

**Spanish *imperfecto* and *pretérito* :
Truth conditions and aktionsart effects in a Situation Semantics**

Alicia Cipria and Craige Roberts

§0 Introduction¹

In this paper we have both a descriptive and a theoretical aim. The former consists in attempting to formulate truth conditions for the Spanish *pretérito* and *imperfecto* tenses and in identifying the implications they each have for the aktionsart of the resulting clause; so far as we know, this has not been addressed previously in the literature on Spanish. While aspect (imperfective/perfective) is related to aktionsart, they are distinct: Aspect is a grammatical notion, reflected in morphological distinctions such as that between *pretérito* (perfective) and *imperfecto* (imperfective), while aktionsart is a semantic notion, a classification of the events corresponding to clauses. As is often the case in human languages, there is no one-to-one correlation between the aspect of a given verbal form and the aktionsart of the corresponding event. We will argue that while the *imperfecto* will always entail atelic aktionsart in the interpreted utterance, the use of the *pretérito* will not necessarily result in telic aktionsart. We show that this follows from the truth conditions we suggest for these aspectual forms.

We will formulate these truth conditions in a situation semantics of the sort originally proposed in Kratzer (1989). The use of this framework reflects our second, theoretical aim, which is to begin to explore how to enrich this framework with a semantics for tense and aspect. Again, this is a subject which, so far as we know, has not yet been systematically explored, and, of course, the present study only represents a modest beginning. But it already presents some interesting problems which may be useful to keep in mind in subsequent work, whether on Spanish or other languages.²

In what follows, we first, in §1, give a brief overview of the traditionally observed meanings of the *pretérito* and *imperfecto*. In §2, we consider the associated aktionsarten. In §3 we offer our truth conditions, briefly discussing some of the relevant issues which

¹This paper was presented in an earlier form at the Georgetown University Roundtable on Language and Linguistics, in the Pre-session on Spanish Linguistics, in March, 1995. We are grateful to Jae-Hak Yoon, Andreas Kathol, David Dowty, and Paul Portner for helpful discussions on various points.

²See Cooper (1986) for an earlier discussion of (English) tense within situation semantics.

arise in introducing temporal factors into a situation semantics. And in §4 we consider how these truth conditions account for the readings discussed in §1.

§1 Observed meanings of the *pretérito* and *imperfecto*

§1.1 *Pretérito*

The Spanish *pretérito*, exemplified by (1a) and (1b), is generally said to make an unambiguous contribution to the meanings of expressions in which it occurs, with a sense which is often said to be punctual, terminative, or definite.

- (1) a. Llegó el tren.
arrive-3sg.PRET the train
'The train arrived.'
- b. Teresa cantó en el teatro.
Teresa sing-3sg.PRET in the theater
'Teresa sang in the theater.'

The terminative character seems to reflect the fact that events corresponding to *pretérito* clauses are taken to have an end, e.g. in (1a), the train's arrival is a culmination, an end of the trip. When definiteness is invoked, the point seems to be that the entire event is referred to, as opposed to some indefinite subpart; hence, e.g., (1b) might be taken to refer to the entire event of Teresa's singing in the theater, as opposed to some subevent of her singing there. We will argue that these senses are captured by a requirement that the event(s) corresponding to a *pretérito* clause have a definite termination point, or end-point, in contrast to the events corresponding to *imperfecto* clauses. The relationship to the terminative sense is obvious and direct, that to the definite and punctual senses less so, mediated by aktionsarten. The *pretérito*, unlike the *imperfecto*, may denote a telic aktionsart; this aktionsart in turn entails the definiteness, in the relevant sense, of the event in question; and it influences the way that a Reference Time is established in discourse and leads to the impression that the corresponding event is viewed as punctual relative to other events under discussion. We'll review how these effects arise below.

§1.2 *Imperfecto*

Traditional discussions of the *imperfecto* propose various meanings for different tokens, including progressive, habitual, and intentional; hence at first glance it appears to be ambiguous. The *imperfecto* is often said as well to convey a durative, continuous, or indefinite sense: durative, as opposed to the punctual sense of the *pretérito*, continuous as opposed to the terminative character of the *pretérito*, and indefinite in the sense that some nonspecific subpart of the event is referred to, in contrast to the *pretérito*, which refers to the event in its entirety.

To illustrate the different senses of the *imperfecto*, consider (2a). Its different possible interpretations may be suggested by the context, or by modifying adverbials like those in (2b-d):

- (2) a. Ibamos a la playa.
go-1plu.IMPF to the beach
'We went/ were going/used to go to the beach.'

The temporal adverbial clause in (2b) suggests a progressive reading.

- (2) b. Ibamos a la playa cuando nos encontramos con Miguel.
 go-1plu.IMPF to the beach when RECP. meet-1plu.PRET with Miguel
 'We were going to the beach when we ran into Miguel.' (progressive)

The adverbial *los domingos* in (2c) suggests a habitual reading.

- (2) c. Ibamos a la playa los domingos.
 go-1plu.IMPF to the beach on Sundays
 'We went/used to go to the beach on Sundays.' (habitual)

In (2d) the "intention-in-the-past" reading is clear:

- (2) d. Hasta ayer, fbamos a la playa de vacaciones,
 until yesterday go-1plu.IMPF to the beach on vacation
 pero hoy Pepa dijo que no hay dinero para eso.
 but today Pepa say-3sg.PRET that not there is money for that
 'Up until yesterday we were going to the beach on vacation but today Pepa said
 that there is no money for that.' (intention-in-the past)

Examples like those in (4), patterned after the English example due to Dowty (1987) in (3), help to clarify the distinction between the progressive and the intentional readings:

- (3) Lee was going to Radcliffe until she got accepted by Parsons.
- (4) a. Laura iba a Radcliffe hasta que Parsons la aceptó.
 Laura go.IMPF to Radcliffe until Parsons her accept.PRET
 'Laura was going to Radcliffe until Parsons accepted her.'
- b. Laura estaba yendo a Radcliffe hasta que Parsons la aceptó.
 Laura be.IMPF going to Radcliffe until Parsons her accept.PRET
 'Laura was going to Radcliffe until Parsons accepted her.'
- c. Laura iba a ir a Radcliffe hasta que Parsons la aceptó.
 Laura go.IMPF to go to Radcliffe until Parsons her accept.PRET
 'Laura was going to go Radcliffe until Parsons accepted her.'

