus sensitivity of *quasi.*

(13) A: Leo ha guidato fino a Pisa ieri.
'Leo drove to Pisa yesterday.'
Q: Da dove?
'From where?'
A: Quasi DA MILANO.[7]
'Almost from Milano.'

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Leo is arrived only until to Roma
'Leo went only up to Rome.'

This fact is in contrast with what one observes in English. The two sentences (iii) and (iv) actually share the interpretation on which *only* modifies *up to Rome*, and are equally acceptable on this interpretation.

(iii) Leo went only up to Rome.
(iv) Leo only went up to Rome.

[6] We follow the convention of marking focus on a constituent $\alpha$ by means of the notation $[\alpha]_F$.

[7] The capitals in (13) and (14) are intended to signal prosodic prominence.

(14) A: Leo ha guidato da Milano ieri.
'Leo drove from Milano yesterday.'
Q: Ok, ma fino a dove?
'Ok, but where did he drive to?'
A: Quasi FINO A PISA.
'Almost up to Pisa.'

The constituent question in (13) has the pragmatic effect of introducing narrow focus on the directional PP expressing the source of the driving event. This focused element is what *quasi* modifies in the answer, and introduces a set of alternatives to the source (the city of Milano) of the spatial path corresponding to the driving event. From this set *quasi* selects a lower ranked alternative, i.e. a location *l* which is close to Milano on the path connecting Milano to Pisa, and the answer says that Leo drove from *l* all the way to Pisa. On the other hand, the constituent question in (14) has the pragmatic effect of placing narrow focus on the directional PP expressing the goal of the driving event, and this focused element is modified by *quasi* in the answer. The focused PP in the answer thus provides a set of alternatives to the goal (the city of Pisa), from which *quasi* selects a lower ranked alternative, i.e. a location *l* which is close to Pisa on the path connecting Milano to Pisa. Accordingly, the answer in (14) says that Leo went from Milano to *l*. The crucial difference between the two cases is that in the former the starting point is not Milano, but a closer point on the path between the two cities, and the ending point is Pisa, whereas in the latter the starting point is Milano, and the ending point is not Pisa but a location close to Pisa on the same path. This difference comes about because of the different focus placements induced in the two answers by the preceding questions, whence it follows that *quasi* associates with different constituents in the answers.

We show now that it is possible to take a stronger position than treating *quasi* as focus sensitive. There are syntactic tests showing that *quasi* is focus functional, in the sense defined by Beaver & Clark (2003). On their view, a focus functional adverb is one that lexically encodes a dependency on focus placement. From this it follows that a focus functional adverb cannot associate with "leaners"[8] (phonologically weak elements) or traces of movement, since these elements, due to their phonological properties, cannot be focused. B&C look at the possible interpretations of sentences in which *only* co-occurs with leaners and traces, and observe that these sentences never display readings in which *only* modifies these elements. They conclude that *only* lexically requires that its argument be focused, i.e. *only* is focus functional. We find the same restrictions that B&C observe for *only* on the interpretation of Italian sentences containing *quasi*. The examples that we consider are (15) and (16) for traces,[9] and (17) and (18) for leaners, which are well represented by clitic pronouns in Italian.

The ungrammaticality of (15b) shows that it is not possible to form a question in which the argument of *quasi* is extracted. In other terms, *quasi* cannot associate with the trace of *quando* in (15b), and the sentence cannot be interpreted as a question about the time *t* which in (15a) is said to be such that Leo arrived at almost *t*.

[8] The term "leaner" is originally from Zwicky (1982) and means "prosodically dependent material" (Beaver & Clark 2003: 342).

[9] Beaver & Clark (2003) only consider examples in which the trace is due to relativization, whereas we also consider an example involving a trace of *wh*-movement, i.e. (15b).

(15) a. Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

b.* Quando$_i$ è arrivato Leo quasi _$_i$?
'When did Leo arrive almost?'

The ungrammaticality of (16b) shows that it is not possible to form a relative clause in which the argument of *quasi* is relativized. In other terms, *quasi* cannot associate with the trace of *fino a dove* in (16b), and the sentence cannot be interpreted as saying that the place *p* such that Leo went almost up to *p* is Rome.

(16) a. Leo è andato quasi fino a Roma.
'Leo went almost up to Rome.'

b.* Il posto fino a dove$_i$ Leo è andato quasi _$_i$ è Roma.
'The place where Leo went almost up to is Rome.'

In (17a), *quasi* modifies the *about*-argument *di tutto* ('about everything'), and the sentence means that we talked about almost everything. In (17b), the phonologically weak form *ne* pronominalizes the *about*-argument of the verb *parlare* ('to talk'), but *quasi* cannot modify *ne*.

(17) a. Abbiamo parlato quasi di tutto.
'We talked about almost everything.'

b. Quasi ne abbiamo parlato.
'We almost talked about it.'

The only possible interpretation of (17b) is that we went close to talking about the referent of *ne*, i.e. (17b) does not have the reading of (17a), according to which we talked about almost everything. The semantic contrast between (17a) and (17b) shows that, in order to obtain the latter reading, the full *about*-phrase *di tutto* must be used, rather than the clitic *ne*.
A parallel example is (18b), with the locative clitic *ci*, which pronominalizes the goal argument *in Alaska* ('to Alaska') of the verb *andare* ('to go'). Sentence (18b) can only mean that we were close to going to Alaska. In particular, it cannot mean that we went up to a place close to Alaska, which is the interpretation of (18a).[10]

(18) a. Siamo andati quasi in Alaska.
'We went almost to Alaska.'

b. Quasi ci siamo andati.
'We almost went there.'

The semantic contrast between (18a) and (18b) shows that in order to get the interpretation in which *quasi* modifies the goal argument, the full PP *in Alaska* must be

[10] This is parallel to the constraint holding in English for the interpretation of *only* with leaners discussed by Beaver & Clark (2003: 353). As the authors show, (i) cannot mean that I discussed the entity referred to by the leaner *'im* with Sandy, and that I did not discuss anybody else with Sandy.

(i) I only discussed'im with Sandy. (Beaver & Clark 2003, ex. [66])

The explanation they provide for this fact is that leaners cannot be focused, while the expression modified by *only* must be focused. As a consequence, the only possible interpretations of (i) are interpretations in which *only* associates either with the whole VP *discussed'im with Sandy* or with the PP *with Sandy*.

used, instead of the phonologically weak form *ci*. To conclude, both (17b) and (18b) show that *quasi* cannot associate with leaners.

In what follows, we build on the analogy between *quasi* and *solo* / *only* and propose a formal account of *quasi* which is based on some core ideas from focus semantics.[11] We assume that the interpretation of a sentence containing *quasi* requires that a set of alternatives be available from the context, where the alternatives must be ordered on a scale. More specifically, we make the standard assumption that the alternatives are triggered by focus on the modified expression (Rooth 1985, 1992), and we further assume that they are semantic objects of the same type as the semantic value of the modified expression. To exemplify, in the case of sentence (1a), repeated below as (19), we have focus on the temporal PP *alle 15* ('at 3pm'), accordingly the set of relevant alternatives will contain the semantic values of temporal PPs like *alle 13:00*, *alle 14:00*, *alle 14:58*, etc.

(19) Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

We will assume that, by default, any two alternatives *x*, *y*, corresponding to PPs *alle X*, *alle Y*, are ordered on a scale as $x < y$ or as $y < x$, according to whether the time denoted by *X* precedes the time denoted by *Y* or vice versa. We return to the question of the ordering between the alternatives in sections 6 and 7.

## 4. Semi-formal characterization of the meaning of *quasi*

We will now specify the meaning contribution of *quasi* in a more explicit way.

(A) First of all, we take the meaning of *quasi* to be such that it entails negation of the smallest sentence in which *quasi* occurs. We occasionally call this sentence *the prejacent*, extending Horn's (1996) terminology for sentences modified by *only*. To put it more formally, we assume that the entailment in (20) holds. For our present descriptive purposes, we make the simplifying assumption that *quasi* applies to a sentential argument S (the prejacent), a constituent of which is focused.

(20) Quasi(S) *entails* not(S)

For example, for sentence (19) above we have the following entailment:

(20') Quasi(Leo è arrivato [alle 15]$_F$) *entails* not(Leo è arrivato [alle 15]$_F$)

A clarification about the proper understanding of the negation is in order. We intend that the negation of the prejacent is also focus-sensitive, and is not interpreted as the simple logical operator ¬: it does not simply deny the truth of the prejacent, but, more specifically, it denies the truth of the prejacent for the particular value of the focused constituent. For example, in the case of (19), we do not get the simple logical negation of the proposition that Leo arrived at 3 pm, since this plain negation would be compatible with a situation in which Leo did not arrive at all, and this is intuitively excluded by the

[11] Penka (2006) and Amaral (2007) independently proposed to treat English *almost* and Portuguese *quase* 'almost', respectively, as focus sensitive particles. However, to our knowledge, the current paper contains the first full-fledged account that builds on such an approach. We are indebted to Cleo Condoravdi for suggesting to us to develop a fomal analysis of *quasi* based on focus semantics.

truth of (19). So, what (19) actually entails can be better expressed through the paraphrase 'Leo arrived but not at 3 pm', which makes it clear that what is denied is not the fact that Leo arrived.

(B) In the second place, we take the meaning of *quasi* to be such that the focused constituent, possibly with the support of the conversational context, must provide a scale, i.e. a set of alternatives with a linear order on it, and a value on that scale, which we call *limit* or *limit point*.[12] For example, in most circumstances an utterance of the focused PP *alle 15* ('at 3pm') will provide a scale consisting of temporal locations linearly ordered from earlier to later, and it will always provide a value from that scale, i.e. 3 pm.

(C) Third, we take a sentence *quasi(S)* to entail a related sentence S', where S' expresses a proposition in which existential quantification is made over alternatives to the focused constituent of S which are ranked lower than the limit and situated close to it. How much an alternative must be close to the limit in order to be taken into account for the quantification is a context-dependent issue. This entailment relation is schematically given as follows:

(21) Quasi(...$[\alpha]_F$...) *entails* (for some $d < [[\alpha]]$ & close($d$, $[[\alpha]]$))(...$d$...)

This assumption, in the case of (19), comes down to assuming that the entailment in (21') holds (for the sake of simplicity, here we assume that the alternatives provided by the focused PP *alle 15* are just time points, which are ordered by the relation of temporal precedence $<_T$).

(21') Quasi(Leo è arrivato [alle 15]$_F$) *entails* (for some $d <_T$ 3pm & close($d$, 3pm)) (Leo è arrivato a $d$)

No one of the properties (A)-(C) is shared by the advberbials *all'incirca* ('approximately', 'around') and *più o meno* ('more or less').

(A') All'incirca(S) does *not* entail not(S)

For example, sentence (2a), repeated below as (22), does not entail that Leo did not arrive at 3 pm.

(22) Leo è arrivato all'incirca / più o meno alle 15.
'Leo arrived approximately / more or less at 3 pm.'

Indeed, the following conversational exchange would not be acceptable:

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[12] To our knowledge, the first scalar account of the meaning of *almost* was provided by Hitzeman (1992). On her account, *almost* is a cross-categorial modifier which maps a category on a scale S onto another category on S. A category is defined as a continuous subset of S whose members share a set of properties. For example, the interpretation of sentence (i) below (equal to Hitzeman's example (11)) is such that *almost* maps the category of humans onto a contiguous category on the same scale which corresponds to the set {Frankenstein, Dracula, …}, and the former category is ranked higher than the latter on the scale.

(i) Frankenstein's monster was almost human.

There are similarities in spirit between our proposal and Hitzeman's: both assume that *quasi* (*almost*) requires a scale, that the modified expression denotes a value on this scale (what we call limit point), and that *quasi* (*almost*) selects a value ranked lower than the limit point. However, Hitzeman's semantics, as formulated in (16i,ii), p. 228, requires that *almost P* denote a maximally close alternative to *P*. As we shall show later on, this is too strong a requirement for the interpretation of *quasi*.

(23) A: Leo arrived around 3 pm.
B: # That's false, actually Leo arrived at 3 pm.

(B') Given a well-formed sentence All'incirca(S), S must not provide a scale with a value from it.

This is most clear in the case of (4b), repeated below as (24), where the adverb *all'incirca* refers to the spatial PP *a Roma*. Here the underlying sentence *Leo si trova a Roma* ('Leo is in Rome') describes the location of a person in space.

(24) Leo si trova all'incirca a Roma.
'Leo is approximately in Rome.'

Given the dimensional complexity of space, the underlying S does not provide any privileged scale *per se*. Incidentally, this is why in the case of (4a), repeated below as (25), where the same surface sentence is the argument of *quasi*, we must assume that a certain path be otherwise salient in the context of utterance in order to interpret the assertion.

(25) Leo si trova quasi a Roma.
'Leo is almost in Rome.'

(C') As a necessary consequence of lacking the scale-limit selection property, a sentence All'incirca(S) will also lack the third property: there are simply no alternative values which are ranked lower than the limit, since there is no scale or limit in this case.

## 5. Apparent non-scalar uses of *quasi*

Now that we have clarified the reason for using the term 'scalar adverb', we will provide more examples of sentences modified by *quasi*, where apparently there are no scalar expressions in the sentence to contribute a scale and a limit point.

Consider the sentences in (26):

(26) a. Leo quasi dimostrò il teorema.
'Leo almost proved the theorem.'

b. Leo va di fretta, sta quasi correndo.
'Leo is in a hurry, he is almost running.'

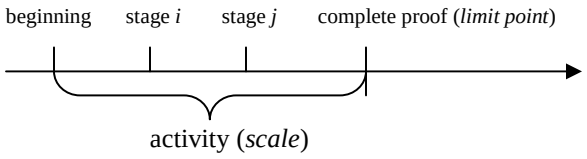
c. L'uomo quasi attraversò il confine.
'The man almost crossed the border.'

Our claim is that the examples in (26) are by no means problematic for the hypothesis that *quasi* is a scalar adverb. For each of the sentences (26a-c), it is possible to show that a scalar structure is made available in the semantic representation, as well as a limit point from that scale.

In (26a), it is the accomplishment VP *dimostrare il teorema* ('prove the theorem') that introduces the relevant scale and limit point. Indeed, accomplishment predicates are properly analyzable as introducing a complex event structure E, where E encompasses a linear activity (a sequence of successive steps directed to the proof goal, which specifies the scale) and a telic point from therein (the limit), consisting of the step at which the full

proof is provided (see e.g. Rothstein 2004). For the predicate *dimostrare il teorema*, this is roughly represented in Fig. 3 (see Kennedy & MacNally [2005] and Amaral [2006] on the semantic restrictions of *almost*).

Fig. 3 (event structure of *prove the theorem*)




To put it roughly, sentence (26a) says that in an event structure like the one diagrammed in Fig. 3, the agent got to a point which is before the limit point of the full proof, and close to this limit. It further says that the agent did not get to the limit point, which comes down to the entailment that a completion of the proof by Leo did not occur in the world of the utterance.[13] This type of reading of sentences like (26a), on which the underlying activity of the event structure is started but the culmination point is never reached, has been described in the semantics literature as a case of scalar interpretation, and has been opposed to the so-called counterfactual interpretation (e.g. Rapp & von Stechow 1999), on which not even the beginning of the activity is reached, so that no part of the event actually occurs. For example, on its counterfactual interpretation, (26a) would be true in a scenario in which Leo went close to the point at which he would begin to prove the theorem, but he never actually started the proof. We think that the counterfactual reading of (26a) is at best a marginal one. In our intuition, however, to the extent that (26a) can be judged to be true in the counterfactual scenario, its interpretation still requires that a scale be contextually accessible, relative to which the component of approximation to the limit point (the beginning of the proof) is evaluated: in this case, a temporal scale corresponding to a succession of the agent's intentions or to an underlying plan entertained by the agent. So, our claim is that the opposition scalar / counterfactual is not a fundamental semantic distinction (at least for Italian *quasi*), as the counterfactual interpretation is just a special case of the scalar interpretation,[14] one in which a scale is

[13] In cases like (19a), the limit point does not exist in actuality independently of whether the event structure at stake is completely run through or not. This is in contrast with cases like (i) below, where the actual existence of the limit point (the location of the city of Rome) is independent of the circumstance whether Leo arrived in Rome or not.

(i) Leo è arrivato quasi a Roma.
'Leo arrived almost to Rome.'

[14] An anonymous reviewer points out that in German there is morphological evidence that the counterfactual reading should be seen as a disjoint reading: examples of counterfactual *fast* obligatorily have the subjunctive, and thus differ from examples in which the indicative is used, which can only have a scalar interpretation (Rapp & von Stechow 1999). One could propose that there *is* a morphological correlate of counterfactual readings in Italian, namely the indicative imperfective past (Imperfetto), based on the observation that a counterfactual construal of (26a) is facilitated if the perfective form *dimostrò* is replaced by the imperfective *dimostrava*. Still, it would be empirically inadequate to claim that the Imperfetto is the morphological hallmark of counterfactual readings. Our intuition is that the German subjunctive clause (i) (from Rapp & von Stechow 1999) could be translated equally well as an Imperfetto and as a Passato Remoto (indicative perfective past) in Italian, as shown in (ii):

(i) weil David fast seinen Hasen erwürgt hätte [subj]. [counterfactual]

still given, and the limit point on the scale is not given by the culmination point of the complex telic event, but rather by its inception.

The case of (26b) intuitively involves an ordering of moving-by-foot paces, ranked from lower paces to higher paces, which pass through some average standard of walking pace and then go on to higher paces which rather characterize running events than walking events.

Sentence (26c) involves the achievement predicate *attraversare il confine* 'cross the border'. This predicate, unlike the accomplishment VP *dimostrare il teorema* that we have considered in example (26a), does not introduce a complex event structure. In this case, we don't have a sequence of stages and a culmination point, but rather a simple transition point, namely the point corresponding to the transition from one side to the other side of the border. The transition point does not have any internal structure that may be mapped onto a natural scale. As a consequence, the scale which, on our account, is necessary for the interpretation of *quasi* is not lexically provided in (26c), but it is still recoverable on the basis of contextual information accessible at the point at which the sentence is evaluated. Indeed, (26c) could be felicitously uttered only in a context in which it had already been established that the relevant man entered some step-wise process (decisional and/or of physical actions) which, if completely run through, would have lead to the achievement of crossing the border. In such a context, (26c) would be true if the man reached a step in the process that was close to the achievement of crossing the border.

