

Andrea Bonomi

## Semantical remarks on the progressive reading of the imperfective<sup>1</sup>

Abstract.

Since there are independent reasons for associating the habitual reading of the imperfective, in Italian, to a logical form based on universal or generic quantification, the purpose of Part I is to see how this kind of semantical structure accounts for another important interpretation of the imperfective: the progressive reading. And since in some particular cases the imperfective can also have a marginal interpretation which can be assimilated to a perfective effect (it is the so-called “narrative” reading), a further problem is how to provide a reasonable explanation for this phenomenon too.

If one considers the co-occurrence of the imperfective with different event predicates (in particular, accomplishments and achievements) it is possible to show that, with some minimal assumptions, the theoretical framework under discussion correctly predicts the following facts, which represent a crucial, but puzzling, characteristic of the imperfective in Italian: (i) activities allow for the progressive reading of the imperfective, but not the “narrative” reading; (ii) with achievements we have the opposite situation; (iii) accomplishments are compatible with both these readings. From this point of view, the semantic properties of the progressive reading of the imperfective are quite distinct from those of the *perifrasi progressiva*, which is the specialized form used in Italian to express the progressive meaning.

Part II, which addresses the issue of the intensional character of both forms of the progressive, is more problematic, in the sense that it takes into consideration a possible extension of the theoretical framework presented in Part I. First of all I discuss some examples which clearly show that the *perifrasi progressiva* calls for some sort of “branching” representation of time, for it crucially refers to future courses of events which are not realized in the real world. On the other hand, since similar examples can be found in the case of the progressive reading of the imperfective, the main problem is represented by the fact that the kind of logical form under discussion is not completely adequate to account for such intensional phenomena. A natural solution to this problem is to let the universal quantifier associated with the imperfective range not only over times, but over times *and* worlds or courses of events. Such a move, which is independently motivated by other uses of the imperfective in Italian, requires a systematic account of the modal notions underlying the different readings of the imperfective. But such an account is still an open problem.

## I. Quantification

### *1. Introduction: temporal frames and quantification.*

The distinction perfective/imperfective is associated, in Italian, with two different types of quantification over times or events<sup>2</sup>. If I say:

(1) Alle cinque Leo prese il té [At five o'clock Leo have (past, perf.) tea]

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the natural interpretation of the sentence is that there is a reference to a single event of Leo's having tea, which occurred at five o' clock. But if I say:

(2) Alle cinque Leo prendeva il té [At five o'clock Leo have (past, imp.) tea]

a possible interpretation of (2) (the so-called habitual reading) is that there is systematic connection, in the past, between a certain time (five o' clock) and an event of Leo's having tea. In terms of logical forms, the idea is that the former sentence should be expressed as an existential quantification (*there is* a particular time such that...) whilst the latter should be expressed by a universal or generic quantification<sup>3</sup> (for *every* time such that...).

The intuition, here, is that the existential quantification introduced by the perfective allows for the reference to A SINGLE circumstance in which Leo had tea at five o' clock, whilst the universal quantification associated with the imperfective is intended to characterize an extended interval *i* by referring to ALL the circumstances in which Leo had tea at five o' clock. In the language of event semantics, (2) can be paraphrased by saying that there is a (past) interval *i* such that all its (relevant) subintervals satisfying the property described by the restrictive clause *alle cinque* temporally coincide<sup>4</sup> with the occurrence of an event satisfying the property described by the matrix *Leo prendeva il té*, i. e. with an event of Leo's having tea.

It should be noticed that if the restrictive clause is empty, the habitual reading that we obtain expresses a general property of the subintervals of the interval *i* at issue. For instance, a sentence such as:

(3) Bill Evans suonava in un trio con Scott La Faro e Paul Motian [Bill Evans play (past, imp.) in a trio with Scott La Faro and Paul Motian]

means that there is a past period of time *i* in which Bill Evans used to play in a trio with Scott La Faro and Paul Motian. Once more, this habitual reading of the imperfective can be paraphrased in the

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<sup>2</sup> This idea is fully developed in Bonomi (1997a). A preliminary version of this paper was published in 1992 in a pre-print series of the Dipartimento di Filosofia, Università degli Studi di Milano.

<sup>3</sup> To simplify things, from now on I will simply refer to universal quantification. On this point, see Bonomi (1997a).

<sup>4</sup> This notion of temporal coincidence between the time or event denoted by the when-clause and the event denoted by the main clause is to be taken in a very broad sense (as, for instance, in Ritchie (1979)). Contextual factors can be very important in making this sense more precise.

language of event semantics as follows: there is a (past) interval  $i$  such that, for every relevant subinterval  $i'$  of  $i$ , an event of Bill Evans playing in a trio with Scott La Faro and Paul Motian occurs at  $i'$ .

So, the universal or generic quantifier associated with the imperfective allows us to characterize a WHOLE interval  $i$  in terms of the habitual occurrence of a given type of event. This is why the imperfective, on its habitual reading, is often used to describe the *temporal frame* in which the particular event denoted by a perfective clause or the particular time denoted by a temporal adverbial is located. For example, in the sentence:

(4a) Quando firmò il contratto con la Riverside, Bill Evans suonava in un trio con Scott La Faro e Paul Motian [When Bill Evans sign (past, perf.) the contract with Riverside, he play (past, imp.) in a trio with Scott La Faro and Paul Motian = ... he used to play...]

the imperfective clause describes the temporal frame (i. e. the period in which Bill Evans used to play in a trio) where the particular event denoted by the perfective clause (i. e. the event of signing the contract with Riverside) must be located.

Interestingly enough, in Italian the imperfective form can also have the “framing” effect of the progressive described by Jespersen (1931):

(4b) Quando Miles Davis entrò al Village Vanguard, Bill Evans suonava in un trio con Scott La Faro e Paul Motian [When Miles Davis enter (past, perf.) the Village Vanguard, Bill Evans play (past, imp.) in a trio with Scott La Faro and Paul Motian = ... he was playing...].

## 2. *An intriguing ambiguity.*

The last sentence is a good illustration of the so-called progressive reading of the imperfective. It should be noticed that (4a) and (4b) have the SAME aspectual configuration (with the perfective in the subordinate clause and the imperfective in the main clause). What forces the habitual interpretation in the former case and the progressive interpretation in the latter is only the context, i. e. the actional characteristics of the when-clauses. But there are situations in which BOTH interpretations are allowed, as shown by the following sentence:

(5) Quando fu lodato da Miles Davis, Bill Evans suonava in un trio con Scott La Faro e Paul Motian  
 [When Bill Evans be praised (past, perf.) by Miles Davis, he play (past, imp.) in a trio with Scott La Faro and Paul Motian = ... he was playing... or ...he used to play...].