(4a) is ambiguous between the two types of readings. (4b), with a past progressive, is synonymous with the progressive reading of (4a), while (4c), with the periphrastic future *ir a*, is synonymous with the intentional reading. Note that one of these readings might be true while the other is false, underlining their non-synonymy. For example, for (4b) to be true, Laura must already be at Radcliffe when she learns that Parsons has accepted her, while this need not be the case with (4c).

There is another meaning which the *imperfecto* is sometimes said to have, the iterative; we will illustrate this further below. The iterative and the three meanings for the *imperfecto* that we have just examined all have two things in common. First, they involve reference to a past time. Second, they display atelic aktionsart, a notion which we turn to now.

§2 Aktionsarten and the *imperfecto* and *pretérito*

We assume a truth conditional semantics in which sentences denote propositions, where propositions are classically taken to be sets of worlds or situations. But it has long been clear to those who work on tense and aspect that sentences and the clauses they consist of allude as well to the existence of various kinds of events or states. In §3, we will discuss how the propositions expressed by clauses are related to these events or states. For the moment, it suffices to acknowledge the correlation.

The aktionsarten constitute a classification of eventualities, where eventualities are either events or states. By extension, one talks of the aktionsart of a given clause on the basis of the aktionsart of the event or state correlated with the proposition it expresses. And we often talk of the aktionsart of predicates, defined in terms of the aktionsart of simple clauses in which it occurs as main predicate. There are two major classes of aktionsarten: telic and atelic.³ Thus, we often speak of the aktionsart of a given clause or predicate as its *telicity*. The characterization used here is that of Dowty (1979, 1987), who draws in turn on Kenny (1963).

Atelic aktionsarten may be states (e.g. *saber* 'know', *querer* 'want', *vivir* 'live') or processes (e.g. *correr* 'run', *llover* 'rain', *escuchar* 'listen'). In general, telic situations involve the achievement of a goal or some resulting state; they may be simple (e.g. *win the contest*) or complex (e.g. *write the dissertation*). There is one property that centrally distinguishes the atelic from the telic aktionsarten, which we call the **subinterval property**. Informally, we can say that if a state or process holds at some interval of time then it also holds at any subinterval of that interval, so that, e.g., if it is true at an interval of an hour that I know something, I also know it at any subinterval of that hour (**distributivity**). Also, its truth at the hour-long interval does not exclude the possibility that there may also be a super-interval, say of two hours, during which the same state or process is true (**cumulativity**). Dowty (1987) formally defines atelicity for predicates in terms of the subinterval property, as shown in (5):

(5) The SubInterval Property for Atelic Aktionsarten

If δ is an atelic predicate, then necessarily, $\delta(x_1, \dots, x_n)$ is true for interval I if and only if $\delta(x_1, \dots, x_n)$ is true for all subintervals I' of I .

The predicted entailments are illustrated for the process of running in (6):

- (6) a. Jaimito corrió de 4 a 5.
 Jaimito run.PRET from 4 to 5
 'Jaimito ran from 4 until 5.'
- b. Jaimito corrió de 4 a 4:30.
 Jaimito run.PRET from 4 to 4:30
 'Jaimito ran from 4 until 4:30.'

Because the interval from 4 to 4:30pm is a subinterval of that from 4 to 5pm, the atelicity of *correr* is reflected in the fact that (6a) entails (6b) (distributivity). Similarly, this permits us to say that if Jaimito runs during the period from 4 to 5pm and also during the period from 5 to 6pm, it is also true that he runs from 4 until 6pm (cumulativity).

Telic aktionsarten do not have the subinterval property, and in fact if a telic event is true at an interval, none of its proper subintervals will verify an instance of the same type of event. Thus, we can only say that a telic like (7) is true at the maximal interval which it took for Jaimito to write the poem in question.

³These terms were first introduced by Garey (1957).

- (7) Jaimito escribió un poema.
 Jaimito write.PRET a poem
 'Jaimito wrote a poem.' (telic)

If (7) is true at an interval i , we cannot say that it is true at any subintervals of i , at least for the same poem (though of course, the progressive version of (7) or its English counterpart may be true at a subinterval of i). From this it also follows that if (7) is true of the interval from 4 to 5pm and then again of the interval from 5 to 6pm, it is not true at the interval from 4 to 6pm, though we could say that it is true at the larger interval that Jaimito wrote two poems.

Dowty (1987) formally defines telicity as in (8):

- (8) If δ is a telic predicate, then the truth of $\delta(x_1, \dots, x_n)$ for interval I entails that $\delta(x_1, \dots, x_n)$ is false for all proper subintervals I' of I .

The telicity or atelicity of a clause is not determined by its verb alone. Rather, the presence of certain argument NPs, adverbial phrases, or aspectual markers on a verb can yield a different aktionsart from the one suggested by the verb in isolation. To see how non-verbal elements contribute to aktionsart, observe that often in English sentences with a simple past tense verb, an argument NP whose head is a count noun will yield telic aktionsart for the whole clause, whereas a mass NP will yield atelicity; this is illustrated in (9a) and (9b):

- (9) a. Oil flowed through the pipes. (atelic)
 b. 3000 liters of oil flowed through the pipes. (telic)

(9a) may be true both at an interval i and at subintervals of i . But on at least one reading of (9b), which may be the easiest reading to access out of the blue, if it is true at i , then though (9a) will be true at subintervals of i , (9b) itself will not be true at those subintervals. The measure phrase in (9b) sets the boundaries on the event's duration: Once the measure is achieved, the event is completed, but not before.