Finally, we consider an example in which *quasi* modifies an achievement verb (as in 26c) and this verb is under the scope of negation:

(26) d. Leo quasi non mi vide.
'Leo almost didn't see me.'

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'(because) David almost strangled his rabbit.'

(ii) (perché) David quasi strangolava [imp] / strangolò [perf] il suo coniglio.

Both the imperfective and the perfective version of (ii) imply that David went close to achieving the strangulation of his rabbit, and that he did not strangle the rabbit. The conditions for talking of counterfactual reading are satisfied in both cases: the achievement event did not occur, which makes it impossible for a part of this event to have occurred. Thus, the perfective past is compatible with the counterfactual interpretation of *quasi*.

Furthermore, the Imperfetto is compatible with scalar *quasi*. Our intuition is that the German indicative clause (iii) (from Rapp & von Stechow 1999) could be translated equally well as an imperfective and as a perfective past clause in Italian, as shown in (iv):

(iii) weil sie den Schlager fast grölten [indicative]. [scalar reading]
'(because) they almost bellowed the song.'

(iv) (perché) quasi urlavano [imp] / urlarono [perf] la canzone.

Actually, our judgment is that there would be no possible counterfactual reading of (iv), no matter whether the imperfective or the perfective is used. Note that these sentences involve the (gradable) manner verb *urlare* 'bellow', and are accordingly interpreted along these lines: (a) the relevant people X phonically produced the song, (b) along a scale of loudness values pertaining to singing acts which ranges from the value of singing in a normal tone to the limit value of singing in a roaring tone, X went close to the limit value, but (c) X did not attain the limit value. If we accept this description as correct, we can conclude that it is a scalar reading which is involved in (iv), where the scale is plausibly determined by the lexical semantics of the verb in combination with its direct object.

The case of (26d) is less straightforward, but still manageable consistently with the previous examples. The intuitive meaning of (26d) can be expressed through the following complex paraphrase: Leo actually saw me (i.e. we have the standard entailment that the prejacent *Leo non mi vide* 'Leo didn't see me' is false), but he was close to a point at which he would not have seen me, without ever getting to that point. Hence, we have here a counterfactual entailment similar to the one we have described for (26a): in this case too the limit point (Leo not seeing me) turns out not to exist in actuality. It seems then that we have all the typical ingredients of the interpretation of sentences modified by *quasi*. However, it's just not easy to pin down what the relevant scale is in this case. We will assume that the scalar structure here is related to a complex structure determinable on the basis of speakers' general knowledge regarding events of seeing an individual, which encompasses the psychophysical process leading to the successful achievement of events of seeing. The relevant scale will be a series of disfavourable events which would lead to a failure of the event of Leo seeing me, if it were run completely. The limit point on this scale is the ultimate event whose occurrence crucially makes the seeing event impossible. The sentence then conveys that Leo was close to this limit point on the relevant scalar structure, but he never reached the limit, which entails that he could actually see me.

## 6. Modification of temporal phrases by *quasi*

In this section we look at the interpretation of sentences in which *quasi* modifies a temporal phrase introduced by a temporal connective, and we examine the semantic patterns that result from the interaction between the two. A hypothesis as to what the modifier-modifiee structure is which underlies the sentence will be made for each example. For the present descriptive purposes, the term *limit point* will be used in a non technical sense, to refer to some point in time which is intuitively seen as the limit which *quasi* approximates. In particular, this term will not be used to refer to the semantic value of the focused constituent.

We focus on the temporal connectives *quando* ('when'), *finché* ('until'), *da quando* ('since'), *prima* ('before'), and *dopo* ('after'). The reason for our choice is that these temporal connectives exemplify paradigmatic types of temporal relations between eventualities, that we characterize in intuitive terms as follows:

- *Quando* is a locational temporal connective, as it denotes a relation that is essentially used to locate an eventuality in time in a static way

- *Finché* and *da quando* are directional temporal connectives, as their function is to specify the dynamic extension of an event across time, either introducing an end time and enabling description of the extension of an event from some point in time up to this end time (forward-looking directionality of *finché*), or introducing a source time and enabling description of the extension of an event from some point in time back to this source time (backward-looking directionality of *da quando*)

- Finally, *prima* and *dopo* are temporal connectives of temporal sequencing, as they are typically used to serially order events in time.

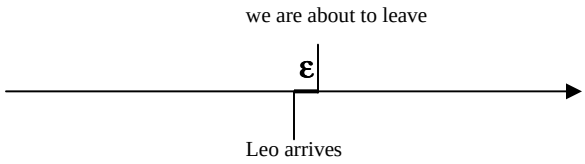
### 6.1 Quando (*when*)

As an example of modification of a locational temporal connective by *quasi*, let us consider (27):

(27) Leo è arrivato quasi quando stavamo per partire.
'Leo arrived almost when we were about to leave.'

The intuitive interpretation of sentence (27) is that Leo arrived shortly before a point in time at which we would be about to leave. This is represented in Fig. 4.

Fig. 4




(**ε** is a small interval)

Our assumption about (27) is that its interpretation is generated on the basis of a logical structure in which *quasi* modifies the whole temporal phrase occurring to its right. Thus, we assume that the focused constituent in (27) is the AdvP *quando stavamo per partire* ('when we were about to leave'). Accordingly, a schematic representation of (27)'s logical structure, in the format adopted in section 3 above, will be as follows:

(27') Quasi(Leo è arrivato [$_F$ quando stavamo per partire])

Notice that the interpretation of (27) is characterized by an approximation to a limit point from the left, where the limit point is the temporal location introduced by the *quando*-clause. We recall that this is the standard effect induced by *quasi* in sentences with locational PPs like *alle 15* ('at 3 pm'), as was observed in connection with example (1a) from sect. 2.

### 6.2 Fino + a + NP / finché + S (*until*)

Corresponding to the English temporal connective 'until', Italian has both the prepositional element *fino*, which generally takes nominal complements introduced by the preposition *a* 'at' (but also *that*-clauses and *when*-clauses introduced by the same preposition), and a conjunction proper, *finché*, which only takes clausal complements. In (28a,b) we give an example with the preposition *fino* and another one with the conjunction *finché*.

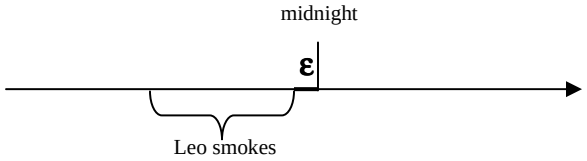
(28) a. Leo ha fumato quasi fino a mezzanotte.
'Leo smoked almost until midnight.'

b. Fai cuocere lentamente le cipolle quasi finché non si disfano.
'Let the onions cook almost until they melt down.'

Intuitively, the interpretation of (28a) is that Leo went on smoking up to a point in time which was shortly before midnight, while the interpretation of (28b) is that you must keep on cooking the onions up to a point which is shortly before the point at which they

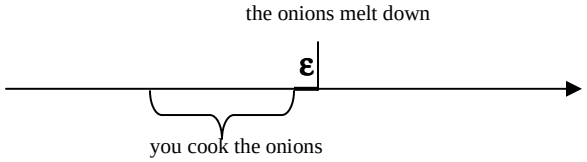
would melt down.[15] These interpretations are represented in Fig. 5a and Fig. 5b, respectively.

Fig. 5a




(**ε** is a small interval)

Fig. 5b




(**ε** is a small interval)

We assume that the interpretations of (28a) and (28b) are generated on the basis of logical structures in which *quasi* modifies the temporal phrase occurring to its right. Accordingly, the abstract structures of these sentences will be as follows:

(28a') Quasi(Leo ha fumato [$_F$ fino a mezzanotte])

(28b') Quasi(Fai cuocere le cipolle [$_F$ finché non si disfano])

The semantic pattern that arises from the interpretation of (28a,b) can be described as follows: the effect triggered by *quasi* when it modifies a *finché*-phrase is one of approximation to a limit point from the left, where the limit point is the temporal (or eventive) goal introduced by the *finché*-clause. One can hypothesize that the approximation from the left is due to the inherent directionality of *finché*, which requires a movement along the time axis from the past to the future, i.e. from the left to the right. When we interpret 'A finché B', we consider an A-eventuality which stretches rightward from some point in time up to a future point in time at which a B-eventuality holds, more precisely, we look at an A-eventuality *as* stretching rightward from some point in time up to a future B-point. A description along these lines should make it clearer that the relevant facts involve a perspectival stance on the event, which is linguistically encoded by *finché*. In actual facts, an eventuality does not stretch forwards any more than it stretches backwards.

Sentences (28a,b) can be paraphrased as *prima*-sentences. This is shown in (29a,b):

(29) a. Leo ha smesso di fumare poco prima di mezzanotte.
'Leo stopped smoking shortly before midnight.'

b. Fai cuocere lentamente le cipolle e interrompi la cottura poco prima che si disfino.

[15] We observe that the negative particle *non* ('not') in the complement clause of *finché* in (28b) is an expletive negation which is licensed by the temporal connective, and has nothing to do with *quasi*. For example, in sentence (i), which is obtained by removing *quasi* from (28b), the particle *non* is still present.

(i) Fai cuocere lentamente le cipolle finché non si disfano.
'Let the onions cook until they melt down.'

'Let the onions cook and stop cooking them shortly before they melt down.'

It is worth noting that the *finché*-sentence in (28b) has a non-veridical interpretation, according to which the onions will not melt down. This nicely corresponds to the non-veridical reading of *prima* in (29b), which is the paraphrase we have proposed for (28b).

### 6.3 Da + NP / da + [quando S] (*since*)

Corresponding to the English temporal connective 'since', Italian has the prepositional element *da*, which takes both nominal and *when*-clause complements. Besides this preposition, one also finds a conjunction proper, *dacché*, which is syntactically and morphologically similar to *finché* and takes clausal complements. Unlike *finché*, however, *dacché* is no longer in use in contemporary Italian, thus we will not consider it. In (30a,b) we give examples of *da* with a NP complement and with a *when*-clause complement.

(30) a. Viviamo qui quasi dal 2000.
'We have lived here almost since 2000.'

b. Viviamo in questa casa quasi da quando fu costruita.
'We have lived in this house almost since it was built.'

The interpretation of (30a) is that the state of our living here stretches backward up to a point in time which is shortly after 2000 (see Fig. 6a below), while the interpretation of (30b) is that the state of our living in this house stretches backward up to a point in time which is shortly after the building of the house (see Fig. 6b below).

Fig. 6a

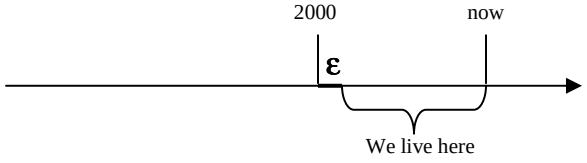
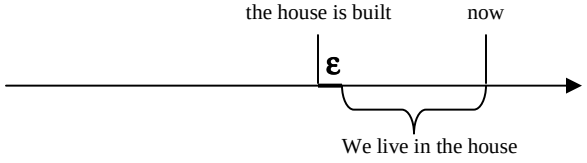



Fig. 6b




We assume that the intuitive interpretations of (30a) and (30b) are generated on the basis of logical structures in which *quasi* modifies the temporal phrase occurring to its right. A representation of the abstract structures of these sentences is given in (30a',b').

(30a') Quasi(Viviamo qui [$_F$ dal 2000])

(30b') Quasi(Viviamo in questa casa [$_F$ da quando fu costruita])

The semantic pattern that arises from the interpretation of (30a,b) can be described as follows: when it modifies a temporal phrase headed by *da* (or *da quando*), *quasi* determines an effect of approximation to a limit point from the right, where the limit

point is the temporal (or eventive) source introduced by the complement of the temporal connective. This is in contrast with what we have observed concerning the modification of temporal phrases with *quando* (or with the locational preposition *a*, 'at') and with *fino* / *finché*: in all those cases, we have seen that the standard effect of *quasi* is to approximate a limit point from the left, i.e. the relevant ordering of the temporal alternatives is from earlier times to later times. With *quasi da*, instead, the relevant ordering is from later times to earlier times, so that we have the reversed temporal scale. We hypothesize that the approximation from the right is a direct consequence of the inherent directionality of *da quando*, which requires a movement on the time axis from the future to the past, i.e. from the right to the left. When we interpret a sentence 'A da quando B', we consider an A-eventuality *as* stretching backwards from some point in time down to a source point at which a B-eventuality holds. As a consequence, in (30a,b) the implied temporal relation between the main clause eventuality and the limit point is the reversed one with respect to what we found above for (27) (involving the locational temporal connective *quando*) and for (28a,b) (involving the directional temporal connective *fino* / *finché*), and can be roughly characterized as "shortly after". Accordingly, it is possible to give the *dopo*-sentences (31a,b) as paraphrases of (30a,b).

(31) a. Siamo venuti a vivere qui poco dopo il 2000.
'We came to live here shortly after 2000.'

b. Siamo venuti a vivere in questa casa poco dopo che fu costruita.
'We came to live in this house shortly after it was built.'

There are sentences in which *quasi* occurs in the surface position between *da* and *quando*, which we think are worth describing. One such naturally occurring example from the web is given in (32):

(32) […] frequento il Blog di Grillo da quasi quando è nato e ne sono rimasto ampiamente soddisfatto per la qualità dei temi trattati e dal modo controcorrente di affrontarli. (http://www.meetup.com/beppegrillotrieste/members/3614767/)

'I have been using Grillo's Blog almost since it was born and I have been very satisfied with it for the good quality of the topics and the nonconformist way of dealing with them.'

The intuitive interpretation of (32) is that the author of the comment has been using the Blog since a time which shortly follows its creation. This is the same pattern that we have described for *quasi da (quando)*, i.e. approximation to the limit point from the right. In spite of *quasi* being to the immediate left of *quando*, we do not find the pattern that characterizes modification of *quando*-phrases by *quasi*, namely approximation to the limit point from the left. We take this fact as evidence for the claim that *quasi* is modifying the whole temporal phrase headed by *da quando* in (32), rather than the expression occurring to its immediate right at the surface. This is also evidence that there is no categorical requirement in Italian for the focus adverb to be immediately to the left of the focused constituent. We will return to this point when we consider the modifier-modifiee structure in sentences with *dopo* ('after').

### 6.4 Prima (*before*)

According to traditional descriptive grammars, the lexical item *prima*, corresponding to English *before*, has both the status of a prepositional element, which takes NP complements introduced by the preposition *di* 'at', and the status of a conjunction proper, which takes either finite *that*-clause complements (introduced by *che*) or infinitival complements introduced by *di*. We will not consider examples with nominal complements, so we will just focus on uses of *prima* as a conjunction. For each of the sentences in (33), we give the corresponding English translation, along with an English paraphrase expressing what we take to be the intuitive meaning of the sentence.

(33) a. L'avventura olimpica di Tommaso Rocchi è finita quasi prima di cominciare.
'The Olympic adventure of Tommaso Rocchi ended almost before it started.'
[intuitive meaning: 'The Olympic adventure of T. Rocchi lasted for a short time / ended shortly after it started.']

b. Fausto Coppi imparò a pedalare quasi prima di imparare a camminare.
'Fausto Coppi learned to bike almost before he learned to walk.'
[intuitive meaning: 'Fausto Coppi learned to bike quite early / shortly after he learned to walk.']

c. Oggi ho cominciato a lavorare quasi prima che sorgesse il sole.
'Today I began to work almost before the sun rose.'
[intuitive meaning: 'Today I began to work quite early / shortly after the sun rose.']

By looking at the interpretation of the sentences in (33), we see that all these sentences share a common semantic feature: they convey the meaning that the matrix event occurred quite early, earlier than one would have expected. Sentence (33a), adapted from a naturally occurring example, refers to the following context: the Italian soccer player T. Rocchi played two matches at the beginning of the 2008 Beijing Olympics, and then he had to discontinue his participation in the games because of an injury due to a previous accident. Given this context, the intuitive interpretation of (33a) is that the Olympic adventure of T. Rocchi ended earlier than expected, i.e. its duration was shorter than expected. Sentence (33b), on the other hand, is interpreted as meaning that the cycling champion Fausto Coppi was a precocious biker. Finally, (33c) is interpreted as saying that today I started my work very early. For each of these sentences, the temporal relation actually holding between the main clause event and the subordinate clause event is likely to be the relation expressed by *after*. In the case of (33a), we can be certain, from our world knowledge, that the end of the adventure actually occurred after the beginning of the adventure, though the meaning of the sentence will require that the end occurred *only a little bit* after the beginning. In the case of (33b), it is very plausible, still in view of our world knowledge, that F. Coppi actually learned to bike after learning to walk, but the meaning of the sentence will constrain the former event to have occurred *shortly* after the latter. Concerning (33c), it is less determinate how the actual situation is, since in this case we do not have background knowledge that makes it strongly unlikely that somebody may begin to work right at the time that the sun rises. Still, in this case too, it is probable that the speaker started her work after the sunrise, and the meaning of the sentence will impose the restriction that the beginning of the work occurred *shortly* after the sunrise.

A likely assumption is that the intuitive interpretations of (33a,b,c) are generated on the basis of logical structures in which *quasi* modifies the temporal phrase occurring to its right. A representation of the abstract structures of these sentences is given below.

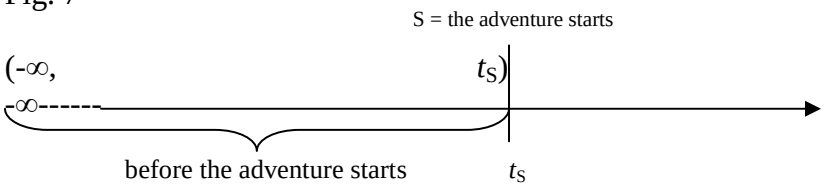
(33a') Quasi(L'avventura di Tommaso Rocchi è finita [$_F$ prima di cominciare])

(33b') Quasi(Fausto Coppi imparò a pedalare [$_F$ prima di imparare a camminare])

(33c') Quasi(Oggi ho cominciato a lavorare [$_F$ prima che sorgesse il sole])

The semantic pattern that arises from the interpretation of (33a,b,c) is not as easy to describe as the ones previously considered. In the case of temporal phrases with *quando*, *finché*, and *da quando*, it is always clear what intuitively counts as the "limit point": the temporal location denoted by S for *quando S*, the temporal goal denoted by S for *finché S*, and the temporal source denoted by S for *da quando S*. Once the limit point has been established, it is easy to state the generalizations about the approximation facts: approximation to the limit is from the left with *quando* and *finché*, while it is from the right with *da quando*. However, in the case of temporal phrases headed by *prima*, it is not so clear what counts as the limit point. We can be certain that it cannot be the time denoted by the clausal complement S (let us call this time $t_S$), since the semantic interpretation of *prima che S* already excludes $t_S$, and this means that, in principle, $t_S$ could be the alternative value which satisfies *quasi prima che S* in a particular case. This point can be understood more easily if we represent the intuitive meaning of *prima che S* as the open interval $(-\infty, t_S)$, as in Fig. 7.