As a consequence, a natural move in the semantics of the Italian aspectual system is to provide a UNIFIED treatment of both interpretations of the imperfective. More exactly, the idea is that the SAME logical form is referred to in both situations, whilst the context (and, in particular, the actional properties of the verb phrases) contributes to select the intended interpretation. So, in the case of (5) the following logical form<sup>5</sup> accounts for both readings of the imperfective (the habitual reading and the progressive one):

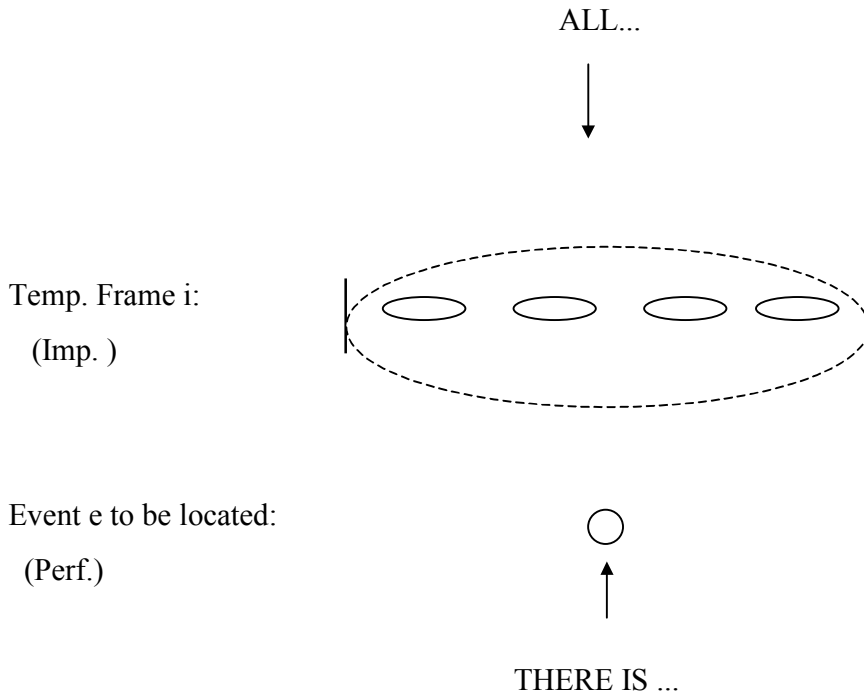
(6)  $\exists i[i < \text{now} \wedge \exists e[e \subseteq i \wedge \text{M.D.-praise-B.E.-(e)}] \wedge \forall i'[\text{Rel}(i') \wedge i' \subseteq i \rightarrow \exists e'[\text{B.E.-play-in-a-trio-(e')} \wedge e' > \langle i' ]]]]$  .

This formula<sup>6</sup> says that there is an interval  $i$  (preceding the time of utterance) such that all its (relevant) subintervals temporally coincide with an event of Bill Evans's playing in a trio, and an event of Miles Davis's praising Bill Evans occurs within  $i$ . As desired, the universal quantification of the imperfective is used to present the *whole* interval  $i$  as containing events of playing in a trio: in other terms, this type of event is used to characterize the “frame” which includes a particular event of Miles Davis's praising Bill Evans. The idea is that to obtain the two interpretations at issue we must look at the interval  $i$  itself. There are two possibilities: (i) If  $i$  is to be considered as one of the *relevant* intervals mentioned in the restrictor, the progressive reading is available, because what (6) says is that the whole interval  $i$  itself (in addition to its relevant subintervals) is occupied by an event of playing in a trio: in other words, such an event is going on at  $i$ . (ii) If  $i$  itself is *not* among the relevant intervals we are quantifying over, what (6) says is that all its (relevant) subintervals correspond to events of playing in a trio, and the habitual reading is possible. Needless to say, the context plays a crucial role in determining which

<sup>5</sup> To simplify things, in the type of logical form under discussion there is no adequate treatment of tense and temporal adverbs.

<sup>6</sup> See Bonomi (1997a) for the details of such a strategy and for a compositional way of obtaining this logical form. In (6) ‘Rel’ is the predicate of contextual relevance, ‘ $\subseteq$ ’ is the relation of temporal inclusion and ‘ $> \langle$ ’ the relation of temporal coincidence in the broad sense mentioned in note 4.

intervals are relevant, and whether  $i$  itself is relevant<sup>7</sup>. For example, considerations about the length of the interval with respect to the temporal extension of the events at issue can be very important.



The ellipses are the events of Bill Evans's playing in a trio which characterize the *whole* interval  $i$ ; the circle is an event of Miles Davis's praising Bill Evans, whose occurrence takes place within  $i$ . In the progressive reading, but not in the habitual reading, the frame interval  $i$  itself (in addition to its subintervals) is occupied by a single event of Bill Evans's playing in a trio (the dotted ellipse).

In what follows I shall ignore the habitual reading of the imperfective (which is the main topic of Bonomi (1997a)) and I shall concentrate on its progressive reading.

As we have just seen, on the progressive reading the temporal frame is a local interval occupied by a single event of playing in a trio, whose subintervals are also occupied by events of playing in a trio. In general, if in a logical form such as (6) we concentrate on the role of the imperfective, what we obtain is the following schema:

$$(6') \forall i' [\text{Rel}(i') \wedge i' \subseteq i \rightarrow \exists e [P(e) \wedge e \gg i']]$$

<sup>7</sup> The role of contexts in selecting the appropriate alternative is discussed in Bonomi (1997a: 493-494).

where P is the event predicate that is used to characterize the frame interval *i*, in the sense that all the (relevant) subintervals of *i* are occupied by events of type P.

Such a theoretical framework raises an interesting problem. For example, (4b), in its progressive reading, is roughly synonymous with :

(7) Quando Miles Davis entrò al Village Vanguard, Bill Evans stava suonando in un trio con Scott La Faro e Paul Motian [When Miles Davis enter (past, perf.) the Village Vanguard, Bill Evans play (past, per. prog.) in a trio with Scott La Faro and Paul Motian = ... he was playing...]

where the imperfective is replaced by the *perifrasi progressiva*, which is the specialized form used in Italian to express the progressive meaning. So the question is: do the imperfective, on the progressive reading, and the *perifrasi progressiva* have the same semantical properties? A negative answer is suggested by a careful investigation of the data.