The facts are somewhat different for Spanish, given the distinction between *pretérito* and *imperfecto*. The use of the *imperfecto* will always imply atelicity, while the *pretérito* will not necessarily imply telicity, as we already saw in (6) above. We claim that this should follow from the truth conditions associated with each of these verbal tense/aspect forms, so that in the case of the *imperfecto*, atelicity is part of its core meaning. Thus, example (11) with an *imperfecto* verb and the count NP *3000 litros de petróleo* has the same aktionsart (atelic) as the proposition in (10), with the mass noun *petróleo*:

- (10) Corría petróleo por las cañerías.
 flow-3sg.IMPF oil through the pipes
 'Oil flowed/was flowing through the pipes.' (atelic)
- (11) Corrían 3000 litros de petróleo por las cañerías.
 flow-3pl.IMPF 3000 liters of oil through the pipes
 '3000 liters of oil flowed through the pipes.' (atelic)

Examples (10) and (11), like (9a), are atelic because if one of them is true at an interval i , it is true to say of any given subinterval of i that oil (in the case of (11), 3000 liters of it), was flowing at that subinterval. To imagine when (11) would be true at an interval i , suppose we have a circular pipe that can hold exactly 3000 liters and oil keeps flowing

around in it continuously; then it is true for a given subinterval of i that "3000 liters of oil were flowing" during that subinterval. Also, (10) and (11) have a habitual reading, even without an adverb such as *diariamente/por día* 'daily/per day'. In the proper context or with an appropriate adverbial modifier, (9b) can have this habitual reading as well. In retrospect, we can see that (9b) may also have the non-habitual reading of (11); however, unlike (9b), (11) has no telic reading.

The examples with the *imperfecto* which we considered earlier were all atelic. So, in (2b) the substitutions of the event of "going to the beach" are instances of "going to the beach" as well. (2c) says that it was a habit of ours to go the beach on any normal Sunday during some past period of time; it entails that our having this habit would also be true of any subperiod of that period. Notice that this does not rule out the possibility that on one Sunday during that period we didn't go to the beach, for example because we had to attend a meeting or we were sick, since with the habitual we are dealing with what was the typical or usual case. With the intentional reading illustrated by (2d), the intention to go to the beach holds over some past interval, and also, then, over any subinterval of that interval.

But the *pretérito* is, as noted, compatible with either aktionsart. In (12), with the *pretérito* and the mass NP argument *petróleo*, the proposition has atelic aktionsart (cf. (9a)). The measure phrase in (13) interacts with the end-point requirement of the *pretérito* (and the meaning of the predicate) to entail telicity:

(12) Corrió petróleo por las cañerías.
 flow-3sg.PRET oil through the pipes
 'Oil flowed through the pipes.' (atelic)

(13) Corrieron 3000 litros de petróleo por las cañerías.
 flow-3plu.PRET 3000 liters of oil through the pipes
 '3000 liters of oil flowed through the pipes.' (telic)

Like (9a), (10) and (11), example (12) has an atelic reading because it is true to say of any given subinterval of the flowing process that oil was flowing at that subinterval. (13) has a telic interpretation, with the same sense as the telic reading of (9b): If it is true at some past interval i that 3000 liters of oil flowed non-circularly through the pipes at i , then it is not true that 3000 liters of oil flowed through the pipes at any subinterval of i ; instead only some part of the 3000 liters flowed during any subinterval of i .

Like (9b), (13) can have a habitual, i.e. atelic, interpretation as well in the proper context; but the point here is to contrast it with (11), which does not have a telic reading. Uttered out of the blue, the telic reading of (13) is the default. We take this to be pragmatically motivated: since the *imperfecto* can have only the atelic reading, when that is the meaning the speaker wishes to convey the use of the *imperfecto* is less likely to lead to a misunderstanding than that of the often telic *pretérito*. Among others, Horn (1984a, 1984b) has argued that when we have two elements in a paradigm, one unmarked for some feature and the other marked, the use of the unmarked element will tend to take on the interpretation which is not possible for the marked element; he illustrates this with a number of lexical items and argues that it is motivated by Gricean principles, principally the Maxim of Quantity, which would lead the cooperative speaker to use the more informative marked form if it were applicable. We would argue that the default character of the telic interpretation of the *pretérito* is another instance of the sort of phenomenon that Horn has discussed: the *pretérito* may display either aktionsarten and hence is the unmarked element, while the *imperfecto* may only lead to an atelic interpretation, so that it is marked. Hence, by the maxim of Quantity, there is a tendency to interpret the *pretérito* as telic if the *imperfecto* could have been used instead to unequivocally yield

the atelic. However, in certain contexts, partly because of the discourse effects of the *pretérito* vs. the *imperfecto*, to be discussed in §3.3.2 below, the *pretérito* may be preferred even though an atelic interpretation is intended. For example, we might utter (13) in the following context:

- (13') Normalmente, corrían 1500 litros de petróleo por las cañerías, pero una vez,
usually flow-impf liters of petroleum through the pipes but one time
en 1985, a causa de un desperfecto, corrieron 3000 litros de petróleo (por las
in due to a malfunction flow-pret liters of petroleum through the
cañerías) hasta que se soluciono el problema.
pipes until solve-pret the problem
'Usually, 1500 liters of oil flowed/were flowing through the pipes. But once, in
1985, due to some malfunction, 3000 liters were flowing (through the pipes) until
the problem was solved.'

Here, the *pretérito* form *corrieron* has an atelic reading. The possibility of contextually overriding the default in (13), argues that the tendency for a telic interpretation of the *pretérito* is indeed only pragmatic, a Gricean conversational implicature, and not part of its truth conditional semantics.