Fig. 7




This representation makes it clear that $t_S$ belongs to the complement of *prima che S*, hence it could count as a verifying alternative for *quasi prima che S*; more exactly, from this representation we understand that $t_S$ is the maximum value among the scalar alternatives to *prima che S*, and assuming density for the order of times we further understand that there is no time preceding $t_S$ that can be designated as the limit point. We can conclude that the case of *prima che S* is different from the previous ones in that there exists a maximum value for the alternatives and there is no temporal entity that can play the role of the limit. This situation seems to entail that for *prima che S* there is a maximally close alternative, which is the maximum value $t_S$.

### 6.5 Dopo (*after*)

The lexical item *dopo*, which corresponds to English *after*, has traditionally been described as having both the status of a preposition which takes NP complements and the status of a conjunction which takes *that*-clause complements. In (34a-c) we give examples of both constructions. These examples also illustrate different patterns of modification that one can observe in sentences containing *quasi dopo*.

(34) a. Il pubblico romano si mostra affettuosissimo con numerosi applausi e standing ovations quasi dopo ogni canzone.
'The Roman audience shows itself very affectionate by means of many applauses and standing ovations almost after every song.'

b. Quasi dopo trenta giorni ho fatto un test di gravidanza ed è risultato negativo.
'Almost after thirty days I did a pregnancy test and it was negative.'

c. I film di guerra si estinsero o quasi dopo che Oliver Stone ebbe esaurito il suo interesse per il Vietnam.
'War movies got extinct or almost after Oliver Stone had exhausted his interest for Vietnam.'

In these examples there is no direct relation between *quasi* and *dopo*, *quasi* being intuitively related to some scalar expression occurring elsewhere in the sentence.[16] Let us consider each of these sentences in turn.

In (34a), *quasi* is intuitively related to the universal NP *ogni canzone* ('every song'), which is the complement of *dopo*. This sentence has a distributive interpretation: almost every song is such that applauses and standing ovations followed it. Here *quasi* plays its usual role as scalar adverb: (34a) entails the negation of the prejacent (i.e. it is not true that the Roman audience shows itself affectionate by means of applauses and standing ovations after every song), and it also entails the existential quantification over lower ranked alternatives (for some quantifier *Q* which approximates the strength of the universal quantifier, it is true that the Roman audience shows itself affectionate by means of applauses and standing ovations after *Q* song). The fact that *quasi* is related to *ogni canzone* in (34a) is confirmed by the following observation: if we insert *quasi* immediately to the left of the universal NP, so as to force the former to take scope only

[16] There are some cases in which *quasi* seems to modify *dopo*, as in the following example (an excerpt from a nursery rhyme that we found on Google (http://www.rimaiolo.it/Ballata_dei_dodici_mesi.html):

(i) Nasce col freddo e col gelo Gennaio
Fuoco scoppietta e si vuota il granaio
Mentre a Febbraio che è il mese più corto
Il sole tramonta quasi dopo che è sorto

'January comes with the cold and the frost
crackles the fire and the barn empties out
while in February which is the shortest month
the sun sets shortly after it has risen.'

Intuitively, *quasi* is related to *dopo* in (i). However, from the global interpretation of the text, one can see that *quasi* here shows the meaning of the modifier *poco* ('a little'), which is different from the meaning of the scalar adverb *quasi*. For one thing, *quasi* in (i) does not entail the negation of the prejacent (there is no entailment that on February the sun does not set after it has risen), and it can rather be characterized as denoting a small quantity of time. Relatedly, in (i) we do not obtain the same interpretation that we have observed with *quasi prima* (which, as we have seen, is understood as 'shortly after'). A hypothesis that one might entertain is that *quasi* is lexically ambiguous between two interpretations, the 'a little' interpretation being a secondary one, which surfaces in a few cases. In the following we will ignore this interpretation of *quasi*. However, we do not intend to say that the availability of this interpretation is of no interest to semantics, as it might turn out that the same interpretation were also accessible for the corresponding approximative adverbs in other languages.

on the latter, we obtain a sentence with the same meaning as (34a). This is shown in (34a'):

(34) a'. Il pubblico romano si mostra affettuosissimo con numerosi applausi e standing ovations dopo quasi ogni canzone.
'The Roman audience shows itself very affectionate by means of many applauses and standing ovations after almost every song.'

A further observation which is crucial for the claim that *quasi* bears no direct relation to *dopo* in (34a) is the following: if we replace the universal NP in (34a) with the NP *molte canzoni* ('many songs'), we end up with a bad sentence, in which *quasi* remains uninterpretable. This is shown in (35a):

(35) a. ? Il pubblico romano si mostra affettuosissimo con numerosi applausi e standing ovations quasi dopo molte canzoni.
'? The Roman audience shows itself very affectionate by means of many applauses and standing ovations almost after many songs.'

Indeed, while *quasi* can modify universal NPs, it cannot modify NPs with the determiner *molti*, as shown by the contrast between the good sentence *Ho ascoltato quasi ogni canzone* ('I have listened to almost every song') and the deviant one *Ho ascoltato quasi molte canzoni* ('I have listened to almost many songs'). If we remove *quasi* from (35a), the result is a perfectly sensible sentence. This confirms that the anomaly of (35a) depends on the dangling occurrence of *quasi*, which does not find any suitable expression in the sentence to modify: it seems that what acts as a "licenser" for *quasi* in (34a) is the semantics of the universal NP, whereas, as the anomaly of (35a) shows, there is nothing in the semantics of *dopo* itself which can license *quasi*.[17]

In (34b), *quasi* is intuitively related to the Measure Phrase (MP) *trenta giorni* ('thirty days'), which occurs to the right of *dopo*. Accordingly, we have the interpretation that a period of almost thirty days had passed from some contextually salient event, when the subject did a pregnancy test. In this sentence too, *quasi* plays its usual role as scalar adverb, as it entails the negation of the prejacent (i.e. it is not true that the subject did a pregnancy test after thirty days) and the existential quantification over lower ranked alternatives (for some numerical value *n* which is smaller than the number thirty and close to it, it is true that the subject did a pregnancy test after *n* days). In this case too, we can change the surface position of the adverb, and insert it to the immediate left of the MP *trenta giorni*, without bringing about any change in the meaning of the sentence.

(34) b'. Dopo quasi trenta giorni ho fatto un test di gravidanza ed è risultato negativo.
'After almost thirty days I did a pregnancy test and it was negative.'

A further observation, crucial for the claim that *quasi* does not bear a direct relation to *dopo* in (34b), is the following: if we replace the MP in (34b) with *diversi giorni* ('several days'), we end up with a deviant sentence, in which *quasi* remains uninterpretable. This is shown in (35b):

[17] One might observe that the relation of modification between *quasi* and *ogni canzone* in (34a) is evidence against the hypothesis that in Italian the modified constituent must be to the immediate right of its modifier in surface structure. Indeed, examples like (34a,b) show that it would be inappropriate to talk of a rule of grammar prescribing such a relation between focus adverb and focused constituent. We suggest that in languages like Italian there is only a preference for this relation.

(35) b.? Quasi dopo diversi giorni ho fatto un test di gravidanza ed è risultato negativo.
'? Almost after several days I did a pregnancy test and it was negative.'

Indeed, while *quasi* can modify numeral phrases like *trenta giorni*, it cannot modify similar phrases with the determiner *diversi*. This is shown by the contrast between the good sentence *Ho lavorato per quasi trenta giorni* ('I worked for almost thirty days') and the bad one *Ho lavorato per quasi diversi giorni* ('I worked for almost several days'). Notice that if we remove *quasi* from (35b), the resulting sentence is perfectly acceptable. Hence, the anomaly of (35b) depends on the dangling occurrence of *quasi*, which does not find any suitable expression in the sentence to modify. So, it seems that what licenses *quasi* in (34b) is the semantics of the MP *trenta giorni*, while there is nothing in the semantics of *dopo* which can license *quasi*, as shown by the anomaly of (35b).

On an alternative analysis for (34b) that one might consider, *quasi* would modify not the MP *trenta giorni*, but the composition of *dopo* with this MP. On this analysis, the modified expression *dopo trenta giorni* ('after thirty days') would provide the right boundary $R_i$ of a time interval *i* whose length is thirty days and whose left boundary is the time of a contextually salient event, and *quasi* would approximate $R_i$ from the left. The truth conditions obtained on this analysis would be the same as if we assume that *quasi* modifies *trenta giorni*, in spite of the differences in the underlying processes of semantic composition. This alternative analysis, however, cannot be extended to example (34a) because of the distributive interpretation of the universal NP *ogni canzone* ('every song'), whose contribution to the meaning of the sentence is totally different from the contribution of *trenta giorni* in (34b). For one thing, while *dopo trenta giorni* is interpreted as 'after an interval *i* whose length is thirty days', the phrase *dopo ogni canzone* is not interpreted as 'after an interval *i* which includes the temporal trace of every song'. This would rather be the interpretation of *dopo tutte le canzoni* ('after all the songs'), as in sentence (36):

(36) Ci sono stati applausi quasi dopo tutte le canzoni.
'There were applauses almost after all the songs.'

This sentence can be true if there were applauses only once, namely shortly before the right boundary of the minimal interval that includes the running times of all the songs.
In sum: while an analysis in which *quasi* modifies *dopo trenta giorni* would predict the same meaning as one in which *quasi* modifies *trenta giorni*, an analysis in which *quasi* modifies *dopo ogni canzone* does not yield the intuitively correct interpretation. We will assume an analysis of (34a) in which *quasi* modifies the NP complement *ogni canzone*, which is then scoped out of the *dopo*-phrase in order to get the distributive interpretation 'almost every song is such that there were applauses and standing ovations after it'.
Furthermore, there is a reason to reject the analysis in which *quasi* modifies *dopo trenta giorni*. If this were the case, we would miss an explanation of why *quasi* cannot modify the composition of *dopo* with a finite clause. The reasoning is as follows: in *dopo trenta giorni* and in *dopo che Gianni è uscito* ('after Gianni left') the temporal interpretation is the same: *dopo* denotes a relation of succession between its external argument (the matrix clause event) and another time/event. This other time/event is the right boundary of the thirty days long interval in the former case and the time of the event of Gianni leaving in the latter case. Hence, if the interpretation of the two *dopo*-phrases has the same

structure, there is no way to explain why the former can be modified by *quasi* and the latter cannot, as shown by the uninterpretability of (37):

(37) * Ci sono stati applausi quasi dopo che Gianni è uscito.
There are been applauses almost after that Gianni is left

Sentence (37) cannot mean that there were applauses after a time point which is before the time at which Gianni left. But if we assume that *quasi* is modifying *trenta giorni* in (34b), we expect the reading of this sentence to be obtained through selection of an alternative interval $i_{alt}$ whose length is less than thirty days. The interpretation which is obtained is that the subject did a pregnancy test after the right boundary of $i_{alt}$, which is intuitively correct. The reason for the contrast between (34b) and (37) is that in the former the phrase *trenta giorni* provides a limit point on a scale, that *quasi* can modify, but in the latter the complement clause *che Gianni è uscito* does not provide any limit point on a scale.

In (34c), *quasi* is related to the matrix achievement predicate *si estinsero* ('got extinct') and the interpretation of the sentence is that war movies got near to extinction after Oliver Stone lost interest for Vietnam. Once more, the role of *quasi* here is the one described in section 4 above: (34c) entails the negation of the prejacent (it is false that War movies got extinct after Oliver Stone exhausted his interest for Vietnam) and the existential quantification over lower ranked alternatives (for some scalar alternative *S* to the state of being completely extinct, characterizable as a state of rareness close to complete extinction, it is true that War movies got into *S* after Oliver Stone exhausted his interest for Vietnam). In accordance with the above observation, we can place *quasi* to the immediate left of the predicate *si estinsero*, so as to make the relation of modification between the adverb and the predicate more transparent in the surface, and by this operation we do not bring about any change in meaning, as shown in (34c'):

(34) c'. I film di guerra quasi si estinsero dopo che Oliver Stone ebbe esaurito il suo interesse per il Vietnam.
'War movies almost got extinct after Oliver Stone had exhausted his interest for Vietnam.'

In conclusion, the vast majority of examples with *quasi dopo* that we found exemplify patterns of modification in which *quasi* is related to some scalar expression occurring elsewhere in the sentence. This is in striking contrast with the interpretation of sentences with *quasi prima*, where we observe a very productive pattern in which *quasi* modifies the temporal connective *prima*, thus triggering reversal of the temporal relation 'before', and giving rise to the meaning that we have described above for the sentences in (33).

## 7. Previous semantic analyses of *almost*

In this section we critically consider two previous analyses that have been proposed for *almost* in the formal semantics literature, namely Sevi (1998) and Penka (2006). Both proposals are stated in a formally explicit way. This will make it easier to confront them with our data and criticize them on empirical and theoretical grounds. We start from Sevi's (1998) proposal.

### 7.1 Sevi's (1998) account

Sevi works out his analysis within a model-theoretic framework in which the evaluation of sentences is made relative to indices from a linearly ordered, discrete set *I*. Indices are the formal counterparts of circumstances of evaluation. For his purposes, Sevi assumes that the set *I* can be a set of possible worlds, a set of standards of precision for resolving vagueness, or a set of time intervals. Further, the set *I* is assumed to be contextually determined. The basic idea is that *almost* operates on aspects of circumstances of evaluation, hence on indices. In this respect, *almost* is semantically similar to a modal operator. The analysis is presented as follows (see Sevi 1998, 65-66):

(38) Let A be a formula, *I* a discrete set, and < a three-place relation such that for every $i^* \in I$, $<_{i^*}$ is a strict partial order on *I* ($i_1 <_{i^*} i_2$ is read as $i_1$ is closer to $i^*$ than $i_2$).

$[\![ \text{almost A} ]\!]^{i^*} = 1$ *iff* $[\![ \text{A} ]\!]^{i^*} = 0 \;\&\; \exists i' \in I \; \forall i'' \in I \; (i' \neq i'' \neq i^* \rightarrow i' <_{i^*} i'' \;\&\; [\![ \text{A} ]\!]^{i''} = 1)$

(in words: *Almost A* is true in $i^*$ iff *A* is false in $i^*$ and there is a maximally close *I* such that *A* is true in *i*)

Notice that both a negative and a positive clause are present in the semantics of *almost*: the negative clause (the first conjunct of the *definiens*) says that the prejacent proposition *A* is false in the current index *i**; the positive clause (contained in the second conjunct of the *definiens*) says that *A* is true in some alternative index *i* which is maximally close to *i**. Following Horn's (2002) terminology, we call these clauses *polar* and *proximal* component, respectively. The polar component of Sevi corresponds to the negative entailment that *quasi* has on our analysis, as it was informally sketched in sect. 4, paragraph (A), while his proximal component is conceptually close to the proximality entailment that *quasi* has on our analysis, as it was informally sketched in sect. 4, paragraph (C). Notice further that Sevi's semantics leaves it underspecified whether the closest index *i* is before or after *i** in the linearly ordered set *I*. This information is often obtained as a consequence of the polar component in conjunction with some semantic properties of the particular sentence at issue. For example, consider the sentence *Danny is almost bald*. This contains a vague predicate, *bald*. For such sentences, Sevi's assumption is that their evaluation is made relative to a set of standards of precision (in the sense of Lewis 1979), linearly ordered from stricter standards to more relaxed standards. The polar component says that 'Danny is bald' is false relative to the current precision standard *s**, while the proximal component says that 'Danny is bald' is true relative to the closest standard *s*. From the polar component and the structure of the set of precision standards, it follows that the closest standard *s* must be less strict than *s**, hence we get the information that the closest index in this case must be after the current index in the linearly ordered set of precision standards.

The crucial difference between our analysis and Sevi's is dependent on the way the proximality condition is implemented. Here, we will abstract away from the fact that Sevi's analysis quantifies over indices of evaluation in the metalanguage, instead of quantifying - as ours does - over scalar alternatives determined in the object language. The aspect that we will uniquely focus upon is the requirement that the *closest* index to the original index of evaluation be considered, rather than just some index close enough to it. We will argue that Sevi's semantics is inadequate if applied to our data, and that its

inadequacy is due precisely to this feature "select the closest index". Preliminarily, we make an observation about the application of Sevi's account to uses of *almost* in the temporal domain. The only example that Sevi explicitly considers, for whose analysis the set *I* is identified with a set of time intervals, is a sentence similar to (39). Its analysis is given in (40):

(39) By three o'clock we had (already) almost arrived in Paris (we landed a few minutes later).
[adapted from Sevi's example (46), from Sevi 1998 p. 87]

(40) The sentence 'We are in Paris' was not true at *t** = three o'clock, but it was true in the closest (contextually relevant) time interval *t*.