### 3. The data.

Consider the following pairs of sentences:

(8) Ieri alle tre Leo stava correndo nel parco [Yesterday at three o' clock Leo run (past, per. prog.) in the park]

(9) Ieri alle tre Leo correva nel parco [Yesterday at three o' clock Leo run (past, imp.) in the park]

(10) Ieri alle tre Leo stava dimostrando un teorema [Yesterday at three o' clock Leo prove (past, per. prog.) a theorem]

(11) Ieri alle tre Leo dimostrava un teorema [Yesterday at three o' clock Leo prove (past, imp.) a theorem]

(12) Ieri alle tre Leo stava raggiungendo la vetta della montagna [Yesterday at three o' clock Leo reach (past, per. prog.) the top of the mountain]

(13) Ieri alle tre Leo raggiungeva la vetta della montagna [Yesterday at three o' clock Leo reach (past,

imp.) the top of the mountain]

In the first pair, where we have an activity predicate, only the progressive reading of the imperfective is possible and the two sentences ARE synonymous. So, what (8) and (9) say is that a particular time (three o'clock) is included in a larger time interval whose extension is entirely "occupied" by the activity at issue. The idea is that this activity was in progress at three o'clock.

With accomplishment predicates such as *dimostrare un teorema* (*prove a theorem*) the situation is different. First of all, the progressive reading of (11) is possible, even though, in this context, it is not the favorite one and is not as natural as in the case of (9). Anyway, such a reading of the imperfective sounds quite natural in different contexts in which an accomplishment predicate occurs, e. g.:

(14a) Lo studente che dimostrava un teorema alla lavagna fu interrotto dalla campanella

[The student who prove (past, imp.) a theorem on the blackboard was interrupted by the bell]

(14b) Quando si fece male, Leo riparava il condizionatore [When Leo get (past, perf.) hurt, he fix (past, imp.) the air conditioner]

(14c) L'auto percorreva il suo terzo giro quando il motore si ruppe [The car run (past, imp.) its third lap when the engine break (past, perf) down].

Such examples show that the progressive interpretation of the imperfective is quite acceptable with accomplishment predicates (even if no human agent is involved, as shown by (14c)) and that, on this interpretation of (11), sentences such as (10) and (11) CAN be synonymous.

But, interestingly enough, (11) has a second interpretation, because it can also mean that yesterday, exactly at three o'clock, Leo completed the proof of a theorem. On this interpretation, (11) is equivalent to a perfective sentence. This is the so-called "narrative" reading<sup>8</sup> of the imperfetto, which (unlike the progressive reading) is inconsistent with a continuation such as:

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<sup>8</sup> The idea is that, when it co-occurs with some particular event predicates, the imperfective has a semantical effect which might be expressed by a perfective form. In the literature, this effect is usually associated with achievements (see sentence (13)), as pointed out by Berrettoni (1972: 251): 'These are the cases where a verb – mostly a verb with an "instantaneous" character such as *to be born*, *to die*, etc. – is combined with the imperfetto tense, although in that context it denotes a single, instantaneous action, a new element which allows the narration to advance; they are features which fit the values of aoristic forms better than those of the imperfetto.' As shown by (11) and other similar examples, this "narrative" reading of the imperfective is possible not only with achievements, but also with accomplishments (although in this case it is not the only interpretation available). To explain why this phenomenon is in general possible is precisely one of the goals of the theoretical framework under discussion.

(15) Poco dopo ha rinunciato [A little later he gave up].

On this interpretation, (10) and (11) are not synonymous.

Finally, let us turn to achievement predicates, which are characterized by a different behaviour. In this case the progressive reading is not possible, so that (12) and (13) CANNOT be synonymous. The only possible interpretation of (13) is that yesterday, exactly at three o'clock, Leo reached the top of the mountain: this is why (13) is inconsistent with a continuation such as (15).

To sum up, in the above examples:

- (a) the imperfective of activity predicates can only have the progressive reading;
- (b) the imperfective of accomplishment predicates can have both the progressive reading and the “narrative” reading;
- (c) the imperfective of achievement predicates can only have the “narrative” reading.

So, the question is: how can our theoretical framework account for this situation?

#### *4. An explanation.*

To answer this question, let us assume, with Rothstein (1998), a development of Dowty's proposal that “achievements are simple changes of state, which are treated by the grammar as punctual and (near) instantaneous, while accomplishments have a complex structure consisting of an activity which takes place over an interval followed by a telic point”. Take, for instance, the event of Leo's proving the completeness theorem. First of all we can isolate an activity with different stages (such as writing some formulas, proving a particular lemma, and so on), and, if this activity is successful, there is a particular instant at which this process reaches its culminating point: the resultant state is that completeness is proved.



We shall also assume<sup>9</sup> that an accomplishment predicate applies to both kinds of events associated with it (i. e. the activity and the change of state) and, in order to avoid complications with the so-called imperfective paradox, that the perfective entails the occurrence of the culminating event (if any)<sup>10</sup>.

Coming back to the logical form of the type illustrated in (6), consider the universal quantification over the subintervals of the frame interval *i*. This quantification has different effects depending on the different event predicates occurring in (8) – (13).

In the case of activity predicates such as *running in the park* (see (9)) what this kind of logical form says is that the relevant time (i. e. three o' clock) is included in the interval *i*, and that *i* is entirely “occupied” by events of Leo’s running in the park. Since no culminating event can be involved here (in the sense that activities, unlike accomplishments and achievements, contain no event of that kind), the perfective effect of the narrative reading is ruled out, and the only possible interpretation (in this context) is the progressive reading, that at three o’ clock the activity at issue was going on.