The examples in (15) illustrate how the temporal adverbials *por una hora* and *en una hora*, like their English counterparts *for an hour* and *in an hour* in (14), may also affect aktionsart:

- (14) a. Frida rehearsed the libretto for an hour. (atelic)
b. Frida rehearsed the libretto in an hour. (telic)
- (15) a. Frida ensayaba el libreto por una hora.
Frida rehearse.IMPF the libretto for an hour
'Frida used to rehearse/was rehearsing the libretto for an hour.'
(atelic: habitual or progressive)
- b. Frida ensayaba el libreto en una hora.
Frida rehearse.IMPF the libretto in an hour
'Frida rehearsed/used to rehearse/was rehearsing the libretto in an hour.'
(telic: inchoative; or atelic: habitual, progressive, or intentional)
- c. Frida ensayó el libreto por una hora.
Frida rehearse.PRET the libretto for an hour
'Frida rehearsed the libretto for an hour.' (atelic: iterative or progressive).
- d. Frida ensayó el libreto en una hora.
Frida rehearse.PRET the libretto in an hour
'Frida rehearsed the libretto in an hour.' (telic)

It is argued in the literature on English that *for an hour* requires that its argument, the clause within its scope, be atelic in aktionsart, while *in an hour* requires telic aktionsart. English *Frida rehearsed the libretto* may be within the scope of either adverbial, because it is indeterminate with respect to aktionsart, yielding either a telic reading as argument for *in an hour* (where the complete rehearsal takes place) or an atelic argument for *for an hour* (where the libretto was worked on without necessarily getting through the entire piece). If the Spanish counterparts to these adverbials work similarly, we predict that the atelic *imperfecto* may occur with *por una hora* 'for an hour' to yield the habitual or

progressive readings in (15a), and that the *pretérito* can yield whatever aktionsart is required for the adverbial, i.e. either atelic reading for *por una hora*, or else telic for *en una hora* 'in an hour'. But we correctly predict that the *imperfecto* in (15b) cannot occur with *en una hora* to yield the telic reading we find in (15d).

The telic interpretation noted for (15b) might appear to be a counterexample to the generalization that the *imperfecto* always yields atelic aktionsart. However, this reading does not share the truth conditions available for (15d), where the entire rehearsal took one hour. In general, when a telic adverbial like *en una hora/in an hour* occurs with an atelic clause, one way of making the result felicitous is to shift to an inchoative interpretation, where the endpoint of the hour period marks the beginning of the process or state corresponding to the atelic clause—here, the process of rehearsal. We can see this in English if we give *in an hour* wide scope over the progressive, which is always atelic:⁴

- (14) c. Frida was rehearsing the libretto in an hour. (telic: inchoative)

Since the only telic reading available for (15b) is the inchoative, the *imperfecto* patterns with the atelic English progressive, as expected. The other readings available for (15b) may be accounted for by assuming that in them the adverbial takes as its argument the tense/aspectless *ensayar el libretto*, which is indeterminate with respect to aktionsart, like its English counterpart; the *imperfecto* then applies to the resulting clause to yield atelic aktionsart.

The preceding discussion would suggest that (15d) has the same atelic readings as those noted for (15b). These readings do not seem to be available. We would offer, again, a pragmatic explanation for this fact, i.e. that the availability of the unambiguously atelic *imperfecto* strongly favors it over the ambiguous *pretérito* in such cases.

An endpoint adverbial such as *to the store/a la tienda* may similarly suggest telic aktionsart, as illustrated in (16–17), but this effect is overridden by the *imperfecto* in (18), which has only an atelic (habitual or progressive) interpretation:

- (16) Juana ran to the store. (telic)

- (17) Juana corrió a la tienda.
Juana run.PRET to the store
'Juana ran to the store.' (telic)

- (18) Juana corría a la tienda.
Juana run.IMPF to the store
'Juana ran/was running to the store.' (atelic: habitual or progressive)

Summarizing, it is interesting to note that the use of the *imperfecto*, with at least three attested meanings (progressive, habitual, and intentional), always results in a single aktionsart, the atelic; while the *pretérito*, with an apparently unitary meaning, can display either telic or atelic aktionsart. This will follow from our truth conditions, to which we will turn in the next section.

First, though, let us be more precise about what we mean when we say that a given clause, or the proposition it denotes, displays telic or atelic aktionsart. In Dowty (1979) and subsequent work on English tense and aspect, it is assumed that aspectual markers like the Progressive have scope independent of the scope of tenses like the Past or

⁴(14c) also has an habitual reading, of course. The inchoative is the only interpretation when the adverbial *in an hour* is sentence-initial.

Present. E.g., in Dowty the Progressive has VP scope, while tenses have sentential scope. This assumption is crucial to the treatment of aktionsart in English, e.g. in the English (14b), repeated here:

(14) b. Frida rehearsed the libretto (in an hour).

Consider the usual truth conditions for such a sentence: The Past tense leads to a shift in the course of interpretation from the Speech Time to a time which is past relative to the Speech Time; call this past time the Event Time, following Reichenbach. The sentence will be true at the Speech Time iff there is a past Event Time at which 'Frida rehearse the libretto' is true. Note that (14b) will also be true for any subinterval of the Speech Time, since the Event Time which makes 'Frida rehearse the libretto' true in the past relative to the Speech Time will be past relative to subintervals of the Speech Time as well. Hence, if we consider the Speech Time and its subintervals, (14b) appears to display the SubInterval Property for Atelic Aktionsarten given in (5) above. But (14b) is intuitively telic, as reflected in the acceptability of the optional telic PP *in an hour*. As suggested above, this adverbial is telic because it requires that its argument be telic. Since only the proposition evaluated relative to the Event Time is technically telic, and not that evaluated at the Speech Time, this means that the adverbial must take narrow scope relative to the Past tense, so that the shift from the Speech Time to the Event Time will have already taken place.

In the English progressive counterpart of (15a), *Frida was rehearsing the libretto for an hour*, the PP adverbial is taken to have narrow scope relative to the Past tense, but it may either take wide or narrow scope relative to the progressive *-ing*. If we give the adverbial wide scope over the progressive, the truth conditions require that there was actually one hour of rehearsal (though the whole libretto may not have been rehearsed); with narrow scope, the (presumably intended) hour of rehearsal may not have been completed. With either scope, the whole atelic proposition *Frida be rehearsing the libretto for an hour* then serves as argument to the Past tense.

Similarly, although we may speak of the telicity of any predicate or clause, in the discussion of the *imperfecto* and *pretérito* examples in (10-13), (15) and (17-18) above, the telicity in question pertains to Event Times, and not to the time of evaluation for the examples. But in Spanish this leads to a problem for compositionality. E.g., in (15a), the *imperfecto* contributes both Past tense and habitual or progressive aspect:

(15) a. Frida ensayaba el libretto por una hora.
 Frida rehearse.IMPF the libretto for an hour
 'Frida used to rehearse/was rehearsing the libretto for an hour.'