More specifically, Sevi's assumption is that *I* in this case is a set of time intervals with a partial ordering of closeness to the reference time. Here the assumption that *I* is a set of time intervals is made plausible by the presence of a reference time, introduced by the time adverbial *by three o'clock*. This feature of the example at hand makes it possible to analyze (39) along the lines of (40): the prejacent 'We are in Paris' was not true at the reference time *t** = 3pm, but it was true at the closest time interval *t*. Notice that from the polar component and from the structure of the course of events in time (which is such that, if we had not yet arrived in Paris at *t* but we had arrived in Paris at *t'*, then *t* must be before *t'*), we obtain the further information that the closest time *t* must be after the current evaluation time *t** in this case.
However, as soon as we look at the simplest ones among our data, we realize that it is not possible to apply Sevi's analysis to them via the assumption that the set of indices *I* is a set of time intervals. Take example (41), which repeats (1a) from sect. 1:

(41) Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

This involves a perfective clause, *Leo è arrivato* 'Leo arrived', with no underlying reference time. Also, *quasi* is semantically related to the PP *alle 15* in (41), not to the VP. These features of the example at hand make it impossible to analyze it in the same way as (39) above. For one thing, it would make no sense to say that (41) entails that the prejacent *Leo è arrivato alle 15* was not true at a reference time interval *t** and that it was true at the closest time interval, the reason being that there is no reference time involved in the interpretation of (41): the intuitive role of the prejacent of (41) is simply to assign a temporal location to a past event of Leo's arrival (as in its English gloss *Leo arrived at 3pm*), and not to say that an event of Leo's arrival had occurred by a certain reference time (as in the English perfect sentence *Leo had arrived by 3pm*). The conclusion is that the only way to apply Sevi's analysis to (41) is by assuming that the set of indices *I* is a set of possible worlds. Given this assumption, sentence (41) is straightforwardly analyzed along the following lines:

(41') The sentence 'Leo arrived at 3pm' is not true in the world *w**, but it is true in the closest (contextually relevant) world *w*.

However, the maximality requirement expressed in the second conjunct of (41') is troublesome. Indeed, what does it mean that the sentence 'Leo arrived at 3pm' is true in a world *w* which is the closest to *w**? We propose to read this condition as requiring that the time at which Leo arrived in *w** is a time which is the *closest* time to 3 pm. This

imposes a discrete order on the set of times, i.e. an order in which 3 pm has an immediately preceding time. This is an unwelcome consequence. Now, it might be argued that this order is discrete from the point of view of the practical interests of the conversational participants, without any commitment to the discreteness of physical time. It is likely that this would be Sevi's reply, as he explicitly assumes that the set of indices *I* is contextually determined, so that it would be natural for him to argue that the contextually determined set of worlds in this case would be related to a set of contextually relevant time intervals. But even accepting the claim that the order of times is discrete in this pragmatic sense, there is still an empirical problem for the proximal component of (41). One could truthfully utter (41) to refer to a past situation in which Leo arrived at 2:55 pm, while he was expected to arrive at 2:30 pm. So, the question that we raise is the following: in what sense the alternative world *w* at which Leo did arrive at 3 pm would be the *closest* world to the actual world *w** (at which Leo arrived at 2:55 pm)? Wouldn't this impose an inadmissible (even pragmatically inadmissible) order on times according to which 2:55 pm would be the time immediately preceding 3 pm?
The maximality requirement of Sevi's analysis is also troublesome for the treatment of *quasi prima* (and, more generally, for the treatment of *quasi*-modification of overt comparatives – see the discussion in sect. 9 below). Consider example (42), which repeats sentence (33b):

(42) Fausto Coppi imparò a pedalare quasi prima di imparare a camminare.
'Fausto Coppi learned to bike almost before he learned to walk.'

As in the case of (41), we assume that Sevi's analysis can be applied to (42) by taking the set of indices *I* to be a set of possible worlds. Given this assumption, the truth conditions of (42) will be as in (43):

(43) The sentence 'Fausto Coppi learned to bike before he learned to walk' is false in the world *w**, but it is true in the maximally close world *w*.

In this case, the maximality requirement would arguably imply that the equative relation "as early as" holds at the actual index *w**. Indeed, what does it mean that the sentence 'Fausto Coppi learned to bike before he learned to walk' is true relative to a world *w* which is the closest to *w**? This requirement seems to imply that Fausto Coppi learned to bike in *w** right at the same time at which he learned to walk in *w**. So, Sevi's semantics rules out the 'less-than' interpretation that we find in the actual data.

### 7.2 Penka's (2006) account

Penka (2006) aims at providing a semantics for *almost* as a cross-categorial modifier, although the focus of her paper is on modification of NPs and the respective restrictions, as exemplified by the contrast between (44a) and (44b) (Penka's [1a] and [1b]):

(44) a. Almost every student passed the exam.
b.* Almost a / some student passed the exam.

Penka proposes a semantics for *almost* on which this adverb behaves similarly to focus sensitive particles like *only* and *even*. Like the latter, *almost* requires an alternative set C consisting of propositions in which the modified constituent has been replaced by objects of the same semantic type. Following Hitzeman (1992), Penka assumes that *almost*

requires an ordering of the alternatives in C, namely it requires a scale. A further, crucial assumption is that the required scale is a Horn scale, namely a scale based on the entailment relation. In other terms, on Penka's proposal the alternatives are not introduced through focus on the modified expression α, but are lexically associated with α. Our diagnosis is that this feature of Penka's proposal is due to its restriction to cases of NP modification. Indeed, with quantifying determiners like *every*, the scale is *some* < *several* < *many* < *most* < *every*, with numeral determiners like *one hundred* (on their 'at least' interpretation) the scale is … *ninety-eight* < *ninety-nine* < *one hundred*. Crucially, in both cases any element on the scale is entailed by higher ranked elements. As we shall see in a moment, the restriction to lexically provided, entailment-based scales severely reduces the empirical coverage of the analysis, making it impossible to extend it to some important cases (e.g. sentences in which *almost* modifies locational time adverbials, or VPs of various sorts). Penka takes scalar alternatives to be propositions, rather than sub-propositional constituents of any semantic type. A sentence in which *almost* modifies an expression P entails a related sentence without *almost* in which P is replaced by a value close by, but lower on the scale associated with P. The lexical entry that is proposed for *almost* is the following (the relational symbol '≈' in the *definiens* is used to refer to a suitable relation of closeness between propositional alternatives on the relevant scale):

[[ almost ]] = $\lambda w.\lambda p.\neg p(w) \wedge \exists q\,[q \approx p \wedge q(w)]$ (Penka 2006: 279)

As in Sevi's semantics, there's no requirement that the alternative introduced by the existential quantifier be ranked lower than the prejacent *p*. However, unlike in Sevi (1998), given that the alternatives are always ordered by entailment, the negative clause '$\neg p(w)$' always entails that the positive clause '$q(w)$' must be true of an alternative *q* which is ranked lower than *p* (i.e. *q* is logically weaker than *p*). We also notice that another point of differentiation between Penka's and Sevi's proposals is that the former gives up the maximality requirement, i.e. the existentially quantified alternative is not required to be maximally close to *p* in this case. We have seen that maximal closeness gives rise to empirical difficulties. Therefore, we expect Penka's account to fare better than Sevi's with respect to those situations in which the maximality requirement gives rise to troubles.

The major problem with an account that, like Penka's, assumes Horn scales is that it cannot provide an explanation for the reading of sentences like (41), repeated below as (45):

(45) Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

As we saw above when discussing Sevi's account, sentence (45) could be true in a scenario in which Leo arrived at 2:55 pm. This means that the proposition that Leo arrived at 2:55 pm would be the alternative to the proposition that Leo arrived at 3 pm that would satisfy the proximal component. However, it is immediate to see that the latter proposition does not entail the former.[18] This example shows a general shortcoming of the account under consideration: when *almost* modifies a locational time adverbial, the relevant alternatives can by no means be ordered by logical strength, as the semantic

[18] For a discussion of the challenges that data of this kind pose to accounts of *almost* relying on entailment-based scales, see Nouwen (2006).

function of such time adverbials is to locate an event at a particular time, and to deny that an event *e* is located at a time *t* does never entail that *e* is located at a time prior to *t* (nor, for that matter, at a time posterior to *t*). An account based on Horn scales has also problems with sentences like (26b,c), repeated below as (46) and (47), respectively:

(46) Leo quasi non mi vide.
'Leo almost didn't see me.'

(47) Leo va di fretta, sta quasi correndo.
'Leo is in a hurry, he is almost running.'

On the one hand, sentence (46) could be true in a situation *s* in which Leo walked towards me without seeing me until he was half meter from me, so in this case it seems that the alternative to the proposition that Leo didn't see me is the complex proposition that we have just used to characterize *s*. It is clear, however, that this complex proposition is not entailed by the proposition that Leo didn't see me. On the other hand, sentence (47) could be true in a scenario in which Leo is walking fast. Thus, the proposition that Leo is walking fast would be the alternative to the proposition that Leo is running that would satisfy the proximal component. But the latter proposition does not entail the former, since, no matter who *x* is, the proposition that *x* is running does not entail the proposition that *x* is walking fast.

The above discussion makes it clear that we need a much broader notion of scale, in which the ordering between the alternatives may be of different kinds (Hirschberg 1985). Relevant examples are the temporal ordering of the scalar alternatives in *quasi alle 3pm*, or the sequence of steps leading to the culmination point in the complex event structure of an accomplishment predicate, as in *quasi dimostrò il teorema* (cf. Amaral 2006, Winter 2006, Caudal and Nicolas 2005). Another case in point is the case of "rank orders" (Horn 1972, 2002), i.e. ordered sets like <dead, moribund, sick> and <full professor, associate professor, assistant professor>, which provide the relevant scales for the interpretation of sentences like (48) and (49) below. A characteristic of a rank order <Y, X> is that Y unilaterally entails ¬ X, i.e. the stronger term does not entail the truth of lower ranked alternatives, but rather their falsity: if John is dead, it is not the case that John is a moribund, and if John is a full professor, John is not an associate professor. In this case, intuitively, the only possible ordering between the scalar terms involves a temporal progression that is correlated with a change in status.[19]

(48) Gianni è quasi morto.
'Gianni is almost dead.'

(49) Gianni è quasi professore ordinario.
'Gianni is almost a full professor.'

Sentence (48) would be true in a situation in which Gianni is moribund, and (49) would be true in a situation in which Gianni is an associate professor, but neither is *moribund* entailed by *dead*, nor is *associate professor* entailed by *full professor*.

[19] "*Dead*, it should be noted, does not entail (*at least*) *dying*, nor does *dying* (or *moribund*) entail *(at least*) *sick*, but if an entity is dead at $t_0$, we can infer the existence of an earlier time $t_i$: $i < 0$ when the entity was dying" (Horn 1972: 51).

We have also seen that a predicate whose lexical semantics does not provide a scale, like the achievement predicate *attraversare il confine* ('to cross the border') in (26f) from sect. 5, can be coerced to a scalar interpretation when modified by *quasi*. An interesting example is provided by color terms. The lexical meaning of the predicate *bianca* 'white' does not provide a scale. Sentence (50) is ambiguous, as there are (at least) two natural scalar representations that can be contextually retrieved, as made explicit by the possible continuations in (50') and (50''). In (50'), the predicate *bianca* is interpreted as the endpoint of a process by which the initial color of the door has faded. The predicate is interpreted here as the culmination point of this process, i.e. the state of the door having no color. The other interpretation is that of (50''), according to which most parts of the door have been painted white, but not its whole surface (i.e. it is not entirely white yet). Here, the mereological structure of the door provides a homomorphic mapping to stages of the complex event of painting the whole door white:

(50) La porta è quasi bianca.
'The door is almost white.'

(50') La porta è quasi bianca, però c'è ancora un po' di colore nella parte inferiore.
'The door is almost white, but there is still a little bit of color in the part below.'

(50'') La porta è quasi bianca, però rimangono ancora da dipingere i lati.
'The door is almost white, but the sides still need to be painted.'

Therefore, it seems too strong a requirement that the scale selected by *quasi* be provided by the modified expression in terms of a Horn scale. Admittedly, in some cases, the ordering between the alternatives may be independently given by the lexicon (as in the case of quantifiers), but it doesn't have to be the case: the scalar representation can be provided by the discourse or extra-linguistic context, to meet the requirement of *quasi* that a scale be available. The general conclusion seems to be that scalar representations other than Horn scales have to be considered. The entailment-based scale is just one type of scale that may be selected by the semantic restrictions of *quasi*.

We have shown that *quasi* is essentially scalar. A consequence of our account is a critical reconsideration of some claims from the previous literature on *almost*. We believe that the distinction between a scalar and a counterfactual interpretation of *almost* is ill-posed, as so-called counterfactual uses of *almost* are still instances of the scalar interpretation conceived in general terms, so that counterfactual uses are not a disjoint set of uses but rather a subset of the scalar ones. For another thing, scholars have been focusing on a very restricted set of phenomena, mostly modification of quantificational NPs by *almost*, and a consequence has been that only a specific type of scale has been considered as relevant to the semantics of *almost*, namely Horn scale. But, as we have shown in previous sections, Horn scales are not general enough to account for the whole range of data.

## 8. Semantic analysis of the previous data

We assume an event semantics framework. Verb predicates, as well as adverbial modifiers, project an argument position for eventualities at LF, which is abstracted over by the λ-operator (Davidson 1967; Parsons 1985, 1990; Landman 2000). Adverbial

modification is handled by means of predicate intersection, that is to say, the λ-abstracts $\lambda e_E$.V(…*e*…) and $\lambda e_E$.Adv(…*e*…), which correspond to the verbal and to the adverbial projection respectively, are combined so as to yield the derived abstract $\lambda e_E$.[V(…*e*…) ∧ Adv(…*e*…)]. A default operation of existential closure maps a λ-abstract $\lambda e_E.\varphi(e)$ onto the existentially quantified formula $\exists e\varphi(e)$. Temporal phrases are adverbial modifiers, and are treated accordingly as intersective modifiers. As for *quasi*, we assume that it is a cross-categorial modifier which takes a focused constituent α as argument and yields the logical conjunction of two elements: the negation of the proposition resulting from the application of the semantic value of α, and a proposition resulting from the application of a lower ranked alternative to the semantic value of α. We assume a semantics for focused expressions along the following lines: the semantic contribution of a complex $[\alpha]_F$ consisting of an expression α (α being of some syntactic category) and a focus $[\ ]_F$ on α is analyzed as an ordered pair $<\alpha', S_{\alpha'}>$ in which the first coordinate is the semantic value of α and the second coordinate is a set of alternatives to α', all of the same semantic type as α', which are ordered according to some linear relation.[20] We refer to such ordered pairs as *f-pairs.* On this semantics, the specific contribution of focus can be analytically identified with the set of alternatives to the semantic value of the expression bearing focus. We do not see the linear order on the alternatives as part of the semantic contribution of focus, but rather as contextually determined. Given the above assumptions, we propose the interpretation for *quasi* given in (51) below. On this interpretation, *quasi* takes two arguments: the first argument is an *f*-pair, and the second argument is the semantic value of the part of the sentence which is not in focus. The *f*-pair, of course, is such that its first coordinate is the semantic value of the focused constituent *x*, while its second coordinate is the set of alternatives to the semantic value of *x* provided by focus, that are ordered in a contextually-relevant way.

(51) $[[\text{ quasi }]] = \lambda<P_{<\gamma,t>}, S>.\ \lambda x_\gamma.\ \neg P(x) \wedge \exists Q_{<\gamma,t>} \in S\ [Q <_S P \wedge \text{close}_S(Q, P) \wedge Q(x)]$[21]

The equation (51) is not a lexical entry, as 'γ' here is a variable over types, not the name of any particular type; this is in accordance to our assumption of the cross-categorial status of *quasi*.

## 8.1 Modification of *AT*-adverbials

[20] A two-place relation R is said to be *linear* (or a *linear order*) if it satisfies the following conditions (see Landman 1991: 84):

(c1) $\forall x\ R(x, x)$ (reflexivity)
(c2) $\forall x \forall y\ [[R(x, y) \wedge x \neq y] \rightarrow \neg R(y, x)]$ (antisymmetry)
(c3) $\forall x \forall y \forall z\ [[R(x, y) \wedge R(y, z)] \rightarrow R(x, z)]$ (transitivity)
(c4) $\forall x \forall y\ [R(x, y) \vee R(y, x) \vee x = y]$ (connectedness)

For our purposes, it does not matter whether the relation that orders the focus-alternatives is reflexive, i.e. whether it satisfies condition (c1). In what follows, we adopt the notation '$<_S$' to refer to the linear order defining a scale *S*, instead of adopting the notation '$\leq_S$', thus suggesting that we consider *strict* (i.e. non reflexive) linear orders. However, our notational choice is uniquely due to practical convenience, and nothing essential in our proposal hinges on the assumption that the relation ordering the alternatives is a strict linear order rather than a reflexive linear order.

[21] This equation could be seen as a set of lexical entries, one for each of the possible values of the variable 'γ' ranging over semantic types.

We start from the case in which a locational time adverbial is modified by *quasi*. For convenience, we refer to such adverbials as *AT*-adverbials. The class of *AT*-adverbials will include time adverbials headed by *quando* 'when'. We provide compositional analyses for the sentences (1a) and (27), repeated below as (52) and (53), respectively. Along with each sentence to be analysed, we provide a specification of the relevant aspects of its LF representation. In the LFs below, focused constituents are written in boldface. On our analysis, *AT*-adverbials have semantic values of type <E, t>, i.e. they denote functions from events to truth-values. Accordingly, the scalar alternatives to the semantic value of *alle 15* ('at 3 pm') will be objects of type <E, t> too. The interpretations of the temporal preposition *a* ('at') and the temporal connective *quando* ('when') that we assume are specified below.

(52) Leo è arrivato quasi alle 15.
'Leo arrived at almost 3 pm.'