As for achievement predicates such as *reaching the top of the mountain* (see (13)), we have exactly the opposite situation. On the one hand, only a single, punctual change of state is available in the case of these predicates. On the other hand, according to the constraint for the progressive reading of the imperfective discussed above, the frame interval *i* itself (besides all its relevant subintervals) must temporally coincide with an event of reaching the top of the mountain. As a result, the only possible interpretation of (13) which is forced by the instantaneous nature of achievements is that *i* itself is instantaneous, because it temporally coincides with the occurrence of an event which has a punctual extension. In other words, the only relevant interval we can focus on is the instant at which the punctual change of state occurs and which coincides with three o’ clock. This is the reason for the “perfective” effect determined by the narrative reading of the imperfective when this aspectual form is combined with an achievement, and this is why a sentence such as:

(16) Ieri fra le due e le quattro Leo raggiungeva la vetta della montagna [Yesterday, between two o’ clock and four o’ clock, Leo reach (past, imp.) the top of the mountain]

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<sup>9</sup> This assumption is not endorsed by Rothstein, but in the framework adopted here it allows for a simpler version of the theory, even though it is not a necessary requirement. In our example, the idea is that both the activity (in its different stages) leading to the culminating event of proving the theorem and the culminating event itself which concludes the proof fall under the event predicate *proving the theorem*.

<sup>10</sup> A little more exactly, the idea is that in a sentence such as *Leo dimostrò un teorema* [Leo prove (past, perf.) a theorem] the culminating event *e* of the accomplishment is such that  $e < \text{now}$ .

cannot mean that in this two-hour interval an activity of climbing the mountain was going on. It can only mean, according to our logical form (6'), that there is an interval *i* (which is to be located yesterday, between two o' clock and four o' clock) whose extension coincides with the punctual extension of the event of reaching the top of the mountain. Once more, the frame interval we are quantifying over is forced to boil down to a single instant because of the actional properties of the achievement predicate.

In between there are accomplishment predicates such as *proving a theorem*. In this case two kinds of event are available. If the culminating event is the relevant one, the same reasoning we have just applied to achievement predicates can be used to account for the narrative reading of (11): the entire interval *i* coincides with the instant at which Leo concludes the proof of the theorem and the meaning expressed by (11) is that this culminating event occurs at three o' clock, as required by the "perfective" effect of the narrative reading. But another possibility is open, because if one refers to the associated activity, then the interpretation which follows is that the interval *i*, which includes the intended time (three o' clock), is such that all its subintervals coincide with stages of the activity at issue. What (11) expresses in this case is that such an activity was going at *i* (and, as a consequence, at three o' clock), as required by the progressive reading. So, the present framework correctly predicts that (11) is ambiguous. For the same reasons it is possible to explain why the following sentence, unlike (16), is ambiguous:

(18) Ieri, fra le due e le quattro, Leo dimostrava un teorema [Yesterday, between two o' clock and four o' clock, Leo prove (past, imp.) a theorem].

In fact this sentence can mean both that at the given interval the event of Leo's proving a theorem was going on and that, at some instant in this interval, Leo concluded the proof. Once more, in these cases of ambiguity the context can have an important role in selecting one of the two interpretations.

A last word on the acceptability of sentences such as (11). Since some speakers find them a little odd, a possible explanation of this intuition is that in Italian there are specialized forms to express the different meanings expressed by (11): respectively the *perifrasi progressiva* (given in (10)) and the perfective form:

(19) Ieri alle tre Leo dimostrò un teorema [Yesterday at three o' clock Leo prove (past, perf.) a

theorem].

To use the ad hoc and “direct” forms to express either meaning would be more perspicuous and efficient.

### 5. *Further evidence.*

In the reconstruction we have just suggested the difference in behaviour between accomplishments and achievements when they co-occur with the imperfective is based on the quantificational properties of the imperfective and on the different structures of these two kinds of events. As we have seen, the idea is that accomplishments, but not achievements, are associated with an *inherent* activity which provides the former type of events, but not the latter, with a temporal extension. It should be noticed that achievements can obviously be associated with activities leading to the relevant change of state: for example, everybody knows what Leo has to do, in ordinary conditions, to reach the top of the mountain. The point is that such an activity is not considered, by the grammar of Italian, as an inherent part of the events denoted by the achievement predicate *raggiungere la vetta della montagna* (*reach the top of the mountain*), whilst it is considered as an inherent part in the case of an accomplishment predicate like *scalare la montagna* (*climb the mountain*). In Dowty (1979) and Rothstein (1998) such a difference in structure between these kinds of events is independently motivated. Anyway, we can wonder whether further evidence is available in connection with the imperfective. Here are some other facts.

Accomplishment predicates, but not achievement predicates, can co-occur, in the imperfective form, with the adverbial *da X tempo*. In fact, whilst a sentence such as:

(20) Leo attraversava la strada da pochi secondi (quando fu chiamato da sua madre) [Leo cross (past, imp.) the street for a few seconds (when he was called by his mother) = He was crossing...]

is perfectly acceptable, a similar sentence with an achievement predicate is completely unacceptable:

??? (21) Leo raggiungeva l'altro lato della strada da pochi secondi (quando fu chiamato da sua madre) [Leo reach (past, imp.) the other side of the street for a few seconds (when he was called by his mother)].

The perfective sentence:

(22) Leo dipinse il ritratto in tre ore [Leo paint (past, perf.) the portrait in three hours]

entails the following imperfective sentence:

(23) In quelle tre ore Leo dipingeva il ritratto [During those three hours Leo paint (past, imp.) the portrait].

But if the accomplishment predicate is replaced by an achievement predicate, this kind of inference is impossible. For instance,

(24) Leo raggiunse la vetta della montagna in tre ore [Leo reach (past, perf.) the top of the mountain in three hours]

does not entail

(25) In quelle tre ore Leo raggiungeva la vetta della montagna [During those three hours Leo reach (past, imp.) the top of the mountain].

If I say:

(26) Quando lo vidi, Leo finalmente attraversava la strada [When I see (past, perf.) him, finally Leo cross (past, imp.) the street]

the adverb *finalmente* (*finally*) can be used to focus on the particular moment at which Leo reached the other side of the street, but it can also be used to focus on any moment of the crossing (including the beginning). This ambiguity is not possible with the corresponding achievement predicate:

(27) Quando lo vidi, Leo finalmente raggiungeva l'altro lato della strada [When I see (past, perf.) him,

finally Leo reach (past, imp.) the other side of the street]

because this sentence can only mean that the moment of my seeing Leo coincides with the moment at which his crossing ends (successfully).

For similar reasons, it is possible to say:

(28) Quando lo vidi, Leo ancora attraversava il prato [When I see (past, perf.) him, Leo still cross (past, imp.) the meadow]

but not:

??? (29) Quando lo vidi, Leo ancora raggiungeva il prato [When I see (past, perf.) him, Leo still reach (past, imp.) the meadow].