In order to characterize the sense in which the *imperfecto* is atelic, we must talk about the habitual or progressive past event, i.e. telicity is determined with respect to material under the scope of the Past tense. But unlike English, in languages like Spanish the tense and aspect may be combined in one morphological form, as is the case in the *imperfecto*. In order to explain the aktionsart properties of *por una hora* and to derive all the possible readings for examples like (15a), the PP must take scope which is *internal* (cf. Dowty 1979:250ff) to the lexical meaning of the *imperfecto*, i.e. having narrow scope with respect to the tense contribution of the *imperfecto* but wide scope with respect to the aspectual contribution. While this can be accomplished technically, as we will show in the following section, it illustrates a whole range of problems with adverbials in various languages, problems which surely deserve a deeper insight into the semantics of adverbials than we can provide here.

§3 A truth conditional account of the semantics of the *imperfecto* and *pretérito*

§3.1 Eventualities and situations

Most previous truth conditional characterizations of the aktionsarten have assumed a possible worlds semantics with temporal primitives which are either intervals, as in Dowty's definitions (5) and (8) above, or events (or eventualities), as in Hinrichs (1985). Hinrichs characterizes atelic eventualities in terms of the cumulative property: they are those eventualities such that two of the same type, such as two eventualities of running, join to give a third, combined eventuality of the same, running type. Telic eventualities never display this property. Hinrichs' approach, thus, is an event analogue to Dowty's definitions of aktionsarten in terms of intervals. When we switch to a situation semantics, we need to address the relationship between intervals, events and situations. Portner (1992) offers a detailed analysis of the English progressive aspect in a situation semantics. He suggests, without argument, that we view an event as a situation, a situation which is minimal in that it includes all and only the participants in the event and verifies that they stand in the appropriate relations entailed by that participation but no others:

A situation is a **minimal situation** in which *c* runs iff it contains nothing irrelevant to the truth of *c* runs, in the sense that if any part of it were taken away, we would say that we no longer had the whole of *c*'s run anymore. It will therefore be a rather abstract situation. [Portner 1992:61]

He then follows Kamp (1979) in giving temporal relations between events directly in the model, so that we needn't take intervals to be primitive. We will follow Portner in viewing events as minimal situations; but he does not address the question of how to characterize the aktionsarten in these terms. Here, we briefly note a couple of the central issues involved and suggest one path to resolving them.

In Kratzer's situation semantics, a situation is a partial world, and a part-of relation is defined over the set of all situations. In what follows, $s < s'$ iff situation s is a proper part of situation s' ; the relation \leq is the super-relation of $<$ which admits of equality as well; $>$ and \geq are their inverse relations, as usual. Since Kratzer doesn't treat tense or time, the part-of relation between situations is presumably based at least partly on spatial partiality, as well as perhaps other more abstract properties. Each situation is part of one and only one possible world, with the latter a maximal situation, i.e. one which is part of no other situation. If we extend this conception to consider time, we have world histories instead of worlds. Their parts, the situations, intuitively have two dimensions, a spatial extension and a temporal extension.³ If situation s is a proper part of situation s' , then s is presumably a proper spatial part and/or a proper temporal part of s' . In a temporally extended situation s , not only may entities have properties, but things may happen, i.e. change, as well, so that the properties which entities in s have in its initial subsituations may differ from those they have in its final subsituations. Such a situation sounds very much like an event, especially if we follow Portner in abstracting away from extraneous entities and simultaneous occurrences to make s minimal with respect to the realization of some type of event.

An event semantics along the general lines of the theory in Hinrichs (1985) uses quantification over events in the object language. If we assume, following de Swart (1992) and contra Kratzer (1988), that in such a semantics all predicates, both stage-level and individual-level, carry an event argument, and further, if we take events to be a type of situation, then this quantification over events amounts to quantification over situations.

³It is conceivable that there are other, more abstract dimensions of a situation, but we won't consider that possibility here.

But then, in a situation semantic framework of the sort assumed here, we can get much the same semantics without object language event quantification. This is because the situation of evaluation for a given clause plays the role of a witness situation (the event or its super-situation) for such a quantification. That is, the truth of the expression in the situation of evaluation entails the existence of a verifying situation, obviating the need to assert its existence in the object language.

In classical Montague Grammar (e.g. Montague 1973), natural language constituents are interpreted relative to an *index of evaluation* which includes both a world, and a time (now generally assumed to be an interval); we'll call the latter the *time of evaluation*. If we use a temporally extended situation instead of a world as a parameter of the index of evaluation for a constituent (call this parameter the *situation of evaluation*, or **EvalS**), we need to consider what relationship the temporal extension of that situation should have to the time of evaluation (the **EvalT**, an interval). Note that there must be some restriction on the relationship between the EvalS and the EvalT. What would it mean to interpret an utterance relative to an EvalT which was not a subinterval of the temporal extension of the EvalS? Surely something cannot be true in a situation at a time other than that of the situation itself. And super-intervals of the temporal extension of EvalS won't do either, as they might crucially include entities or eventualities which are not in EvalS. Let us define a function on situations, **Time**, which assigns to each situation its temporal extension, an interval. We don't want to say that Rosa built a house in situation *s* if it took longer than *Time(s)* to build the house. We can say she was building the house during *s*, but that's not the same, of course. So, if we have an independent EvalT, we need to guarantee that for all EvalT, EvalS, $\text{EvalT} \subseteq_t \text{Time}(\text{EvalS})$, where \subseteq_t is the temporal subinterval relation on pairs of intervals. But this, in turn, suggests that we might manage without the EvalT and this ad hoc stipulation if we use $\text{Time}(\text{EvalS})$ in place of EvalT in our interpretation. That is, the temporal extension of the situation of evaluation now serves intuitively as the Event Time of the eventuality described.