(52') $\exists$ [$_{IP}$ Leo è arrivato [$_{AdvP}$ quasi **[$_{AdvP}$ alle 15]**]]

[[ a ]] = $\lambda t.\ \lambda e.\ \tau(e) \subseteq t$

[[ le 15 ]] = 3pm

[[ alle 15 ]] = $\lambda e.\ \tau(e) \subseteq$ 3pm

[[ **alle 15** ]] = $\langle \lambda e.\ \tau(e) \subseteq$ 3pm, $S\rangle$

[[ quasi **alle 15** ]] = $(\lambda\langle P_{<E,t>}, S\rangle.\ \lambda e_E.\ \neg P(e) \wedge \exists Q_{<E,t>} \in S\,[Q <_S P \wedge \text{close}_S(Q, P) \wedge Q(e)])(\langle \lambda e.\ \tau(e) \subseteq$ 3pm, $S\rangle)$

= $\lambda e_E.\ \neg(\lambda e.\ \tau(e) \subseteq 3\text{pm})(e) \wedge \exists Q_{<E,t>} \in S\,[Q <_S (\lambda e.\ \tau(e) \subseteq 3\text{pm}) \wedge \text{close}_S(Q, (\lambda e.\ \tau(e) \subseteq 3\text{pm})) \wedge Q(e)]$

= $\lambda e_E.\ \neg\tau(e) \subseteq 3\text{pm} \wedge \exists Q_{<E,t>} \in S\,[Q <_S (\lambda e.\ \tau(e) \subseteq 3\text{pm}) \wedge \text{close}_S(Q, (\lambda e.\ \tau(e) \subseteq 3\text{pm})) \wedge Q(e)]$

[[ (52') ]] = 1 *iff* $\exists e$ [arrive($e$, Leo) $\wedge \neg\tau(e) \subseteq 3\text{pm} \wedge \exists Q_{<E,t>} \in S\,[Q <_S (\lambda e.\ \tau(e) \subseteq 3\text{pm}) \wedge \text{close}_S(Q, (\lambda e.\ \tau(e) \subseteq 3\text{pm})) \wedge Q(e)]]$

For the modifier *alle 15*, we assume that the relevant scale $S$ includes the following values, ordered in the specified way:

$(\lambda e.\ \tau(e) \subseteq 12\text{pm}) <_S (\lambda e.\ \tau(e) \subseteq 1\text{pm}) <_S (\lambda e.\ \tau(e) \subseteq 2\text{pm}) <_S (\lambda e.\ \tau(e) \subseteq 3\text{pm})$

The ordering rule underlying this scale is that the function $(\lambda e.\ \tau(e) \subseteq t)$ precedes the function $(\lambda e.\ \tau(e) \subseteq t')$ if and only if $t$ temporally precedes $t'$. In other words, our assumption is that the relevant scale of alternative values to [[ alle 15 ]] is determined by a linear order which is defined on the basis of the natural relation of temporal precedence between times.[22] In light of this, we can rewrite the truth-conditions for (52) given above in the following simplified way:

[22] We do not claim that this assumption is empirically adequate for handling just any case in which *quasi* modifies an *AT*-adverbial, as we in fact know of some exceptional cases whose interpretation can only be

[[ (52') ]] = 1 *iff* $\exists e$ [arrive($e$, Leo) $\wedge$ $\neg\tau(e) \subseteq$ 3pm $\wedge$ $\exists t$ [$t <$ 3pm $\wedge$ close($t$, 3pm) $\wedge$ $\tau(e) \subseteq t$]]

This analysis correctly predicts that sentence (52) is true iff there is an event of Leo's arrival which occurred before 3 pm, at a time close to 3 pm (in a contextually relevant sense of 'close').

Let us now consider sentence (53), given along with its LF (53'):

(53) Leo è arrivato quasi quando stavamo per partire.
'Leo arrived almost when we were about to leave.'

(53') $\exists$ [$_{IP}$ Leo è arrivato [$_{AdvP}$ quasi **[$_{AdvP}$ quando [$_{IP}$ stavamo per partire]]**]]

The compositional derivation of (53)'s truth conditions is reported below.

[[ quando ]] = $\lambda P_{<E,t>}$. $\lambda e_1$. $\exists e_2$ [$P(e_2) \wedge R(\tau(e_1), \tau(e_2))$][23]

[[ stavamo per partire ]] = $\lambda e_1$. [Past($e_1$) $\wedge$ be-about-to-leave($e_1$, we)]

[[ quando stavamo per partire ]] = $(\lambda P_{<E,t>}.\ \lambda e_1.\ \exists e_2\ [P(e_2) \wedge R(\tau(e_1), \tau(e_2))])(\lambda e_1.$ [Past($e_1$) $\wedge$ be-about-to-leave($e_1$, we)])

= $\lambda e_1$. $\exists e_2$ [($\lambda e_1$. [Past($e_1$) $\wedge$ be-about-to-leave($e_1$, we)]) ($e_2$) $\wedge$ $\tau(e_1) \subseteq \tau(e_2)$]

= $\lambda e_1$. $\exists e_2$ [[Past($e_2$) $\wedge$ be-about-to-leave($e_2$, we)] $\wedge$ $\tau(e_1) \subseteq \tau(e_2)$]

[[ **quando stavamo per partire** ]] = $<\lambda e_1$. $\exists e_2$ [[Past($e_2$) $\wedge$ be-about-to-leave($e_2$, we)] $\wedge$ $\tau(e_1) \subseteq \tau(e_2)$], $S>$

[[ quasi **[$_{AdvP}$ quando [$_{IP}$ stavamo per partire]]** ]] =

= $(\lambda <P_{<E,t>}, S>.\ \lambda e_E.\ \neg P(e) \wedge \exists Q_{<E,t>} \in S\ [Q <_S P \wedge \text{close}_S(Q, P) \wedge Q(e)])(<\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)], S>)$

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dealt with on the alternative assumption that the relevant scale be determined on the basis of the relation of temporal succession (i.e. the converse relation with respect to the natural order of temporal precedence). We discuss one such exceptional case later on in this section. We qualify cases of this sort as "exceptional" since, as far as we can tell, they are very rare. The most common pattern in the interpretation of a structure *quasi* + *AT*-adverbial is the one which is captured by the assumption that the relevant scale be determined on the basis of the relation of temporal precedence: that is the pattern in which we get the implication that the event occurs *before* the time denoted by the *AT*-adverbial. We cannot provide any other reason for this pattern being so widely and solidly attested besides the greater naturalness of the relation of temporal precedence, compared to its converse relation. After all, temporal precedence is the relation which fits our natural experience of the flow of time from the present towards the future, whereas we do not have an experience of the time flowing from the present back into the past.

[23] In the interpretation of *quando*, '*R*' is an open parameter whose possible values are contextually determined relations between time intervals. The only value of '*R*' that we will consider here is the sub-interval relation. This restriction depends on the fact that whenever *quasi* modifies a *when*-clause, the latter has imperfective aspect (this fact is morphologically overt in Italian, but it has a manifestation in English too, since *when*-clauses modified by *almost* are stative) - a fact that we do not try to explain in this paper. We assume that it is the presence of the imperfective aspect in the *when*-clause that determines instantiation of the relational parameter '*R*' through the sub-interval relation.

= $\lambda e.\ \neg(\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)])(e) \wedge \exists Q_{<E,t>} \in S\ [Q <_S (\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)]) \wedge \text{close}_S(Q, (\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)])) \wedge Q(e)]$

= $\lambda e.\ \neg\exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e) \subseteq \tau(e_2)]) \wedge \exists Q_{<E,t>} \in S\ [Q <_S (\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)]) \wedge \text{close}_S(Q, (\lambda e_1.\ \exists e_2\ [[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})] \wedge \tau(e_1) \subseteq \tau(e_2)])) \wedge Q(e)]$

[[ (53') ]] = 1 *iff* $\exists e_1\ [\text{Past}(e_1) \wedge \text{arrive}(e_1, \text{Leo}) \wedge \neg\exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)] \wedge \exists Q \in S\ [Q <_S (\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)]) \wedge \text{close}_S(Q, (\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)])) \wedge Q(\tau(e_1))]]$

We assume that the alternative values to $\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)]$ are of the kind in (54):

(54) $\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge S(e_2) \wedge \tau(e_1) \subseteq \tau(e_2)]$

Here 'S' denotes a contextually recoverable predicate that is true of some eventuality causally related to the state of us being about to leave in the referred situation; for example, S could be true of the eventuality of us being preparing our suitcases, or of the eventuality of us having just left. If the S-eventuality precedes the state of us being about to leave, we have the ordering given in (a). If the S-eventuality follows the state of us being about to leave, we have the ordering in (b). In both formulas '$<_S$' denotes temporal precedence, which is the ordering relation that determines the scale in this case:

(a) $(\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge S(e_2) \wedge \tau(e_1) \subseteq \tau(e_2)])\ <_S\ (\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)])$

(b) $(\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)]) <_S (\lambda e_1.\ \exists e_2\ [\text{Past}(e_2) \wedge S(e_2) \wedge \tau(e_1) \subseteq \tau(e_2)])$

Now we can simplify the truth-conditions given above for (53) in the following way (the iota-term '$\iota e_2[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})]$' on the right-hand side of the biconditional denotes the maximal state of us being about to leave):

[[ (53') ]] = 1 *iff* $\exists e_1\ [\text{Past}(e_1) \wedge \text{arrive}(e_1, \text{Leo}) \wedge \neg\exists e_2\ [\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we}) \wedge \tau(e_1) \subseteq \tau(e_2)] \wedge \exists t\ [t <_T \tau(\iota e_2[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})]) \wedge \text{close}(t, \tau(\iota e_2[\text{Past}(e_2) \wedge \text{be-about-to-leave}(e_2, \text{we})])) \wedge \tau(e_1) \subseteq t]]$

The analysis predicts that sentence (53) is true iff an event of Leo's arrival occurred in the relevant situation, whose temporal trace preceded the time of our being about to leave and was close to it.

## 8.2 Modification of directional time adverbials

The next step is to analyze directional time adverbials with *da* 'since' and *fino* 'until'. On our proposal, *da* denotes a relation between a time *t* and an event *e*, for which the temporal trace of *e* includes the left-closed interval whose left bound is *t* and whose right bound is the reference time $t_R$. The time $t_R$ is an open parameter whose value is contextually assigned. Given that *since*-adverbials always modify sentences whose temporal interpretation requires that a reference time be specified (sentences with perfect tenses in English, and with imperfective aspect in Italian), the open parameter $t_R$ in the lexical entry of *da* will be assigned the reference time of the matrix sentence. Notice that once a given value is assigned to $t_R$, the denotation of *da* is a partial function: it is defined only for those times *t* such that *t* precedes $t_R$. The partiality of the function denoted by *da* will make it possible to account for the infelicity of an utterance like *Obama has been President of the US since 2012* made right at this moment (February 9th 2009).

We analyze sentence (30a), repeated here as (55), and given along with its LF (55'):

(55) Viviamo qui quasi dal 2000.
'We have lived here almost since 2000.'

(55') $\exists$ [$_{IP}$ Viviamo qui [$_{PP}$ quasi **[$_{PP}$ dal 2000]**]]

[[ da ]] = $\lambda t.\ \lambda e.\ \tau(e) \supseteq [t, t_R)$

[[ il 2000 ]] = 2000a.d.

[[ dal 2000 ]] = $\lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$)

[[ **dal 2000** ]] = $\langle \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$), $S\rangle$

[[ quasi **dal 2000** ]] = $(\lambda\langle P_{<E,t>}, S\rangle.\ \lambda e_E.\ \neg P(e) \wedge \exists Q_{<E,t>} \in S\ [Q <_S P \wedge \text{close}_S(Q, P) \wedge Q(e)])\ (\langle \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$), $S\rangle)$

= $\lambda e_E.\ \neg\tau(e) \supseteq$ [2000a.d., $t_R$) $\wedge\ \exists Q_{<E,t>} \in S\ [Q <_S \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$) $\wedge\ \text{close}_S(Q, \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$)) $\wedge\ Q(e)]$

[[ (55') ]] = 1 *iff* $\exists e$ [live($e$, we, here) $\wedge\ \neg\tau(e) \supseteq$ [2000a.d., *now*) $\wedge\ \exists Q \in S\ [Q <_S \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$) $\wedge\ \text{close}_S(Q, \lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$)) $\wedge\ Q(\tau(e))]]$

We assume that the alternative values to $\lambda e.\ \tau(e) \supseteq$ [2000a.d., $t_R$) are of the kind in (56):

(56) $\lambda e.\ \tau(e) \supseteq [t_{alt}, t_R)$

We further assume that the lower ranked alternatives are such that 2000a.d. $<_T t_{alt} <_T t_R$. This assumption implies that the scale of the alternatives for *da* is determined by the succession relation between times $>_T$ (i.e. the time $t_{alt}$ in any lower ranked alternative must follow the limit time 2000a.d.). Now we can simplify the truth-conditions given above for (55), in the following way:

[[ (55') ]] = 1 *iff* $\exists e$ [live($e$, we, here) $\wedge\ \neg\tau(e) \supseteq$ [2000a.d., *now*) $\wedge\ \exists t$ [$t >_T$ 2000a.d. $\wedge$ close($t$, 2000a.d.) $\wedge\ \tau(e) \supseteq [t, now)]]$

Sentence (55) is predicted to be true in the case in which there is an eventuality of us living here which stretches backward from the present time up to some point in the past which closely follows the time 2000a.d.

Concerning *fino* 'until', we propose an analysis on which it denotes a relation between a time *t* and an event *e*, for which the temporal trace of *e* includes a right-closed interval whose right bound is *t* and whose left bound is a time $t_{inc(e)}$ which we identify with the inception of *e*. The fact that the left bound of the interval cannot be identified with the reference time $t_R$, while in the case of *since* we could identify the right bound of the relevant interval with $t_R$, depends on the fact that *until*-adverbials, unlike *since*-adverbials, modify sentences whose temporal interpretation does not require a reference time (sentences with imperfective aspect in Italian, which typically require a reference time, do not allow for modification by *until*-adverbials). *Until*-adverbials modify sentences with perfective aspect, and the open parameter $t_{inc(e)}$ in the lexical entry of *fino* will be assigned the inception time of the matrix event. Notice that once a given value is assigned to $t_{inc(e)}$, the denotation of *fino* is a partial function: it is defined only for those times *t* such that *t* follows $t_{inc(e)}$. The partiality of the function denoted by *fino* will make it possible to account for the infelicity of an utterance like *George W. Bush was President of the US until 2000*.

Let us now consider sentence (28a), repeated below as (57), whose LF is given in (57'):

(57) Leo ha fumato quasi fino a mezzanotte.
'Leo smoked almost until midnight.'

(57') $\exists$ [$_{IP}$ Leo ha fumato [$_{PP}$ quasi **[$_{PP}$ fino a mezzanotte]**]]

[[ fino ]] = $\lambda t.\ \lambda e.\ \tau(e) \supseteq (t_{inc(e)}, t]$

[[ fino a mezzanotte ]] = $\lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am]$

[[ **fino a mezzanotte** ]] = $<\lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am], S>$

[[ quasi **fino a mezzanotte** ]] = $(\lambda<P_{<E,t>}, S>.\ \lambda e_E.\ \neg P(e) \wedge \exists Q_{<E,t>} \in S\ [Q <_S P \wedge close_S(Q, P) \wedge Q(e)])(<\lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am], S>)$

= $\lambda e_E.\ \neg\tau(e) \supseteq (t_{inc(e)}, 12{:}00am] \wedge \exists Q \in S\ [Q <_S \lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am] \wedge close_S(Q, \lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am]) \wedge Q(e)]$

[[ (57') ]] = 1 *iff* $\exists e$ [smoked($e$, Leo) $\wedge \neg\tau(e) \supseteq (t_{inc(e)}, 12{:}00am] \wedge \exists Q \in S\ [Q <_S \lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am] \wedge close_S(Q, \lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am]) \wedge Q(\tau(e))]]$

We assume that the alternative values to $\lambda e.\ \tau(e) \supseteq (t_{inc(e)}, 12{:}00am]$ are of the kind in (58):

(58) $\lambda e.\ \tau(e) \supseteq (t_{inc(e)}, t_{alt}]$

We also assume that the lower ranked alternatives are such that $t_{inc(e)} <_T t_{alt} <_T 12{:}00am$. This assumption implies that the scale of the alternatives for *until* is determined by the precedence relation between times $<_T$ (i.e. the time $t_{alt}$ in any lower ranked alternative

must precede the limit time 12:00am). Now we can simplify the truth-conditions given above for (57), in the following way:

[[ (57') ]] = 1 *iff* $\exists e$ [smoked($e$, Leo) $\wedge$ $\neg\tau(e) \supseteq (t_{inc(e)}$, 12:00am] $\wedge$ $\exists t$ [$t <_T$ 12:00am $\wedge$ close($t$, 12:00am) $\wedge$ $\tau(e) \supseteq (t_{inc(e)}, t]]]$

The analysis predicts that sentence (57) is true just in case in which there is a past event of Leo's smoking which stretches forward from its inception time up to a subsequent point in time which closely precedes midnight.

Given the semantics of *da* and *fino* that we have proposed, it follows that the relation defining the relevant scale must be temporal succession for the former and temporal precedence for the latter. Indeed, suppose that the relevant scale for the interpretation of (55) were defined by the relation of temporal precedence $<_T$. The truth-conditions that we would get for (55) are given by the following formula:

(59) $\exists e$ [live($e$, we, here) $\wedge$ $\neg\tau(e) \supseteq$ [2000a.d., *now*) $\wedge$ $\exists t$ [$t <_T$ 2000a.d. $\wedge$ close($t$, 2000a.d.) $\wedge$ $\tau(e) \supseteq [t$, *now*)]]

But this formula is necessarily false, no matter how we instantiate the existentially quantified variable '*t*': given that $\tau(e)$ does not include [2000a.d., *now*), it follows that $\tau(e)$ will not include [*t*, *now*) either, for any *t preceding* 2000a.d., as any such interval [*t*, *now*) will be a proper super-interval of [2000a.d., *now*).

A parallel argument can be run against the hypothesis that the scale underlying (57)'s interpretation is defined by the relation of temporal succession $>_T$. It is then possible to establish that, in the case of (55) and (57), what ordering relation is relevant can be determined on the basis of the negation of the focused part, as only one choice of order turns out to be logically compatible with this negation. This consequence of the semantic analysis of *da* and *fino* is empirically adequate, as it conforms to our previous observation that when *quasi* modifies *da* (respectively *fino*), it triggers an effect of approximation to a limit point from the right (respectively from the left).

In contrast, we observe that there is nothing in the semantics of locational *a* (nor in that of *quando*) proposed in section 8.1 above which forces the selection of a scale defined by temporal precedence. In this case, the ordering relation could also be temporal succession, and we would still get satisfiable truth-conditions. This prediction is empirically correct, as an analysis that forced selection of a temporal precedence scale for sentences in which *quasi* modifies an *AT*-adverbial would be unable to explain a possible reading of (60) below, i.e. the reading in which Leo fell *after* the beginning of the race. This reading is made salient by the context provided below.

[Context: Leo was one of the participants in the race, he started the race but fell out of his bike very soon.]

(60) Leo è caduto dalla bici quasi all'inizio della gara.[24]
'Leo fell out of his bike almost at the beginning of the race.'

## 8.3 Modification of *BEFORE*-adverbials

[24] Thanks to Andrea Bonomi for pointing out this example to us.