The idea that an inherent activity is associated to accomplishments but not to achievements can also explain the reason why the former type of events, but not the latter, can be used in perfective sentences in which the *partial* realization of the intended purpose is seen as an instantiation of that type of realization.

For a suitable illustration of this point, take an accomplishment predicate such as *mangiare la buccia di una banana* (*eating the peel of a banana*) or *attraversare la strada* (*crossing the street*). It is possible to say:

(30) Leo ha mangiato la buccia di una banana, ma non completamente [Leo has eaten the peel of a banana, but not completely]

or

(31) Leo ha attraversato la strada, ma solo per alcuni metri (Leo has crossed the street, but only for some meters)

whilst similar constructions are not possible in the case of achievement predicates such as *scivolare*

*sulla buccia di una banana (slipping on the peel of a banana) or raggiungere l'altro lato della strada (reaching the other side of the street):*

??? (32) Leo è scivolato sulla buccia di una banana, ma non completamente [Leo has slipped on the peel of a banana, but not completely]

??? (33) Leo ha raggiunto l'altro lato della strada per alcuni metri (Leo has reached the other side of the street for some meters).

*6. A tentative conclusion about the difference between imperfetto and perifrasi progressiva.*

The data we have just discussed show that there are independent reasons for assuming that the grammar of Italian (and in particular its lexicon) assigns different internal structures to accomplishments and achievements. Coming back to the progressive reading of the imperfective, the moral we can draw is the following. As concerns the combination with different predicates of events, the imperfetto and the perifrasi progressiva are interchangeable (without particular variations in meaning) in the case of activity predicates. They are not interchangeable in the case of achievement predicates (since the progressive reading of the imperfective is ruled out, and only the “narrative” reading is available) and in the case of accomplishment predicate (since the imperfective, but not the perifrasi progressiva, can license two interpretations: the progressive reading and the “narrative” reading). So, a natural conclusion is that the progressive reading of the imperfective and the perifrasi progressiva (which in Italian is the specialized form to express the progressive meaning) have different semantical sources. The reason for this difference might be the following:

(i) In order to express the idea that a given event *e* is going on, the imperfective can only refer to the subevents of *e* which are “inherent” parts of *e*, where this inherence is a grammatical (or, more exactly, a lexical) fact. So, if *e* has no subparts, i. e. no activity associated with it (as in the case of achievements), then the only available subevent whose occurrence can be stated is the culminating event *e* itself, and the imperfective turns out to be trivially equivalent to the perfective.

(ii) This restriction does not hold for the perifrasi progressiva, which, in the case of achievement

predicates, can associate a non-inherent activity to the culminating event denoted by that predicate. This is why achievements are compatible with this kind of progressive.

Point (i) is accounted for by the treatment of the imperfective proposed in the present paper and based on Bonomi (1997a), whilst point (ii) is consistent with current approaches to the progressive, as for instance those developed in Landman (1992) and Bonomi (1997b). But the problem is that these approaches treat the progressive as an intensional operator involving possible worlds or branching structures, whilst no intensional content of this sort is explicitly stated in the logical form we have associated with the imperfective, apart from the quantification over intervals or events. So we can wonder whether the progressive reading of the imperfective (WHEN POSSIBLE) shares some of the main intensional properties of the *perifrasi progressiva*. To address this issue, we will consider a very typical situation, which has to do with disjunction and existential quantification.

## II. Intensionality

### *7. The progressive and the idea of branching time.*

The intensional nature of the progressive is best shown by the following example, which is a modified version of the so-called multiple choice paradox discussed in Bonomi (1997b).

Suppose that today, at nine o' clock P. M., there are two concerts organized by "Umbria Jazz": respectively in Perugia and Spoleto. Leo, who adores jazz, has made a reservation for both concerts. He has also made a hotel reservation in both cities. At the present moment (three o' clock P. M.), while driving from Milan to Umbria, he has not yet decided where to go, because the two concerts attract him exactly in the same way. To overcome his embarrassment he has even planned to toss a coin after reaching Bologna. But suppose that suddenly the engine of the car breaks down and that Leo's journey stops before he reaches Bologna. In this situation, if at three o' clock, before the engine's breakdown, I say:

(34) Leo sta andando a Perugia o Spoleto [Leo is going to Perugia or Spoleto]

this sentence is true, whilst this other sentence:

(35) Leo sta andando a Perugia, o sta andando a Spoleto [Leo is going to Perugia, or he is going to Spoleto]

is NOT true, because, even though it is definitely true that Leo is going to either city, neither is there, nor will be there any particular city where Leo was going. (Do not forget that Leo's journey stops before Bologna because the engine breaks down.) In other terms, (35) is not true because neither disjunct in it is true. This means that (34) does NOT entail (35)<sup>11</sup>.

For the same reasons, in this situation the sentence:

(36) Leo sta andando in una città segnalata dagli organizzatori di "Umbria Jazz" [Leo is going to a city listed by the organizers of "Umbria Jazz"]

is true, whilst this other sentence:

(37) C'è una città segnalata dagli organizzatori di "Umbria Jazz" tale che Leo sta andando in quella città [There is a city listed by the organizers of "Umbria Jazz" such that Leo is going to that city]

is not true, so that (36) does not entail (37)<sup>12</sup>.

Such phenomena concerning the disjunction and the exportation of the existential quantifier are clear proof of the intensional character of the perifrasi progressiva. Interestingly enough, from this point of view the progressive is even "more intensional" (in a sense that I will make explicit in a moment) than other temporal operators, as for instance the "Priorean" operator for the future tense (which is often presented, at least in Prior's tradition, as a typical intensional operator). Let us see why.