We can either assume that our model has intervals as primitive elements, with temporal relations defined over them and hence indirectly over situations in terms of their value under **Time**; or else, following Portner (1992), we can assume that situations have temporal relations defined directly over them. In the latter case, we can define times and intervals, if we need them, in terms of the temporal relations over situations; again, this would follow Kamp's (1979b) definition of times and intervals in terms of primitive temporal relations over events. The way we model temporal relations over situations doesn't matter here, so we won't choose between these approaches. Whether we take times to be primitive elements of the model or defined, they can serve as the value of the function *Time* over situations. In either case, we will want to guarantee that the temporal dimension of a situation, as captured by the *Time* function, corresponds to our intuitions about the relationship between situations and their temporal extensions. Among other things, we will want the following to be true:

(19) For all *s*, *s'*, if $s \leq s'$, then $\text{Time}(s) \subseteq \text{Time}(s')$.

I.e., if *s* is a sub-situation of *s'*, then their times are appropriately related as well.

One more difficulty remains. Kratzer (1989) argues that propositions ought to be persistent, in order to get the correct semantics for counterfactual conditionals. As usual, a proposition is a set of situations, those in which it is true:

(20) **Persistence in Situation Semantics** [Kratzer 1989:616]

A proposition $p \in P(S)$ is *persistent* iff for all *s* and *s'* $\in S$ the following holds:
Whenever $s \leq s'$ and $s \in p$, then $s' \in p$.

What this means is that if a proposition is true in a situation s , then it must be true in all the supersituations of s , including the maximal situation, or world, w_s , of which s is part. Assuming that Kratzer's argument is sound, then we will want to require persistence of propositions in our situation semantics enriched with times, as well. The problem is that if we require persistence of propositions and take the primitives in terms of which we define aktionsarten to be situations instead of primitive events or intervals, then we must take care to avoid imposing conflicting requirements on the interpretation of clauses, arising from their telicity and persistence.

To see the problem, consider how we might define the aktionsarten in such a framework. First we consider the preliminary, simple definition of atelicity in (21):

- (21) A clause (or formula) ϕ expresses an atelic proposition iff for all situations s ,
 $[[\phi]]^s = 1$ iff for all $s' \leq s$, $[[\phi]]^{s'} = 1$.⁶

Since the set of situations which are parts of s will include those which are temporal parts of s , (21) might seem to capture Dowty's subinterval property for atelic aktionsarten in (5), the latter defined in terms of the intervals at which certain (atelic) predicates hold of a set of arguments.

(5) **The SubInterval Property for Atelic Aktionsarten**

If δ is an atelic predicate, then necessarily, $\delta(x_1, \dots, x_n)$ is true for interval I if and only if $\delta(x_1, \dots, x_n)$ is true for all subintervals I' of I . [Dowty 1987]

Now suppose we try to extend this approach to develop the analogue of Dowty's (8) in situation semantic terms, as in (22):

- (8) If δ is a telic predicate, then the truth of $\delta(x_1, \dots, x_n)$ for interval I entails that $\delta(x_1, \dots, x_n)$ is false for all proper subintervals I' of I . [Dowty 1987]
- (22) A clause (or formula) ϕ expresses a telic proposition iff for all situations s such that $[[\phi]]^s = 1$, for all $s' < s$, $[[\phi]]^{s'} = 0$.

(22) does mirror (8), but if we require persistence of propositions, this will mean that there can be no telic propositions. For persistence requires that if $[[\phi]]^s = 1$, then for all s'' such that $s < s''$, $[[\phi]]^{s''} = 1$. So long as s isn't a world history (and recall that Portner assumes that events are minimal situations, which won't be world histories in our reasonably realistic model), persistence would entail that ϕ is true in both a situation, s'' , and its substitution s , precluding telicity as defined in (22).

Further, consider a clause ϕ , of the form *María tomó/tomaba cerveza*, 'María drank beer', atelic by the usual tests (again, considering the Event Time of María's drinking, and not the Speech Time). Suppose that this is true by virtue of the fact that María is drinking beer in some past situation s , which is not itself a world history, and that she is drinking beer in all of the substitutions of s , reflecting its intuitive atelicity; $Time(s)$ will then be the Event Time of María's drinking. By persistence, María will also have to be drinking beer in the world history of which s is a part, w_s . But surely she wouldn't be drinking beer in all the subsituations of w_s . Even if she's a drunkard, María has to sleep

⁶This is a bit too strong. As Hinrichs (1985) discusses at length, even in relatively homogeneous eventualities, such as processes like walking, there are subeventualities which are so small that they are too small to identify as eventualities of walking; they might be identifiable as eventualities of lifting a foot or flexing a heel, but aren't sufficiently temporally extended to be differentiated from a standing in place and lifting one foot. We could modify (21) to take this into account, requiring that s' be sufficiently temporally extended to be a ϕ -ing, but for simplicity, we'll just ignore this refinement in this and subsequent definitions, as Dowty does in his interval-based definition of atelicity.

sometime! But then María's drinking beer would be true of a situation, w_s , but not of all of its subsituations, so that the clause would *not* satisfy the definition of atelicity in (21). Hence, we could not reflect the atelicity of ϕ under (21) while maintaining persistence, without imposing a very unrealistic requirement on its truth in the model.

Finally, another problem with (21) is that it requires the truth of ϕ even in the subsituations of the past situation s which, while they may be in principle temporally extensive enough to contain ϕ -ings, are spatially radically smaller than s , to such an extent that they are too small to contain all of the individuals which play central roles in ϕ -ing. This is clearly too strong a requirement.

(23) retains the simple indexing schema argued for above, without temporal indices, while avoiding some of the pitfalls of (21). In it, **Space** is a function from situations to their spatial extensions; it is used to keep the spatial parameter stable while permitting the temporal to vary:

(23) **Atelicity in a Situation Semantics**

A clause (or formula) ϕ expresses an atelic proposition iff for all situations s ,
 $[[\phi]]^s = 1$ iff there is an $s' \leq s$ such that $[[\phi]]^{s'} = 1$ and for all $s'' \leq s'$ such that
 $\text{Space}(s'') = \text{Space}(s'')$, $[[\phi]]^{s''} = 1$, as well.