We turn now to the case of *quasi prima*. We assume a decompositional analysis of *prima* as the comparative of the degree predicate *presto* (following Del Prete 2008), and we further assume that *quasi* modifies the comparative marker *più* (a determiner of type <<d,t>, <<d,t>, t>> - d being the type of degrees), i.e. *quasi-più* is the modifier-modifiee pair in sentence (33a), which we repeat below as (61).

(61) L'avventura di Tommaso Rocchi è finita quasi prima di cominciare.
'The adventure of T. Rocchi ended almost before it started.'

The LF representation of (61) is as follows:

(61') [[Quasi **[più]** 1[di $PRO_3$ cominciare $d_1$-presto]]$_2$ 2[l'avventura$_3$ è finita $d_2$-presto]]

The lexical entry that we assume for the determiner *più* is the following:

$[\![ \text{ più } ]\!] = \lambda P_{<d,t>}.\ \lambda Q_{<d,t>}.\ \exists d\ [\neg P(d) \wedge Q(d)]$

Given these assumptions, our analysis makes the following predictions. In the first place, we compute the negative entailment of *quasi*, as in (62):

(62) [[Quasi **[più]** 1[di $PRO_3$ cominciare $d_1$-presto]]$_2$ 2[l'avventura$_3$ è finita $d_2$-presto]] *entails*
not [[**[più]** 1[di $PRO_3$ cominciare $d_1$-presto]]$_2$ 2[l'avventura$_3$ è finita $d_2$-presto]]

The truth-conditions for the entailed LF in (62) are expressed by the formula in (63), which is logically equivalent to (64):

(63) $\neg\exists d\ [\neg\exists e\ [\text{began}(e, \text{the-adventure}) \wedge \text{presto}(e, d)] \wedge \exists e\ [\text{finished}(e, \text{the-adventure}) \wedge \text{presto}(e, d)]]$

(64) $\forall d\ [\exists e\ [\text{finished}(e, \text{the-adventure}) \wedge \text{presto}(e, d)] \rightarrow \exists e\ [\text{began}(e, \text{the-adventure}) \wedge \text{presto}(e, d)]]$

Formula (64) says that for any time *t*, if an event of the adventure finishing occurred by *t*, then an event of the adventure beginning occurred by *t* as well. In other words, the end of the adventure did not precede the beginning of the adventure, i.e. the adventure actually took place. This proposition is actually part of the meaning conveyed by (61).
In the second place, we compute the scalar entailment of *quasi*. To do this, we need to specify a set of scalar alternatives. We have assumed that the alternatives are determined by focus on the modified expression, which is *più* in this case. Accordingly, the set of alternatives will contain semantic objects of the same type as *più*, i.e. <<d, t>, <<d, t>, t>> (this is the type of relations between sets of degrees). What objects of this type might count as scalar alternatives to *più*? For concreteness, we focus on a couple of objects that we assume as weaker alternatives to *più* on the relevant scale. These are the relations between sets of degrees given in (65):

(65) a. $\lambda P_{<d,t>}.\ \lambda Q_{<d,t>}.\ \forall d\ [P(d) \rightarrow Q(d)]$

b. $\lambda P_{<d,t>}.\ \lambda Q_{<d,t>}.\ \exists d[P(d) \wedge \neg Q(d) \wedge \exists d'\ [d \geq d' \wedge \text{close}(d, d') \wedge Q(d')]]$

The relation (65a) is the semantic value of the equative marker *tanto quanto* ('as much as'), while the one in (65b) is the semantic value of the *less*-comparative *un pò meno* ('a little less'). For example, consider the sentences (66a,b) below. They have the LFs (67a,b), and their truth conditions are compositionally derived in (68a,b), respectively.

(66) a. Leo è arrivato tanto presto quanto Teo.
Leo is arrived as-much early as Teo
'Leo arrived as early as Teo.'

b. Leo è arrivato un pò meno presto di Teo.
Leo is arrived a little less early of Teo
'Leo arrived a little less early than Teo.'

(67) a. [tanto quanto 1[Teo è arrivato $d_1$-presto]]$_2$ 2[Leo è arrivato $d_2$-presto]

b. [un pò meno 1[Teo è arrivato $d_1$-presto]]$_2$ 2[Leo è arrivato $d_2$-presto]

(68) a. [[ tanto quanto ]] = $\lambda P_{<d,t>}.\ \lambda Q_{<d,t>}.\ \forall d\ [P(d) \rightarrow Q(d)]$
[[ 1[Teo è arrivato $d_1$-presto] ]] = $\lambda d.\ \exists e$ [arrived($e$, Teo) $\wedge$ presto($e$, $d$)]
[[ 2[Leo è arrivato $d_2$-presto] ]] = $\lambda d.\ \exists e$ [arrived($e$, Leo) $\wedge$ presto($e$, $d$)]
[[ (67a) ]] = 1 *iff* $\forall d$ [$\exists e$ [arrived($e$, Teo) $\wedge$ presto($e$, $d$)] $\rightarrow$ $\exists e$ [arrived($e$, Leo) $\wedge$ presto($e$, $d$)]]

b. [[ un pò meno ]] = $\lambda P_{<d,t>}.\ \lambda Q_{<d,t>}.\ \exists d[P(d) \wedge \neg Q(d) \wedge \exists d'\ [d \geq d' \wedge$ close($d$, $d'$) $\wedge\ Q(d')]]$
[[ 1[Teo è arrivato $d_1$-presto] ]] = $\lambda d.\ \exists e$ [arrived($e$, Teo) $\wedge$ presto($e$, $d$)]
[[ 2[Leo è arrivato $d_2$-presto] ]] = $\lambda d.\ \exists e$ [arrived($e$, Leo) $\wedge$ presto($e$, $d$)]
[[ (67b) ]] = 1 *iff* $\exists d$ [$\exists e$ [arrived($e$, Teo) $\wedge$ presto($e$, $d$)] $\wedge\ \neg\exists e$ [arrived($e$, Leo) $\wedge$ presto($e$, $d$)] $\wedge\ \exists d'$ [$d \geq d' \wedge$ close($d$, $d'$) $\wedge\ \exists e$ [arrived($e$, Leo) $\wedge$ presto($e$, $d'$)]]]

Sentence (66a) is predicted to be true if and only if for every time *t*, if Teo's arrival occurred by *t* then Leo's arrival occurred by *t* too. In other words, Leo's arrival is predicted to have occurred no later than Teo's arrival. On the other hand, sentence (66b) is predicted to be true if and only if there is a time *t* such that Teo's arrival occurred by *t*, Leo's arrival did not occur by *t*, and for some time *t'* which is shortly after *t*, Leo's arrival occurred by *t'*. Both these predictions are empirically correct.

Now, the equative *tanto quanto* is a weaker alternative to the comparative *più* in two senses: besides being a lower ranked alternative to *più* in the scale that we assume, it is also logically weaker than *più*, since a sentence of the form *x è tanto P quanto y* ('*x* is as much P as *y*') is asymmetrically entailed by the corresponding comparative *x è più P di y* ('*x* is more P than *y*'). Besides this, the equative also seems to be very close to the comparative: if *x* is not taller than *y*, it seems that the closest of the weaker alternatives is that *x* is as tall as *y*. On the other hand, the *less*-comparative *un pò meno* is also a weaker alternative to the comparative *più* (although not in a logical sense, as a sentence of the form *x è un pò meno P di y* '*x* is a little less P than *y*' is not entailed by the corresponding comparative *x è più P di y* '*x* is more P than *y*'), but it is not as close to the comparative as the equative *tanto quanto* is, given that the scale we assume is *più* > *tanto quanto* > *un pò meno*.

At this point, it would be natural to think that in cases of *quasi* modifying a comparative, the semantic value of the equative could be used to instantiate the existential quantifier over alternatives. Indeed, nothing follows from the semantics that would prevent the equative from being the verifying alternative value. However, what we observe is that the intended meaning of *quasi(x è più P di y)*, and in particular of *quasi(A*

*prima di B)*, always involves the relation *a little less*. As far as the semantics proper goes, this fact remains unexplained. In section 9 we develop a pragmatic account of this fact.

Before concluding this sub-section, we notice that the analysis just proposed for *quasi prima* differs from the analyses that we have proposed for the locational and directional temporal connectives in one important respect. For the latter, we have assumed that the constituent modified by *quasi* is the entire temporal phrase, while for the former we have assumed that *quasi* modifies just the comparative morpheme underlying *prima*. The reason for this asymmetry is straightforward, given our account of the meaning of *quasi*: as long as *quasi* finds a constituent X that belongs to a natural scale, as is the case with *più*, the semantic requirement of *quasi* is satisfied and *quasi* can modify X without need to further compose X with other constituents. The locational and directional temporal connectives, on the other hand, do not belong to any natural scale, and, unlike *più* and *prima*, they cannot be uttered in isolation (i.e. without their internal complements). Hence, it is only from the composition of the temporal connective with its internal argument that a set of scalar alternatives can be retrieved.

## 8.4 Modification of *AFTER*-adverbials

We have seen that *quasi* can modify a *dopo*-adverbial if it contains a MP or a universal NP complement, as in sentences (69a,b) below - which repeat (34a,b) from section 6.1.5. On the other hand, sentence (69c) is unacceptable, and it cannot have a symmetrical interpretation with respect to the sentence with *prima* given in (33a) in section 6.1.4.

(69) a. Il pubblico romano si mostra affettuosissimo con numerosi applausi quasi dopo ogni canzone.

'The Roman audience shows itself very affectionate by means of many applauses almost after every song.'

b. Quasi dopo trenta giorni ho fatto un test di gravidanza ed è risultato negativo.
'Almost after thirty days I did a pregnancy test and it was negative.'

c. ?L'avventura è cominciata quasi dopo che è finita.
'? The adventure started almost after it ended.'
[it cannot mean 'The adventure started very late.']

We have seen that in (69a) *quasi* intuitively modifies the quantified NP (QNP) *ogni canzone* ('every song') which provides the complement of *dopo*. On the analysis we are going to propose, the lexical item *quasi* and the QNP *ogni canzone* are parts of a unique constituent, [$_{NP}$ quasi [$_{NP}$ ogni canzone]], which is discontinuous at surface structure. This constituent is of the same syntactic category and semantic type as its sub-constituent [$_{NP}$ ogni canzone]. Specifically, we assume that it has the semantic type of a generalized quantifier over events. Following Heim and Kratzer (1998), we also assume that phrases denoting generalized quantifiers undergo Quantifier Raising (QR) at LF, leaving a coindexed trace behind. A straightforward consequence of our assumptions is that *quasi* will move along with the QNP *ogni canzone* in the course of the derivation of (69a)'s

LF.[25] Since a single instance of QR takes place, targeting a single generalized quantifier expression, only one trace will be generated, the trace being of the same type as the objects over which the generalized quantifier is defined. In this case, we will end up with a trace of the type of events. Given the above assumptions, the LF of (69a) will be as in (70):

(70) [Quasi ogni canzone]$_1$ 1 ∃[Il pubblico romano si mostra affettuosissimo con numerosi applausi dopo [ $t_1$ ]]

For the sake of simplicity, we change (70) to the easier to handle representation (71):

(71) [Quasi ogni canzone]$_1$ 1 ∃[ci furono applausi dopo [ $t_1$ ]]

On the analysis that we propose for *dopo*, it denotes a relation of temporal succession between events. Two events $e_1$, $e_2$ are connected by the relation at issue when the temporal trace of the first completely follows the temporal trace of the second, in symbols $\tau(e_1) >_I \tau(e_2)$. The relation $>_I$ is a strict partial order defined over the set of time intervals I, and it satisfies the condition in (72) ($>_T$ is the strict total order of temporal succession defined over the set of time instants T):

(72) $i >_I i'$ *iff* $\forall x \forall y\, [x \in i \wedge y \in i' \rightarrow x >_T y]$

The lexical entry that we assume for *dopo* is given in (73) below. The first argument of the function which interprets *dopo* is instantiated by temporal measures, which we model as equivalence classes of time intervals in an obvious way: two intervals are members of the same temporal measure iff they have the same size. The first argument gives the measure of the interval $\tau(e_2)$ - $\tau(e_1)$ which separates $\tau(e_2)$ from $\tau(e_1)$.[26] The functor 'μ' in (73) denotes a function which maps any time interval onto its temporal measure. We assume that the measure-argument is optional, unlike the two event-arguments. The reason for having an optional measure-argument in the semantics of *dopo* is the existence of sentences like (69b), in which the MP to the right of *dopo* arguably realizes an extra-argument of the temporal connective, which has to be distinguished from its internal event-argument.[27] [28] We further assume that in cases in which the measure-argument is

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[25] Notice that we are not assuming that *quasi* is moved by some independent, *ad hoc* operation, which would operate independently from the general rule of QR. What we are assuming instead is that the whole constituent [$_{NP}$ quasi [$_{NP}$ ogni canzone]], which happens to be discontinuous at the surface, is targeted by a single instance of QR in the derivation of the LF of (69a), by which both the modifier *quasi* and the modifiee *ogni canzone* are moved at the same time.

[26] We say that an interval $i_1$ separates two intervals $i_2$, $i_3$ when $i_2 \cap i_3 = \varnothing$ and $i_1$ is the minimal interval $i^*$ such that $(i^* \cup (i_2 \cup i_3)) \in$ I.

[27] Evidence for the claim that the MP *trenta giorni* in sentence (i.a) realizes an argument of *dopo*, rather than functioning as a modifier of the temporal connective, is provided by the contrast between (i.a,b) and (ii.a,b):

(i) a. Gianni è arrivato dopo trenta giorni.
'Gianni arrived after thirty days.'

b. Gianni è arrivato trenta giorni dopo.
'Gianni arrived thirty days after.'

(ii) a. * Gianni è arrivato prima trenta giorni.
'Gianni arrived before thirty days.'

b. Gianni è arrivato trenta giorni prima.

not provided by the context (either linguistic or extra-linguistic), the value of the temporal measure variable '*s*' in (73) is set to zero by default, having the effect of trivializing the condition $\mu(\tau(e_2) - \tau(e_1)) \geq s$.

(73) [[ dopo ]] = $\lambda s.\ \lambda e_1.\ \lambda e_2.\ \tau(e_2) >_I \tau(e_1) \wedge \mu(\tau(e_2) - \tau(e_1)) \geq s$

The derivation of the truth-conditions for LF (71) is displayed in (74):

(74) [[ ogni canzone ]] = $\lambda Q_{<E,\ t>}.\ \forall e\ [\text{song}(e) \rightarrow Q(e)]$

[[ **ogni canzone** ]] = $<\lambda Q_{<E,\ t>}.\ \forall e\ [\text{song}(e) \rightarrow Q(e)],\ S>$

[[ quasi **ogni canzone** ]] = $(\lambda<\Theta_{<<E,t>,\ t>},\ S>.\ \lambda P_{<E,t>}.\ \neg\Theta(P) \wedge \exists \wp_{<<E,t>,t>} \in S\ [\wp <_S \Theta \wedge \text{close}_S(\wp,\ \Theta) \wedge \wp(P)])(<\lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)],\ S>)$

= $\lambda P.\ \neg\forall e\ [\text{song}(e) \rightarrow P(e)] \wedge \exists \wp \in S\ [\wp <_S \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)] \wedge \text{close}(\wp,\ \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)]) \wedge \wp(P)]$

[[ 1 ∃[ci furono applausi dopo [ $t_1$ ]] ]] = $\lambda e_3.\ \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) >_I \tau(e_3)]$

[[ (71) ]] = $(\lambda P.\ \neg\forall e\ [\text{song}(e) \rightarrow P(e)] \wedge \exists \wp \in S\ [\wp <_S \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)] \wedge \text{close}(\wp,\ \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)]) \wedge \wp(P)])(\lambda e_3.\ \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) >_I \tau(e_3)])$

= $\neg\forall e\ [\text{song}(e) \rightarrow \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) >_I \tau(e)]] \wedge \exists \wp \in S\ [\wp <_S \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)] \wedge \text{close}(\wp,\ \lambda Q.\ \forall e\ [\text{song}(e) \rightarrow Q(e)]) \wedge \wp(\lambda e_3.\ \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) >_I \tau(e_3)])]$

For the case at hand, we can fairly assume that the scalar alternatives to *ogni canzone* are the generalized quantifiers on the following Horn scale:

(75) Qualche canzone < molte canzoni < ogni canzone

---

'Gianni arrived thirty days before.'

Sentence (ii.a) is simply ungrammatical, in particular *trenta giorni* cannot be interpreted as a modifier of *prima* in (ii.a), hence the sentence cannot get the interpretation that Gianni arrived thirty days before the contextually relevant event. By contrast, this is the natural interpretation of sentence (ii.b), in which *trenta giorni* is immediately to the left of *prima*: in this position, *trenta giorni* is interpreted as a modifier of the temporal connective. Therefore, if *trenta giorni* were interpreted as a modifier of *dopo* in (i.a), yielding the interpretation that Gianni arrived thirty days after the relevant event (which is the interpretation of [i.b]), we would have no explanation for why it cannot be interpreted as a modifier of *prima* in (ii.a), yielding the corresponding interpretation that Gianni arrived thirty days before the relevant event.

[28] Besides sentences such as (69b), in which only a MP occurs to the immediate right of *dopo*, there are also sentences in which both a MP and a clausal complement occur after the temporal connective, as exemplified in (i):

(i) Gianni è arrivato dopo trenta giorni che è partito Leo.
'Gianni arrived after thirty days from when Leo left.'

In sentence (i) all the arguments of the function which interprets *dopo* are overtly realized: the measure-argument by the MP to the immediate right of the temporal connective, the internal event-argument by the clause to the immediate right of the MP, and the external event-argument by the matrix clause.

It is plausible that the proximal component will be instantiated by the semantic denotation of *molte canzoni* in this case. Assuming an interpretation for this QNP like the one specified in (76), we get the truth-conditions given in (77) for LF (71).

(76) [[ molte canzoni ]] = $\lambda Q.\ |\{e\text{: song}(e) \wedge Q(e)\}| > |\{e\text{: song}(e) \wedge \neg Q(e)\}|$

(77) $\neg\forall e\ [\text{song}(e) \rightarrow \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) > \tau(e)]] \wedge |\{e\text{: song}(e) \wedge \exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) > \tau(e)]\}| > |\{e\text{: song}(e) \wedge \neg\exists e_2\ [\text{applauses}(e_2) \wedge \tau(e_2) > \tau(e)]\}|$

Our analysis predicts that sentence (69a) is true if and only if the following conditions obtain: (a) not every song was followed by applauses (polar component), and (b) there were more songs followed by applauses than songs followed by no applauses (proximal component). Notice that application of QR to the complex QNP *quasi ogni canzone* also allows us to represent the distributive interpretation of (69a), according to which for almost every song *e* there occurred applauses by the audience after *e*.