The above remarks suggest that in order to capture the correct truth-conditions of the progressive we

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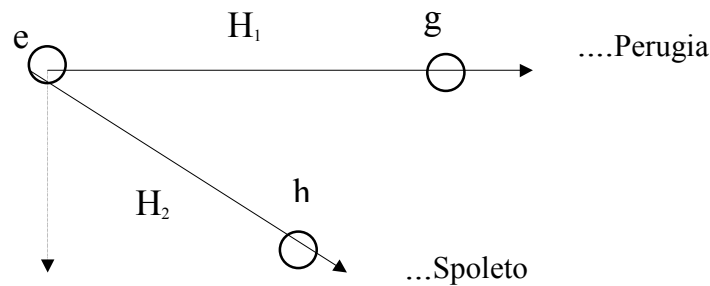
<sup>11</sup> One might object that the intensional character of these sentences is determined not by the progressive but by the *intentional* nature of the event at issue, where a human agent is involved. Yet, it is easy to find similar examples with no human agent. See Bonomi (1997b) on this point. On the other hand, examples such as (14c) are already sufficient to show that the progressive reading of the imperfective is compatible with events whose agent is, for instance, a machine.

<sup>12</sup> Von Stechow (1997) mentions a similar example suggested by A. Kratzer: *They were electing a president* does not entail that there is a particular person they were electing. Other examples can be found in Giorgi and Pianesi (1997). Yet, the example I discuss in the present paper (i. e. the multiple-choice paradox) shows that what fails here is not only the exportation of the existential quantifier, but also the exportation of the disjunction. As I try to prove in what follows, the



have to take into account not only a present event (which in our example is the event  $e$  of Leo's driving on the freeway) and the developments of this event that will occur in the actual future, but also its POSSIBLE developments. The following picture, which nicely accounts for the example under discussion, proves that a "branching" model is quite appropriate in the case of the progressive:

(38)



Each arrow represents here a course of events starting from the event  $e$ , which is the event of Leo's driving on the freeway. The different courses of events  $H_1, H_2, \dots$  contain a possible development of  $e$ : respectively an event  $g$  of going to Perugia, an event  $h$  of going to Spoleto... (See Bonomi 1997b for the technical details.)

#### 8. Two grades of intensional involvement.

Ironically enough, in the present context the idea of branching time turns out to be more problematic in the case of the simple future, i. e. the tense which gave rise to that idea. In fact, a moment's reflection is sufficient to realize that the future counterpart of (34), that is:

(39) Leo andrà a Perugia o Spoleto [Leo will go to Perugia or Spoleto]

does entail the future counterpart of (35), that is:

(40) Leo andrà a Perugia o andrà a Spoleto [Leo will go to Perugia or he will go to Spoleto].

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argument based on disjunction is stronger than the argument based on existential quantification in order to show that branching structures are a necessary ingredient of the semantics of the progressive.

The same can be said of the future counterpart of (36), i. e. the sentence:

(41) Leo andrà in una città segnalata dagli organizzatori di “Umbria Jazz” [Leo will go to a city listed by the organizers of “Umbria Jazz”]

which entails the future counterpart of (37):

(42) C’è una città segnalata dagli organizzatori di “Umbria Jazz” tale che Leo andrà in quella città [There is a city listed by the organizers of “Umbria Jazz” such that Leo will go to that city].

In other words, unlike the progressive, the future does not allow for models (as the one described in (38)) in which (39) (or (41)) is true and (40) (or (42)) is false; so, the inference from the former sentence to the latter turns out to be sound. But this is exactly the kind of inference that the idea of branching time, if applied to the future, should falsify.

The reason why in the case of the future the idea of branching time makes a false prediction is quite simple. For the sentence (39) to be true, at the end of his journey Leo must reach one of the two cities at issue (suppose that Spoleto is this city). As a consequence, (40) is also true. For the same reasons, if (41) is true, (42) must also be true. The point is that what we ideally do, when we evaluate a sentence in the future tense, is to look at the ACTUAL course of events ( $H_2$  in the above schema), ignoring the other courses of events. After all, the fact that Leo MIGHT also go to Perugia is quite irrelevant to the truth-conditions of a sentence in the future tense such as (39) or (41): what counts is, of course, the city where he WILL go. But we have just seen that this kind of reasoning does not apply to the corresponding progressive sentences: the alternative destinations are relevant this time, even though they are merely possible destinations. And it is exactly in this sense that I stated that the progressive is, as it were, “more intensional” than the future: the idea of branching time is fully justified in this case.

### *9. Variations on the Barcan Formula.*

The difference in terms of intensional involvement between the future and the progressive is also emphasized by the following remark.

According to Prior the sentence:

(43) It will be the case that someone is flying to Mars

does not entail:

(44) There is someone who will fly to Mars.

‘For suppose that in fact someone will fly to Mars some day, but not anyone who now exists. Then it will be true that it either is, has been, or will be the case that someone is flying to Mars; but it will not be true that there is someone who either is flying or has flown or will fly to Mars.’<sup>13</sup>

In formal terms, Prior’s idea is that the counterpart of the Barcan formula for the future tense:

(45)  $\text{Fut}\exists xPx \rightarrow \exists x\text{Fut}Px$

is to be rejected.

But notice that an essential requirement to falsify this kind of formula is to assume that different times can be associated to DIFFERENT DOMAINS of objects. In fact, we have just seen that, in the above example, the following conditional (which is an instantiation of (45)) is valid:

(46) Leo andrà in una città segnalata dagli organizzatori di “Umbria Jazz”  $\rightarrow$  C’è una città segnalata dagli organizzatori di “Umbria Jazz” tale che Leo andrà in quella città ” [Leo will go to a city listed by the organizers of “Umbria Jazz”  $\rightarrow$  There is a city listed by the organizers of “Umbria Jazz” such that Leo will go to that city].

The point is that the eventual variability of the domain is not relevant here (because the sentence refers to the cities existing now) and the sentence cannot be falsified.

We can conclude that the requirement of branching time has nothing to do with the refutation of (45): what is crucial, as we have just seen, is only the variability of the domain. Without this assumption a formula of the type of (45) - as for instance (46) - cannot be falsified. But, however plausible it may be, this is just a theoretical assumption (which actually is often rejected).

Interestingly enough, the multiple-choice paradox (in its quantificational version) shows that this assumption is NOT essential to falsify the following conditional:

(47) Leo stava andando in una città segnalata dagli organizzatori di “Umbria Jazz”  $\rightarrow$  C’è una città segnalata dagli organizzatori di “Umbria Jazz” tale che Leo stava andando in quella città [Leo was going to a city listed by the organizers of “Umbria Jazz”  $\rightarrow$  There is a city listed by the organizers of “Umbria Jazz” such that Leo was going to that city].