Here, s' intuitively plays the role of Portner's event at which ϕ is true, though we haven't directly required that it be an event in his sense; rather, the existence of a ϕ event, which might be a subsituation of s' , is entailed by (23). By (23), if ϕ is true at s , it is true at w_s as well, guaranteeing persistence. But we don't thereby require its truth at all subsituations of w_s , any more than its truth at all subsituations of s itself; hence, atelicity is compatible with persistence. The role of Event Time is implicitly played by $\text{Time}(s')$, the temporal extension of the eventuality corresponding to ϕ ; $\text{Time}(s')$ may well be a proper subinterval of $\text{Time}(s)$.⁷ Further, we only require the truth of ϕ in all of those subsituations of s' which are spatially co-extensive with s' , not in those which are too small in some sense.

In order to define a corresponding notion of telicity, then because of persistence we first need to define (rather roughly) what it is for a situation to be a minimal situation in which a given event-type occurs. (24) adapts to a situation semantics with times Portner's (1992) notion of a *minimal situation* in which a proposition is true:

(24) A situation s is ϕ -minimal iff $[[\phi]]^{s.ST} = 1$ and all elements of the non-temporal dimension(s) of s are necessary to its being a ϕ -ing.

Hence, a ϕ -minimal situation should be viewed as a rather long, very thin space/time worm (cf. Cooper 1986, Kratzer 1989). Note that given an atelic proposition ϕ , a ϕ -minimal situation s will typically be such that proper subsituations of s are also ϕ -minimal situations (proper sub-worms of the super ϕ -minimal situation), in accordance with the distributivity required by (23). We will make use of this property to distinguish them from situations of a telic eventuality-type:

⁷We also may need to assume that situations, like intervals, are temporally dense, which we do not find objectionable. Further, there is still the issue of the temporally minimal size at which an eventuality may be true. Suppose that an intuitively telic proposition happens to be true at a situation of temporally minimal size. Then it's the case that the proposition is technically atelic, because it's true at all the subsituations of that minimally-sized situation; there just don't happen to be any proper subsituations. This is undesirable. But note that (5) presents the same problems (and (21) as well). For if i happens to be the minimal interval that's temporally extended enough for ϕ to be true in it, then it's also trivially true that ϕ is true at all temporally minimally subintervals of i .

(25) **Telicity in a Situation Semantics**

A clause ϕ expresses a telic proposition iff for all situations s if s is ϕ -minimal, then there is no s' such that $s' < s$ and $[[\phi]]^s = 1$.

Note that precluding subsituations of s in which ϕ is true entails that there are no temporally proper sub-situations of s at which ϕ is true.

Now consider the following:

(26) María tomó cerveza.
 María drink.PRET beer
 'María drank beer.'

(27) María tomó una cerveza.
 María drink.PRET a beer
 'María drank a beer.'

Under Dowty's characterization of atelicity and telicity, intuitively (26) is atelic, (27) telic (under the scope of the past tense), judgments which are reflected in the acceptability of adverbials: atelic *por una hora* is fine for (26), odd with (27), while telic *en una hora* is fine for (27) but odd with (26). As in examples (9–13), this difference in aktionsart stems from the difference between a mass argument, *cerveza*, and a count argument, *una cerveza*, and not from the verb *tomar* or the *pretérito*, both of which are neutral with respect to aktionsart. Suppose we take the logical form of these examples to be as in (26') and (27'):

(26') PAST_[ϕ] PRET-ASP [tomar (María,cerveza)]

(27') PAST_[ψ] PRET-ASP [tomar (María,una cerveza)]

By (23), if ϕ in (26') is true in a (past) situation s , then this will require the existence in s of an atelic event of María's drinking beer, i.e. a subsituation s' of s during all of whose spatially co-extensive subsituations she also drank beer. The object *cerveza* is a mass noun; hence whatever its denotation, the material parts of that denotation are also in the denotation of *cerveza* (see Link 1983)⁸. Thus, any temporal part of a period of drinking some maximal amount of *cerveza* will contain a proper part of that maximal amount which is also drunk (see Krifka 1986, 1987). Further, if it is true that María drinks beer in s , it will also be true in w_s , satisfying persistence; but she needn't be a drunkard, drinking beer at all the subintervals of w_s itself.

Suppose that (27) is true by virtue of two past beer drinking situations, so that ψ in (27') is minimally true in both s and s' , where $w_{s'} = w_s$ but s and s' are non-identical, temporally non-overlapping situations. Then by persistence, ϕ is still true in $w_{s'} = w_s$, i.e. it's true in that world history that Mary drinks a beer. This seems quite reasonable to us; even though we can also say that she drinks two beers in that world history (and in the join of s and s' which is also part of it), that shouldn't mean that she doesn't also drink one. This is a problem, we think, for Dowty's definitions, according to which María couldn't be said to have drunk a beer at Time($w_{s'}$) or at the join of Time(s) and Time(s'). But under (25), as in Dowty's account, (27) still expresses a telic proposition, because (25) precludes the existence of a temporally proper subsituation s'' of either s or s' during which time Mary drank a beer. It takes just so long to drink a beer; any less is a beer-drinking, but not the drinking of a beer. So the proposition expressed by (27) is non-atelic, as desired, though persistent.

⁸at least down to the level where there are sufficient molecules of the appropriate sort in solution.

We will henceforth assume the definitions of the aktionsarten given in (23) and (25), along with the simple indexing schema they presuppose.

§3.2 Imperfecto

§3.2.1 Truth conditions for the imperfecto

Our truth conditions for the *imperfecto* involve a single core meaning, given in preliminary form in (30) below; for simplicity, this definition ignores the issue of the *imperfecto*-internal scopes of temporal adverbials, discussed in §2 above, a deficiency which will be remedied below. What we offer is basically a modal interpretation of the *imperfecto*, as indicated by the universal quantification over worlds w' . It has two subcases, involving two possible types of domain restriction on the universal quantification; these are given in terms of permissible modal accessibility relations R in cases (a) and (b). Case (a) captures the progressive interpretation of the *imperfecto*, case (b) the habitual. We will argue in §4 that the other purported senses of the *imperfecto* are in fact subcases of one of these two.

(28) $s <_t s'$ iff s and s' are part of the same world and s temporally precedes s'

(29) ST = the Speech Time of an utterance, technically the situation in which it is uttered, whose temporal dimension then corresponds to the Reichenbachian notion of Speech Time.