Let us now consider (69b), repeated below. This is an example in which the internal event-argument of *dopo* is provided by the context, i.e., the sentence is interpreted in context *c* as meaning that the speaker did a pregnancy test thirty days after the event *e* occurred – *e* being an event maximally salient in *c*.

(69) b. Quasi dopo trenta giorni ho fatto un test di gravidanza ed è risultato negativo.
'Almost after thirty days I did a pregnancy test and it was negative.'

We have seen that in (69b) *quasi* intuitively modifies the MP *trenta giorni* ('thirty days') occurring to the right of the temporal connective. We assume that the modified MP realizes the measure-argument of *dopo*. We propose a semantics for MPs like *trenta giorni* in which they denote generalized quantifiers over temporal measures. The interpretation of *trenta giorni* is given in (78), in which 'M' denotes the type of temporal measures and '*s*' is a variable of type M.

(78) [[ trenta giorni ]] = $\lambda P_{<M,t>}.\ \exists s\ [P(s) \wedge s \geq 30\text{-days}]$

This is based on the idea that *trenta giorni* behaves as the indefinite description *un lasso di tempo di trenta giorni* ('a time period of thirty days'), whence the existential quantification over temporal measures. As for (69b), we assume that *quasi* and *trenta giorni* are parts of a discontinuous constituent [quasi [trenta giorni]], which has the same semantic type as its sub-constituent [trenta giorni], i.e. it denotes a generalized quantifier over temporal measures. As such, [quasi [trenta giorni]] undergoes QR, the result being an LF like (79):

(79) [Quasi [trenta giorni]]$_1$ 1[ho fatto un test di gravidanza dopo $t_1$ *e**]

Part of the semantic composition for sentence (69b) is shown in (80):

(80) [[ quasi **trenta giorni** ]] = $(\lambda\langle\Theta_{\langle\langle M,t\rangle,\ t\rangle},\ S\rangle.\ \lambda P_{<M,t>}.\ \neg\Theta(P) \wedge \exists \wp_{\langle\langle M,t\rangle,t\rangle} \in S\ [\wp <_S \Theta \wedge \text{close}_S(\wp, \Theta) \wedge \wp(P)])(\langle\lambda P_{<M,t>}.\ \exists s\ [P(s) \wedge s \geq 30\text{-days}],\ S\rangle)$

= $\lambda P_{<M,t>}.\ \neg\exists s\ [P(s) \wedge s \geq 30\text{-days}] \wedge \exists \wp_{\langle\langle M,t\rangle,t\rangle} \in S\ [\wp <_S \lambda P_{<M,t>}.\ \exists s\ [P(s) \wedge s \geq 30\text{-days}] \wedge \text{close}_S(\wp, \lambda P_{<M,t>}.\ \exists s\ [P(s) \wedge s \geq 30\text{-days}]) \wedge \wp(P)]$

[[ dopo $t_1$ $e^*$ ]] = $(\lambda s.\ \lambda e_1.\ \lambda e_2.\ \tau(e_2) > \tau(e_1) \wedge \mu(\tau(e_2) - \tau(e_1)) \geq s)(g(t_1))(e^*)$

= $\lambda e_2.\ \tau(e_2) > \tau(e^*) \wedge \mu(\tau(e_2) - \tau(e^*)) \geq g(t_1)$

[[ ho fatto un test di gravidanza dopo $t_1$ ]] =

= $\exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq g(t_1)$]

[[ 1[ho fatto un test di gravidanza dopo $t_1$] ]] =

= $\lambda s.\ \exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq s$]

[[ (79) ]] = 1 *iff* $\neg\exists s$ [$\exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq s$] $\wedge$ $s \geq$ 30-days] $\wedge$ $\exists \wp_{<<M,t>,t>} \in S$ [$\wp <_S \lambda P_{<M,t>}.\ \exists s$ [$P(s) \wedge s \geq$ 30-days] $\wedge$ close$_S$($\wp$, $\lambda P_{<M,t>}.\ \exists s$ [$P(s) \wedge s \geq$ 30-days]) $\wedge$ $\wp(\lambda s.\ \exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq s$])]

Assuming that the alternatives to *trenta giorni* form a scale like in (81), in which the ordering is determined by the measure of the time interval, in such a way that lower ranked alternatives have time intervals of smaller size, we can rewrite the truth conditions for (79) in the simplified form given in (82).

(81) $\lambda P_{<M,t>}.\ \exists s$ [$P(s) \wedge s \geq$ 28-days] $<$ $\lambda P_{<M,t>}.\ \exists s$ [$P(s) \wedge s \geq$ 29-days] $<$ $\lambda P_{<M,t>}.\ \exists s$ [$P(s) \wedge s \geq$ 30-days]

(82) $\neg\exists s$ [$\exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq s$] $\wedge$ $s \geq$ 30-days] $\wedge$ $\exists n\ n < 30 \wedge$ close($n$, 30) $\wedge$ $\exists s$ [$\exists e$ [I-did-pregnancy-test($e$) $\wedge$ $\tau(e) > \tau(e^*) \wedge \mu(\tau(e) - \tau(e^*)) \geq s$] $\wedge$ $s \geq n$-days]

Our analysis predicts that sentence (69b) is true if and only if the following two conditions hold: (a) there is no temporal measure *s* at least as great as 30 days such that an event of the speaker doing a pregnancy test follows the contextually relevant event *e** by the measure *s*, and (b) there is a temporal measure *s* a little bit less than 30 days such that an event of the speaker doing a pregnancy test follows the contextually relevant event *e** by the measure *s*.

As shown above, the acceptability of examples (69a) and (69b) can be accounted for by the presence, in the complement of *dopo*, of a lexical item that denotes a value on a set of scalar alternatives and hence may combine with *quasi*. On the other hand, the semantics of *dopo* does not meet the selectional restrictions of *quasi*: the relation of temporal succession between events denoted by *dopo* does not provide a limit value on any natural scale. Our claim is that the unacceptability of **quasi dopo* belongs to the same type of semantic anomalies as **quasi sporco* 'almost dirty' and **quasi qualche* 'almost some', that have been discussed in detail in the literature on *almost* (Hitzemann 1992, Morzycki 2001, Penka 2006).

## 9. The pragmatics of *quasi* with comparatives

Instantiation of the existential quantifier through the equative's semantic value would give rise to the consequence that *quasi(x è più P di y)* can be true in a scenario in which *x* is *exactly* as much P as *y*. Indeed, we would have the entailment that *x* is not more P than

*y*, and the further entailment that *x* is as much P as *y*. The conjunction of these two entailments is the proposition that *x* is *exactly* as much P as *y*. Whether this is empirically adequate is an issue that has to be decided by looking at the actual use of comparatives modified by *quasi*. We will consider the cases of *quasi più alto* ('almost taller than') and *quasi più lontano* ('almost further away than').[29] Consider the sentences in (83):

(83) a. Il fratello del mio ragazzo, che è due anni più giovane di lui, è **quasi più alto** di lui, è forse mezzo centimetro più basso e Gianni (il mio ragazzo) odia questo fatto. Odia il fatto che suo fratello sarà presto più alto di lui e "lo guarderà dall'alto", come dice Gianni. E' già stato superato da una ragazza e ora suo fratello minore sta per diventare più alto di lui.
'My boyfriend's brother, who is two years younger than him, is almost taller than him, he is maybe half a centimetre shorter and Gianni (my boyfriend) hates this. He hates the fact that his brother will now be taller than him and "look down on him" to quote Gianni. So he has been beaten up by a girl and now his brother is growing taller than him'.

b. (Context: S and H are planning a bike ride from Palo Alto)
S: Andiamo a Santa Cruz in bici!
'Let's go to Santa Cruz by bike!'
H: No, è lontano…
'No, it's too far away...'
S: OK, allora andiamo invece a Berkeley!
'OK, let's go to Berkeley instead!'
H: Ma che cosa dici?! Berkeley è **quasi più lontano** che Santa Cruz!
'What are you saying?! Berkeley is almost farther away than Santa Cruz!'

In these examples the modified comparative conveys the converse of the comparative relation denoted by *x è più P di y*: in (83a) *x è quasi più alto di y* is understood as meaning that *x* is a little bit *shorter* than *y*, and in (83b) *x è quasi più lontano di y* means that x is a little bit *less far* than y. This fact parallels what we have previously observed about the interpretation of *quasi prima*.

Consider now the constructed examples in (84), obtained from the modified comparatives in (83) by replacing the comparative morpheme *più* with the equative:

(84) a. Il fratello del mio ragazzo, che è due anni più giovane di lui, è **quasi alto quanto** lui, è forse mezzo centimetro più basso e Gianni (il mio ragazzo) odia questo fatto.
'My boyfriend's brother, who is two years younger than him, is almost as tall as him, he is maybe half a centimetre shorter and Gianni (my boyfriend) hates this.'

b. Berkeley è **quasi lontano quanto** Santa Cruz!

[29] The modified comparative of adjectives like *alto* 'tall' and *lontano* 'far' is a good test case for our purposes its use is often accompanied by numerical estimates of the compared objects' height and distance values, and this makes it easier to determine the truth-conditional meaning of these expressions. Moreover, even if no numerical value is given in the surrounding discourse context, it is often clear from our world knowledge what the relation actually is between the heights or distances of the compared objects.

'Berkeley is almost as far as Santa Cruz!'

The puzzling fact is that both the modified equatives and the modified comparatives are true in a scenario in which the relation 'x is a bit less P than y' holds. For example, (84a) means that Gianni's younger brother is a bit less tall than him, and (84b) means that Berkeley is a bit less far away from Palo Alto than Santa Cruz. If we replaced the modified comparatives in (83) with the corresponding modified equatives in (84), leaving the surrounding contexts unchanged, we would obtain coherent discourses, conveying the same factual information as the original ones.

The interpretation "x is a little bit less P than y" is what we can reasonably expect for the examples in (84) on the basis of our theoretical assumptions: given the assumption that *quasi* modifies the equative *tanto quanto* ('as much as'), we predict that a weaker alternative to the equative must be selected, one which is close to the equative on the relevant scale, and it is straightforward to see that the most natural candidate for instantiating the quantifier over alternatives is the relation *a little bit less*.

The question that we raise at this point is: why do speakers use the construction *quasi più* 'almost more' in order to convey the meaning *a little bit less*, instead of making the (theoretically more obvious) choice of using the construction *quasi tanto quanto* 'almost as much as'?

As far as the semantics proper goes, our prediction is that *x is almost P-er than y* has a different meaning than *x is as much P as y*. This prediction follows from our analysis, and it must follow from any compositional analysis of these constructions, as in the two cases the limit points are different: the limit point is the semantic value of the comparative morpheme *più* in the former case, and the semantic value of the equative morpheme *tanto quanto* in the latter case. As a consequence, we have truth-conditionally different prejacents (see [85a] and [85b]).

(85)

(a) [[ *x is almost P-er than y* ]] = 1 *iff*

(i) $\neg\exists d\ [\neg \mathrm{P}(y,d) \wedge \mathrm{P}(x,d)]$ (*polar component*)

(ii) $\exists \mathrm{R}_{<<d,t>,<<d,t>,t>>}\ [\mathrm{R} < (\lambda \mathrm{Q}_{<d,t>}.\ \lambda \mathrm{S}_{<d,t>}.\ \exists d\ [\neg \mathrm{Q}(d) \wedge \mathrm{S}(d)]) \wedge \mathrm{close}(\mathrm{R}, (\lambda \mathrm{Q}.\ \lambda \mathrm{S}.\ \exists d\ [\neg \mathrm{Q}(d) \wedge \mathrm{S}(d)])) \wedge \mathrm{R}(\lambda d.\ \mathrm{P}(y,d))(\lambda d.\ \mathrm{P}(x,d))]$ (*proximal component*)

(b) [[ *x is almost as much P as y* ]] = 1 *iff*

(i) $\neg\forall d\ [P(y,d) \rightarrow P(x,d)]$ (*polar component*)

(ii) $\exists \mathrm{R}_{<<d,t>,<<d,t>,t>>}\ [\mathrm{R} < (\lambda Q_{<d,t>}.\ \lambda S_{<d,t>}.\ \forall d\ [Q(d) \rightarrow S(d)]) \wedge \mathrm{close}(\mathrm{R}, (\lambda Q.\ \lambda S.\ \forall d\ [Q(d) \rightarrow S(d)])) \wedge \mathrm{R}(\lambda d.\ \mathrm{P}(y,d))(\lambda d.\ \mathrm{P}(x,d))]$ (*proximal component*)

Despite this truth-conditional difference between the two forms, the modified comparative (*quasi più*) is used in scenarios where the semantic value on the scale which is selected is a "less than" relation (a lower ranked alternative to the equative form), and not the "as much as" relation. According to our analysis, a "less than" relation is not ruled

out as a possible interpretation of the modified comparative, as it is a semantic alternative which is ranked lower than the *più* comparative relation on the relevant scale. What is puzzling is the *choice* of the modified comparative given that (i) the empirical data do not show examples in which *quasi(x è più P di y*) is used to convey that *x* exhibits a certain property P to a degree that equals the degree to which *y* exhibits that property, and (ii) the intended meaning of *quasi(x è più P di y*) corresponds to the same semantic alternative which would be obtained by the interpretation of *quasi* as a modifier of the equative. Hence, the similarity of meaning in context between *x is almost P-er than y* and *x is almost as much P as y* is a phenomenon whose explanation cannot be given in purely semantic terms.

Whereas modification of the equative form by *quasi* is felicitous and understandable in an out-of-the-blue context, the use of *quasi(x è più P di y*) is not felicitous in such a context. To exemplify: you can compare the heights of two people whose pictures have just been shown to you and to your interlocutor by saying "Person A is almost as tall as Person B", and this would be true as long as Person A is a bit less tall than Person B. However, in the same situation it would be strange for you to say "Person A is almost taller than Person B". Although in the examples with *quasi(x è più P di y*) the verifying semantic alternative is a 'less than' relation, which is the same verifying alternative for *quasi(x è tanto P quanto y*), the **conditions of use** for the two expressions are not equivalent, as the felicitous use of the modified comparative imposes contextual restrictions not shared by the modified equative. In other words, the set of contexts in which the modified comparative can be felicitously used is a proper subset of the set of contexts in which the modified equative can be used.

In (86), we present a description of the constraints on the contexts in which *quasi(x è più P di y*) occurs, and then we look at the analyses of the examples presented above.

(86)

(α) There is a contextually-shared assumption that in '*A è quasi più P di B'* (where A and B are terms that can have a descriptive content), according to world knowledge the standard of comparison *B* is P to a higher degree than *A* in a contextually-determined sub-scale of property P. This assumption can be generated either in the local context (it can be specific to the common ground of a community of speakers or to the epistemic or deontic models of the participants in a conversation, as in [83a]), or it can be generated in the global context (e.g. what we know about beginnings and endings of events, as in [33a]).

(β) The unmodified comparative (i.e. *A è più P di B*) expresses a relation which is not expected by the speaker. In other words, under normal circumstances, the speaker would expect the converse relation to hold between *A* and *B*.

The reason for considering that the context provides a restriction to sub-scales of property P in condition (α) stems from the fact that the degree to which B is P should not be assumed to be high in absolute terms. To exemplify, in (87) below A is *questo bambino* 'this child' and B, the standard of comparison, is *quest'uomo* 'this man'. The expectation associated with the corresponding sortal terms (*child* and *man*), with respect to height, is that in general a man be taller than a child. The example is felicitous in this context

precisely because the unmodified comparative expresses a relation that goes against this expectation (according to condition (β)).

(87) (Context: Describing a boy who is very tall.)
Questo bambino è **quasi più alto** di quest'uomo.
'This boy is almost taller than this man.'

However, the sortal term *uomo* ('man') is not necessarily mapped onto a high degree on the scale of the property denoted by *alto* ('tall'); in fact, if the standard of comparison is provided by the sortal term *giraffa* 'giraffe', as in (88) below, the relative position of the term *uomo* is now ranked lower than the position of *giraffa* on the scale of height. These examples show that the expectation stated in condition (α) is restricted to a contextually-relevant sub-scale of P.

(88) (Context: Describing a man who is very tall.)
Quest'uomo è **quasi più alto** di una giraffa.
'This man is almost taller than a giraffe.'

The representation of the relative positions for *child*, *man*, and *giraffe* on the scale of height is given in Figure 8, for (87) and (88):

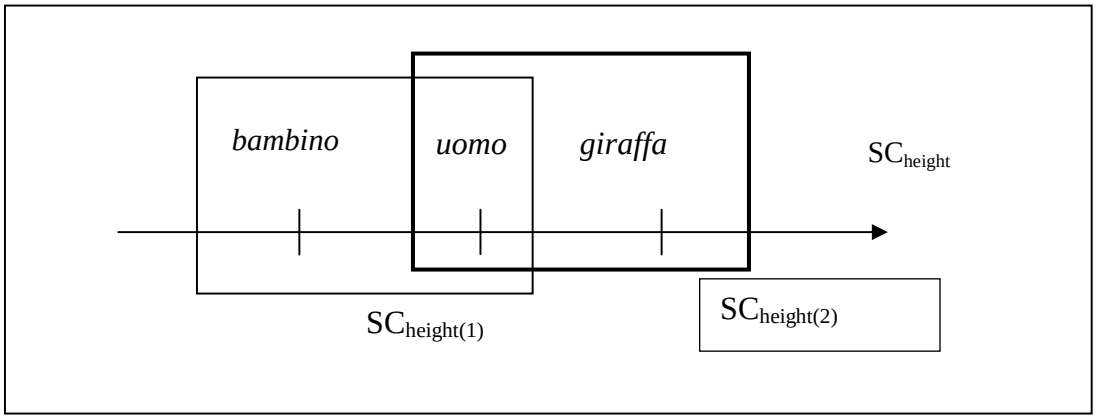


Fig. 8: Relative positions of the sortal terms *bambino*, *uomo* and *giraffa* on a scale of degrees of height

In (87) and (88) we are "zooming in" on different portions of the scale of height: the two boxes in Fig. 8 represent the contextually relevant sub-scales, $SC_{height(1)}$ and $SC_{height(2)}$ for examples (87) and (88), respectively. The position of *uomo*, which is the standard of comparison in (87), is high on the sub-scale $SC_{height(1)}$ but not on the sub-scale $SC_{height(2)}$. Hence, the assumption about A and B stated in condition (α) is relative to a sub-scale of the whole scale of the property in question. This is not a strange feature of our proposal, as different forms of contextual restriction have frequently been invoked in the determination of standards of comparison (cf. Kennedy 1999 a.o.).
The degree to which B is P on a contextually-relevant sub-scale need not be high in the actual world. Rather, the expectation about the degree to which B is P can be relativized

to a certain model, the model assumed by the speaker in the conversation. In (83a), the value of Gianni's height need not be high in absolute terms (i.e. Gianni does not have to be tall, in average): the expectation that *he should be taller* than his younger brother simply holds in the speaker's model (and the speaker is presumably reporting Gianni's opinion, hence this assumption is shared by Gianni).