In fact (47) is false (in the situation described above) EVEN IF we accept a SINGLE domain which allows for the existence of past, present and future individuals. The point is that, in our example, there is no past, present or future city  $x$  such that it is true that Leo is going to  $x$ . On the contrary, in Prior’s example with the future, if (43) is true, then it is true that there is a future individual who will fly to Mars, and the only way we have to falsify (45) is to restrict quantification to present (or present and past) individuals, by ruling out the future individuals. But this requirement is not necessary to falsify the corresponding progressive sentence. In general, to be rejected, the progressive counterpart of the Barcan formula, that is:

(48)  $\text{Prog}\exists xPx \rightarrow \exists x\text{Prog}Px$

does not require the variability of the domain. And the reason is clear if we look at the picture (38): in different courses of events there are different cities (Perugia, Spoleto) which represent the destination of Leo’s journey, although there is no city which in ALL these courses of events is the final destination of this journey (which will be interrupted because of the failure of the engine). What is crucial here is that all these possible courses of events are relevant to the truth-conditions of the progressive sentence (whilst, at least in this case, they do not seem to be relevant in the case of the future).

### *10. Prior vindicated.*

One of the main features of Prior’s analysis of tenses is his criticism of the idea (quite popular amongst linguists and semanticists) that the Future can be treated, in principle, as the Past. More exactly, the

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<sup>13</sup> See Prior (1957: 26). Prior’s original example was about flying to the moon.

idea is that *it will be the case that P* is true at a time *t* iff there is a time *s* later than *t* at which it is true that *P* exactly as *it was the case that P* is true at *t* iff there is a time *s* earlier than *t* at which it is true that *P*. Reference to future events is here on a par with reference to past events.

Prior's objection to this approach is that, since future events (unlike past events) do not exist at the present moment, referring to these events is not allowed: for a statement in the future tense to be true, there must ALREADY be something in the present which makes this statement true. This requirement is condensed in the following principle (Øhrstrøm and Hasle, 1995: 265):

(49) The proposition *Fut(P)* is true now if and only if there exist now facts which make it true.

The reason why linguists (and semanticists in particular) find this approach problematic is that, although it can be justified by philosophical, logical or even ethical arguments, it does not seem to mirror the speaker's intuition. If I now say that tomorrow a panda will sneeze, and if tomorrow a panda sneezes, according to our intuition this is sufficient to say, tomorrow, that what I've just said IS true. What seems relevant to the truth of a future statement is the occurrence, in the future, of the events at issue, independently of the PRESENT state of affairs. Moreover, when we speak, here, of the "occurrence in the future of the events at issue" what we have in mind is the future in the ACTUAL course of events, for the fact that a panda will sneeze in all or some alternative courses of events does not seem relevant to the truth of my statement that a panda will sneeze. This is why Prior's principle (49), which concerns the future tense, is mostly ignored by semanticists.

On the other hand, an application of Prior's principle seems much more reasonable in the case of the progressive. Consider again sentence (36), repeated here as (50):

(50) *Leo sta andando in una città segnalata dagli organizzatori di "Umbria Jazz"* [Leo is going to a city listed by the organizers of "Umbria Jazz"].

In the given situation, we are willing to say that this sentence is true because Leo has made some hotel reservations, has also made a reservation for the concerts, is driving on the freeway towards Umbria, and so on. These are PRESENT facts, and the occurrence of these facts is essential here. In general, what is typical of the *perifrasi progressiva* is that, so to speak, it launches a bridge between the present and the future: there must be, at the evaluation time, an event or a set of events which can be considered

as a stage of a more developed event of a certain type<sup>14</sup>. So, Prior's principle (49) turns out to be well-founded if the future is replaced by the progressive. Besides, as shown by the discussion of the multiple-choice paradox, what is relevant here is NOT ONLY the future facts in the ACTUAL course of events, but also the future facts in the ALTERNATIVE courses of events. Therefore, Prior's idea of branching time is also fully justified in this case.

### *11. Back to the imperfective.*

We have so far considered the case of the *perifrasi progressiva*, but, in connection with the issues we have just addressed, the situation does not change if we consider the case of the imperfective. In fact, in the context described above, if the day after I say:

(51) Ieri, quando si ruppe il motore, Leo andava a Perugia o Spoleto [Yesterday, when the engine broke down, Leo go (past, imp.) to Perugia or Spoleto  $\equiv$  Leo was going...]

this sentence is true, whilst this other sentence:

(52) Ieri, quando si ruppe il motore, Leo andava a Perugia o andava a Spoleto [Yesterday, when the engine broke down, Leo go (past, imp.) to Perugia, or he go (past, imp.) to Spoleto  $\equiv$  Leo was going...] is not true. In a similar way, the sentence:

(53) Ieri, quando si ruppe il motore, Leo andava in una città segnalata dagli organizzatori di "Umbria Jazz" [Yesterday, when the engine broke down, Leo go (past, imp.) to a city listed by the organizers of "Umbria Jazz" = Leo was going...]

does not entail the sentence:

(54) C'è una città x segnalata dagli organizzatori di "Umbria Jazz" tale che ieri, quando si ruppe il motore, Leo andava a x [There a city x listed by the organizers of "Umbria Jazz" such that, when the engine broke down, Leo go (past, imp.) to x].

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<sup>14</sup> See Dowty (1979), Landman (1992) and Bonomi (1997b) for different formalizations of this intuitive idea.

Once more, the idea is that to account for the truth of sentences such as (51) or (53) we must refer not only to the actual course of events (since in this course of events there is no particular city which Leo is going to), but to a set  $X$  of alternative worlds whose events evolve on the basis of the given information and common sense assumptions. In our example, the set  $X$  selected by the context is such that in all the worlds in  $X$  the destination of Leo's journey is Perugia or Spoleto (whilst the context licenses no set  $Y$  such that in every world in  $Y$  the destination of Leo's journey is Perugia, and the same holds for Spoleto).

Unfortunately, nothing, in a logical form of type (6'), accounts for this plurality of situations. So, to solve this problem, a natural move is to let the universal quantifier associated with the imperfective range over times *and* worlds. In general, given a frame interval  $i$  and a set  $X$  of worlds, what we would obtain is something like<sup>15</sup>:

$$(6'') \forall i', w [w \in X \wedge \text{Rel}(i') \wedge i' \sqsubseteq i \rightarrow \exists e [P_w(e) \wedge e \succ i']]$$

where ' $P_w(e)$ ' means that  $e$  is an event of type  $P$  which occurs in  $w$ . In particular, the imperfective clause *Leo andava a Perugia o Spoleto* [*Leo go (past, imp.) to Perugia or Spoleto*] would be associated to something like:

$$(6^*) \forall i', w [w \in X \wedge \text{Rel}(i') \wedge i' \sqsubseteq i \rightarrow \exists e [[\text{Leo-go-to-Perugia}_w(e) \vee \text{Leo-go-to-Spoleto}_w(e)] \wedge e \succ i']].$$

I shall not go into the technical details, but the intuition behind such a strategy should be clear enough. In the situation described in our example, (6\*), which corresponds to sentence (51), is true. Yet, it entails neither disjunct in (52), so that, as desired, its truth is consistent with the fact that (52) is not true.

The obvious question, at this point, is: how is  $X$  determined?

To answer this question it should be noticed that, in a language such as Italian, the imperfective is often used to express modal notions<sup>16</sup>. For example, this is the case of the so-called inherent modality

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<sup>15</sup> This is a very rough formulation, because it ignores the role of tense, of temporal adverbs, etc. But it should be sufficient to deal with the specific issue discussed here.

<sup>16</sup> A list of the modal uses of the imperfetto in Italian is discussed in Bazzanella (1990).

discussed in Kratzer (1981). In fact, whilst a perfective sentence such as:

(55) Questa automobile fece i duecento chilometri all'ora [This car run (past, perf.) two hundred kilometres per hour]

can only mean that, in a particular circumstance, the car at issue reached that speed, the corresponding imperfective sentence:

(56) Questa automobile faceva i duecento chilometri all'ora [This car run (past, imp.) two hundred kilometres per hour]

can be true although the car has never reached that speed in the actual world.

Moreover, the imperfective can be used to express expectations, desires, beliefs, etc., as witnessed by sentences like:

(57) Leo ha promesso che veniva [Leo promised that he come (past, imp.) = that he would come].

Interestingly enough, it is also used in counterfactuals:

(58) Se mi svegliavo prima, non perdevo il treno [If I wake (past, imp.) up earlier, I miss (past, imp.) not the train = If I had..., I would not...].

Finally, as for habitual or generic when-constructions, consider the following sentences:

(59) Durante la guerra, quando un soldato veniva fatto prigioniero, i suoi diritti erano tutelati dalla Convenzione di Ginevra [During the war, when a soldier be (past, imp.) taken prisoner, his rights be (past, imp.) protected by the Geneva Convention]

(60) (Per quanto ne sappiamo) se un mercante walser doveva attraversare il Monte Rosa, passava per il colle del Teodulo [(As far as we know) if a Walser merchant have (past, imp.) to cross the Monte Rosa, he pass (past, imp.) through the Teodulo Pass].



The content of the when-construction, in (59), does not describe what happened in the actual world, but what should have happened in every situation compatible with the rules established by the Geneva Convention. In other terms, in this case the imperfective expresses a deontic modality and the universal quantification with which it is associated does not range over time intervals in the actual world but over ideal states of affairs. In a similar way, (60) expresses a generalization concerning all the situations compatible with the available information, although what happened in the real world might have been different.

From these examples we can conclude that there is each time a particular set of worlds or situations selected by the conversational background in the sense of Kratzer (1981): more exactly, the set of situations compatible with a *deontic* conversational background in the case of (59), and the set of situations compatible with an *epistemic* conversational background in the case of (60).

To go back to the progressive reading of the imperfective, we have already seen that this interpretation is possible when the information provided by the context (e. g. the fact that Leo bought the concert tickets, made some hotel reservations, was driving on the freeway, and so on) is rich enough to determine some particular constraints on possible courses of events. In our example, the set of worlds selected by the available information in the light of some *stereotypical* assumptions is a set of worlds in which Leo's trip has only two possible destinations, although it is not the same destination in all these worlds. In general, what is crucial in the case of the progressive reading of the imperfective is, once more, the existence of a conversational background (more exactly, a stereotypical conversational background) which determines a relevant set of courses of events. But we have just remarked that this is not an ad hoc hypothesis: it is a general feature of the imperfective which can be accounted for in a unified treatment.

## 12. Conclusions and open problems.

In the first part of the paper I have extended to the progressive reading of the imperfective the formal treatment proposed in Bonomi (1997a) for the habitual reading. The basic idea is that the imperfective is associated with a default universal quantification over times or events. Such an analysis has two main advantages: (i) it provides a unified explanation for the two basic readings of the imperfective in Italian (and other languages); (ii) it accounts for the different effects of the co-occurrence of this aspectual

form with different event predicates, by explaining, in particular, why in some contexts activities can only have the progressive reading, achievements can only have the narrative reading and accomplishments can have both readings. From this point of view, the semantic properties of the progressive reading of the imperfective are quite distinct from those of the *perifrasi progressiva*, which is the specialized form used in Italian to express the progressive meaning. So, another indirect advantage of the analysis under discussion is that it predicts this distinction, by providing an independent semantical source for the progressive reading of the imperfective.

In the second part, we have seen that the compositional treatment of the imperfective under discussion is based on a simple quantification over times or events which is insufficient to deal with the intensional issues we have presented in connection with the progressive reading. To overcome this difficulty, a natural solution is to let the quantifier range over pairs of times and worlds. But this modification might have some undesirable effects. In particular, an open problem is represented by the fact that in some cases the imperfective does not seem to entail any reference to a plurality of courses of events. For example, a sentence such as:

(61) L'anno scorso, quando andavo al mare trovavo bel tempo [Last year, whenever I go (past, imp.) to the seaside, I find (past, imp.) fine weather]

seems to express no modal notion, because it simply asserts the existence of a regular connection between two types of events in the past. Unlike (56), this sentence would not be true if the events at issue should take place only in possible situations which are not realized: such situations are not relevant here.

A possible solution to this problem is to recall that different conversational backgrounds determine different modal bases, i. e. different sets of accessible worlds. In particular, “totally realistic” conversational backgrounds in the sense of Kratzer (1981) select a modal base which is simply the singleton of the actual course of events. This situation would be typical of the temporal use of the when-structures, based on the universal quantification over times and events in the real world, whilst in other cases the imperfective seems to entail the reference to richer modal bases. More in general, there seems to be a regular connection between some uses of the imperfective and the set of relevant worlds determined by the contexts of discourse. But a systematic analysis of these connections is still to be developed.

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