Furthermore, the relative expectation about the standard of comparison B stated in condition (α) should be understood as pertaining either to properties of *sorts* of individuals or to individual concepts, not necessarily to the particular individuals referred to. This is exemplified by (83a): the relative positions of the expected degrees of height for the terms of comparison are provided by the sortal terms, which introduce two comparison classes: younger sons, by virtue of their age, are *ceteris paribus* expected to be less tall than their elder siblings. In this case, the particular individuals referred to are considered not for their individual properties, but rather as instantiations of the comparison classes whose respective degrees of height are under comparison.

The difference between the relation expected on the basis of world knowledge and the relation that holds in the actual world (stated in condition (β)) may be explored in two ways, according to the information structure of the discourse (depending on whether the topic of the utterance is A or B): (i) the degree to which A is P is higher than expected, i.e. the degree to which A is P in the actual world is too close to the degree to which B is P; (ii) the degree to which B is P is lower than expected , i.e. the degree to which B is P in the actual world is too close to the degree to which A is P.[30] In either case, the underlying structure that allows for the two possibilities is the same: under normal circumstances, B is expected to be P to a higher degree than A.

To make this more concrete, we spell out the structure of the contextual restrictions on *quasi* with comparatives in a stepwise manner for the previous examples containing *quasi*

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[30] Given the appropriate information structure conditions, the form *quasi(A è più P di B*) can be used to convey that the degree to which the individual instance of B is P in the actual world is low with respect to the expectation about a high degree of P-ness assigned to the sortal properties it instantiates. This is exemplified in (i) for *quasi prima* and in (ii) for *quasi più alto*:

(i) (Context: in a bicycle tour, the Italian team fared very poorly, arriving close to the last position, occupied by the team of Cameroon. Cameroon does not have any tradition in bicycle competitions, unlike the team of Italy. Intended meaning: the Italians arrived very late, or later than expected.)

I Camerunesi sono arrivati quasi prima degli Italiani.
'The bikers from Cameroon arrived almost before the Italians.'

Here the point of the utterance is not that the team of Cameroon arrived earlier than expected, but rather that the Italians arrived very late, i.e. later than expected given their general performance in international biking competitions. The Italian performance is in the foreground, while the performance of Cameroon is in the background. Another constructed example with an overt comparative is given in (ii):

(ii) (Context: a very small pet is seen by the speaker. In general, dogs are expected to be taller than grass. [This example is a case of expectation relative to properties of sorts.])

Oh, guarda il cagnolino! L'erba è quasi più alta di lui!
'Oh, look at the little dog! The grass is almost taller than him!'

However, the two patterns described in this section are allowed precisely by the general schema in (86) that remains constant: either the form *quasi(A è più P di B)* is used to convey that the degree to which A is P is higher than expected, or that form is used to convey that the degree to which the individual that instantiates B is P is lower than the expectation pertaining to the sortal properties of B. Examples (i) and (ii) constitute different ways in which the general schema may be exploited by the information structure of the discourse.

*più alto* 'almost taller than' and *quasi più lontano* 'almost farther away'. Starting with (83a), we apply the schema in (86) as follows:

(i) The assumption about Gianni's degree of height is that it should be greater than the degree of height of the sibling, given that Gianni is the eldest brother (condition [α]). This assumption is valid in the model assumed by the speaker, Gianni's girlfriend, who is reporting on Gianni's assumptions. Crucially, the assumption is not that the degree of Gianni's height is great in absolute terms – the assumption is that he *should be* and *would like to be* the tallest brother (this is the desirable situation according to his point of view).

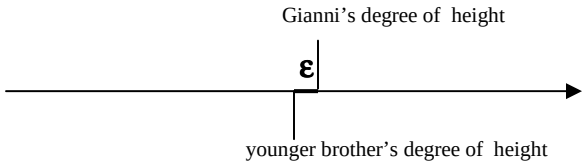
(ii) In this model, the expected relation is that for any younger sibling *x*, *x* is less tall than Gianni, the eldest sibling. The unexpected relation is that *x* is taller than Gianni (condition [β]).

According to the factual information provided in (83a), Gianni's younger brother is "maybe half a centimeter shorter", i.e. the younger brother is just *a little bit* shorter than Gianni. Notice that the younger brother is in fact *less tall than Gianni*, but the difference in height between the two brothers, given the assumption in (i), is not contextually significant. Interestingly, in this case the context entails the reason why the difference is perceived as unimportant: given the observed rate of growth, the younger brother is expected to reach the height of the elder brother soon ("his brother is growing taller than him").

The intended meaning of the modified comparative in (83a) is that the degree to which the younger brother is tall is too high, since it approximates the value of Gianni's height to such an extent that their difference is of no significance, hence contravening the desired expected relation that the eldest sibling be taller than the younger sibling.

The scale for (83a) is schematically given in Fig. 9:

Fig. 9




(**ε** is a small interval)

As for (83b), the structure we assume is the following:

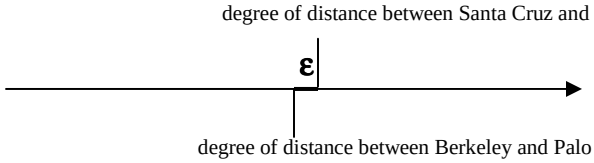
(i) In the local context of (83b), the participants in the dialogue share the assumption that Santa Cruz is farther away from Palo Alto than Berkeley (condition [α] in [86]).

(ii) Given H's reply to S's suggestion of going to Santa Cruz, there is a contextual expectation that S will suggest a place closer to Palo Alto than Santa Cruz for the destination of a bike ride. In other words, whatever place S is going to suggest in the continuation of the dialogue, the expectation is that it verifies the property *closer to Palo Alto than Santa Cruz*. (condition [β] in [86]).

Berkeley is closer to Palo Alto than Santa Cruz to an extent that is contextually irrelevant, i.e. Berkeley is *a little bit closer* to Palo Alto than SC, but the difference in distance between Palo Alto and these two possible destinations is insignificant

according to the contextual measure, hence the expected relation stated in (ii) is not met. The intended meaning of the modified comparative in (83b) is that Berkeley is still too far away from Palo Alto to H: the degree to which Berkeley is far from Palo Alto is remarkably high, and so it is close to the degree to which Santa Cruz (the standard of comparison) is far from Palo Alto. The intended meaning crucially builds on the assumption, which has been established in this context, that Santa Cruz is far to a high degree.

Fig. 10




(**ε** is a small interval)

A crucial component of the pragmatic licensing conditions of *quasi* with comparatives is the unexpected relation denoted by the unmodified comparative (stated in condition [β]). The pragmatic effect of *quasi*-modification of the comparative is an assessment of closeness (the interval **ε** in the schematic representations of the scales) to this unexpected relation. Importantly, the assessment of closeness licenses the use of a relation that conveys the inverse of the truth-conditional description of the situation. In the scenarios described above, the unexpected relation *does not hold in the actual world*: Berkeley is in fact *a bit less distant* from Palo Alto than Santa Cruz, not more distant than Santa Cruz; Gianni's younger brother is *a bit less tall than* Gianni, not taller than Gianni. However, the difference that holds in the actual world is contextually irrelevant, given the perception of closeness to the unexpected or undesired relation: in the case of (83b), both rides are considered long by the speaker and in the case of (83a) the rate of growth of the younger brother leads the speaker to expect that the unexpected relation will hold in the near future.

## 9.1 The pragmatics of *quasi prima*

We have shown that modification of overt comparatives by *quasi* is felicitous only in contexts that meet the restrictions spelled out in (86). In this section, we return to the examples of *quasi prima* presented before and we show that the contextual restrictions on modification of *prima* by *quasi* are the same. In the case of *quasi prima*, the relevant property is earliness. This property is provided by the lexical semantics of *prima*, under the analysis that we have proposed above.

Consider example (33a) above with its full context, as in (89):

(89) Finisce **quasi prima** di comminciare l'avventura olimpica di Tommaso Rocchi, unico fuoriquota della formazione di Casiraghi. Il persistere del dolore al ginocchio destro ha convinto i medici dello staff azzurro ad eseguire controlli più approfonditi. Si pensava inizialmente ad un infortunio di tipo muscolare, che aveva costretto l'attaccante della Lazio a rinunciare alla gara d'esordio contro l'Honduras. Poi la buona prestazione offerta al cospetto dela Corea (con tanto di gol) aveva

fatto ben sperare sulle possibilità di recupero, ma la radiografia ha evidenziato un'infrazione della testa del perone. Niente che non possa essere recuperato in poco tempo, ma sufficiente per mettere la parola fine sul sogno olimpico del laziale, che già domani, dopo aver sostenuto i compagni nella gara contro il Camerum, dovrebbe rientrare a Roma**.**

(Source: http://www.calciopro.com/flash-news/olimpiadi-2008-rocchi-torna-a-casa/)

'The Olympic adventure of Tommaso Rocchi ends almost before it starts. The persistence of the pain in his right knee convinced the doctors to do a more thorough examination. Initially they thought it was a muscle injury, which forced the Lazio forward player to give up the initial match against Honduras. But then the good performance he showed against South Korea (he even scored a goal) made the staff hope that he had fully recovered. But the evidence from the X-ray showed a fractured fibula. Nothing that cannot be recovered in a short period of time, but enough to put the word "end" on the Olympic dream of the player. After having helped his team mates in the game against Cameroon, he should return to Rome as early as tomorrow.'

We apply the schema in (86) to (89), and assume the following structure for the contextual constraints on the use of *quasi prima*:

(i) The standard of comparison B, the beginning of Rocchi's adventure, is early to a high degree relative to A, the running time of the Olympic adventure (condition (α)).

(ii) The expectation provided by the global context is that for any ending event x of an Olympic adventure, x should be less early than a beginning event of the same adventure (condition (β)). Hence, the unmodified comparative (i.e. *ends more early than it starts*) expresses a relation which is not expected by the speaker.

In (89), the ending of Rocchi's adventure is only *a bit less early* than the beginning of the adventure. For the expected duration of an Olympic adventure, the actual difference between the degrees of earliness is irrelevant. The intended meaning of the modified comparative in (89) is that the ending of Rocchi's adventure happened too early, i.e. earlier than expected.

As illustrated above, the assumption stated in condition (α) is relative to a contextually-determined sub-scale. The need to relativize to sub-scales can be made apparent by considering example (33b), repeated below as (90). Here, we are comparing the degree of earliness for *imparare a camminare* 'learning how to walk', term B in the schema in (86), and the one for *imparare a pedalare* 'learning how to bike', term A in (86).

(90) Fausto Coppi imparò a pedalare quasi prima di imparare a camminare.
'Fausto Coppi learned to bike almost before he learned to walk.'
[intuitive meaning: 'Fausto Coppi learned to bike quite early / shortly after he learned to walk.']

The expectation associated with B is not about the degree of earliness of learning how to walk in absolute terms, but rather about the degree of earliness of learning how to walk

when compared to learning how to ride a bike. Under normal circumstances, the expectation is that people learn how to walk prior to learning how to ride a bike. However, if the terms of comparison are different, the expectation about the position of learning how to walk in the earliness scale may change, as shown by (91):

(91) Pietro a imparato a camminare quasi prima di imparare a gattonare.
'Pietro learned how to walk almost before he learned how to crawl.'

In (91), learning how to walk is compared to an activity, learning how to crawl, that takes place at an earlier stage of development, under normal circumstances. So, in this context learning how to walk is expected to be ranked *low* on the contextually determined sub-scale of $SC_{earliness}$. The relative positions of *gattonare* ('to crawl'), *camminare* ('to walk'), and *pedalare* ('to bike') on $SC_{earliness}$ are given in Figure 11. The contextually-relevant sub-scales for examples (90) and (91) are represented by the small box ($SC_{earliness(1)}$) and the big box ($SC_{earliness(2)}$), respectively:

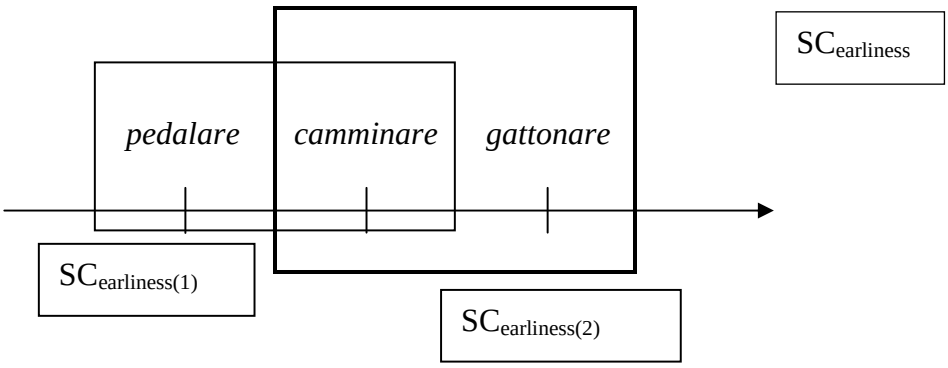



Fig 11: Scale of degrees of earliness for the activities: gattonare, camminare, pedalare

The contextual restrictions that we have presented as conditions on the felicitous use of the modified comparatives provide a way to empirically test our account of the pragmatics of *quasi* when it modifies both overt comparatives and *prima*. Just like in the cases presented in section 9, we predict that *quasi prima* can only be felicitously uttered in a context in which the discourse participants assume a high degree of earliness in a contextually-determined subscale for the subordinate event, and in which the unmodified expression expresses a relation of earliness between events which is unexpected by the speaker. The prediction, then, is that *quasi prima* may only occur in contexts satisfying these conditions. This can be tested by constructing examples in which the expected order between the two events is the one expressed by the unmodified sentence. As shown in (92), once we make this manipulation, the use of *quasi prima* is not felicitous:

(92) #F. Coppi imparò a camminare quasi prima di imparare a pedalare.
'#F. Coppi learned to walk almost before he learned to ride a bike.'

(92) does not meet condition (β) in (86). Furthermore, there is no general expectation of a high degree of earliness that is associated with the eventuality denoted by the complement of *prima*, i.e. learning how to ride a bike in this case, as stated in condition (α) in (86).[31] So, our analysis correctly predicts the infelicity of (92).
By the same token, we can contrast the felicitous use of (93) vs (94). Imagine that we are talking of a child who is a genius, and we say:

(93) Pietro imparò a scrivere quasi prima di imparare a parlare.
'Pietro learned to write almost before he learned to speak'.

We predict (93) to be felicitous as both conditions (α) and (β) in (86) are satisfied, while (94) is predicted to be infelicitous.

(94) #Pietro imparò a parlare quasi prima di imparare a scrivere.
#'Pietro learned to speak almost before he learned to write'.

Under normal circumstances, the expected relation between the degrees of earliness of learning to speak and learning to write is that the former is higher on the scale than the latter. Hence, (94) is infelicitous because the unmodified relation (*impar*ò *a parlare prima di imparare a scrivere*) is the one that is expected, violating condition (β) in (86).

## 10. Conclusions

In this paper, we have provided a semantic analysis of *quasi* that relies on two main assumptions: (i) *quasi* is focus-sensitive, and (ii) a linearly ordered set of alternatives to the semantic value of the focused constituent must be accessible for the adverb to be interpretable. These two assumptions can be subsumed under a more fundamental claim, according to which *quasi* is inherently scalar. As a test-case, sentences in which *quasi* modifies temporal phrases of various sorts have been considered, and compositional analyses of the relevant data have been given.

The interaction of *quasi* with temporal connectives has proved to be a good empirical ground to study the scalarity of *quasi*, as it has shed light on the general notion of scale which is required for a uniform analysis of this adverb. In this connection, focus on modification of quantificational NPs in the previous literature has had the consequence that only a specific type of scale has been considered as relevant to the semantics of *almost*, namely a Horn's entailment-based scale. However, we have shown that the notion of entailment-based scale is not general enough to account for the whole range of data. Although previous works on *almost* have relied on the claim of its inherent scalarity

[31] Although one might argue that the expectation about the earliness relation between learning how to ride a bike is certainly culture-specific, one of the milestones in children development is the time point at which they learn how to walk, not when they learn how to bike.

(especially Hitzeman 1992 and Penka 2006), to our knowledge the current paper is the first attempt to largely explore the consequences of that claim by looking at a wide range of naturally occurring data.

Our analysis has been applied in a formally explicit way only to cases of *quasi*-modification of temporal phrases; however, it can be naturally extended to *quasi*-modification of expressions from other syntactic categories. In particular, as was discussed in sect. 5, it can be brought to deal with those cases which have been described as counterfactual uses of *almost* in the previous literature, as opposed to scalar uses (e.g. Rapp & von Stechow 1998). From the perspective of our proposal, the distinction counterfactual / scalar is ill-posed, as counterfactual interpretations can be shown to be just a particular case of the scalar interpretations.

As for the contrast in acceptability between *quasi prima* and *quasi dopo*, not only does our account provide further evidence for a non-uniform semantic analysis of the two connectives, but it also opens up another domain of inquiry not addressed in the previous literature, namely *quasi*- modification of comparatives. We show that a full account of *quasi*- modification of comparatives requires both a semantic and a pragmatic analysis. Crucially, the contextual constraints we have identified for the modification of overt comparatives by *quasi* are the same as the ones observed with *quasi prima*, hence supporting a unified account of the felicitous use of *quasi* with semantic comparatives.

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