(30) **Meaning of the Imperfecto** (Preliminary)

$[[\text{IMPERF}\phi]]^{s,ST} = 1$ iff

$\exists s' \subseteq w_s [s' <_t ST \ \&$

$\forall s'' [R(s'',s') \rightarrow [[\phi]]^{s'',ST} = 1] \ \&$

$\forall s''' [s'' \leq s' \rightarrow \forall s'''' [R(s''',s'') \rightarrow [[\phi]]^{s''',ST} = 1]]]$,

where either:

(a) Progressive case: $R = \{ \langle s, s' \rangle : s \text{ is an inertia-situation for } s' \}$, or

(b) Habitual case: $R = \{ \langle s, s' \rangle : s \text{ is a characteristic subsituation of } s' \}$

The core import of (30) can be paraphrased as follows: IMPERF ϕ is true in a situation s if and only if there is some situation s' (in the same world history as s) which is past with respect to the Speech Time (ST) and ϕ is true in every situation s'' which is related to s' in the appropriate fashion R . In addition, the truth of ϕ is preserved under R for the subsituations of s' as well; i.e. every subsituation s'' of s' must be such that at all the situations s''' which are related to s'' in the same fashion R are also such that ϕ is true at s''' .⁹ There are thus, in addition to the modal accessibility relation R , two parts of the meaning of the *imperfecto*: the Past tense, reflected in the requirement that s' be past relative to the Speech Time, and the atelic aspect, reflected in the additional assumption, the subinterval property required of s' . Requiring that s' be past relative to the Speech Time makes the Spanish *imperfecto* an *absolute tense*, in the sense that its temporal location is always determined relative to the Speech Time, even in embedded clauses; cf. Korean (Yoo, Yoon this volume) for an example of a language where embedded clauses are interpreted relative to the event time of their embedding clauses instead.

⁹We will not give a complete fragment for Spanish. We assume, as usual for tenseless ϕ , that $[[\phi]]^{s,ST} = 1$ iff ϕ is verified by s . E.g. for a basic formula, the arguments of the predicate must stand in the relation denoted by the predicate in s .

In (30a), we adopt a notion of the progressive modified from Dowty's (1979) definition. Crucial to this definition is the notion of an inertia situation, modelled after his notion of an *inertia world*; cf. also Portner's (1994) *inertia events*. Intuitively, an inertia situation for a situation s is one which begins just like s , but continues in the way that s would continue were there no interference with the course of events as they have developed up to that point. Of course, in reality the course of events is often interrupted; e.g., Freda might be in the midst of baking a cake but receive a phone call and never finish it. So the progressive is in this respect like modality, in that it makes reference to possibly unrealized situations.¹⁰ Further, we require that an inertia situation for a given EvalS continue on beyond Time(EvalS), the interval at which the progressive is asserted to be true:¹¹

(31) **Constraint on the Inertia-Situation Relation**

For all s , if s' is an inertia-situation for s , then there is an s'' which is a temporally final subsituation of s' and which properly temporally follows s , i.e. which is such that $s <_t s''$.

Like the inertia-situation relation, the characteristic counterpart relation referred to in (30b) is modal, in the sense that they shift from one situation of interpretation to another; however, unlike inertia situations, characteristic subsituations of a given situation are all in the same world. This will follow from our definition if we assume, following Kratzer, that the subsituation relation holds only over situations in the same world. In this sense, the habitual reading has a realis character not displayed by the progressive. But not all subsituations of a situation s are characteristic subsituations. The latter are subsituations which are normal or usual in some sense, a sense given by the meaning of the utterance in question and its context. With respect to (30b), since s is a subsituation of s' , and hence they are in the same world, habitual readings are about what someone has actually done on typical occasions, and not, as with the progressive, about what would have been if things had gone on as they were.

Given these assumptions, the two subcases of (30) in (a) and (b) give rise to truth conditions which we can paraphrase as in (30a') and (30b'):

(30) a'. Progressive:

Imperfecto ϕ is true in a situation s if and only if there is an interval s' which is past relative to ST and ϕ is true at every inertia situation for s' , as well as at every inertia situation for all the subsituations of s' . I.e., ϕ would have been true if things had gone on as they were.¹²

b'. Habitual:

Imperfecto ϕ is true in a situation s if and only if there is an interval s' which is past relative to ST and ϕ is true at every characteristic subsituation associated with s' , as well as at every characteristic subsituation associated with the subsituations of s' .

¹⁰Abusch (1985) argues that in a treatment of the progressive along the lines of Dowty's (1979) we cannot make do with a single accessibility relation picking out inertia worlds, but rather that there might be different inertia worlds determined by various aspects of the situation described by the progressive. We will not consider this possibility here, but note that the relation R in our definition (30) might be modified to be a function which picks out accessibility relations on the basis of contextual factors, in order to reflect Abusch's modification of Dowty.

¹¹The definition in (31) only works as desired if we assume that situations in different world histories are temporally comparable.

¹²By this, we intend no counterfactual implication. I.e., the truth of *imperfecto*(ϕ) is compatible with the subsequent truth of ϕ .

Since all the subsituations of s' must be such that their subsituations also have only inertia situations or characteristic subsituations that verify ϕ , this will guarantee that if ϕ is true at s' , it will also be true at all its subsituations as well. This is just what we need to guarantee atelicity under (23). Hence, (30) entails that the *imperfecto* will always yield atelic aktionsart (under the scope of the Past tense).

We noted that (30) is preliminary in virtue of the fact that it ignores the internal adverb problem. We will propose a technical solution to this problem which involves leaving the translation of *Imperf* ϕ open to the introduction of adverbials with scope under the Past tense but wider than the aspectual portion of its meaning. We do this by changing the logical type of *Imperf* ϕ from that of a sentence, i.e. type t , to a function from adverbials to sentence-type objects.¹³ As usual in Montague Grammar, ϕ' is the translation of the constituent ϕ into a formula of intensional logic, its logical form:

(32) **Meaning of the Imperfecto** (final)

$IMPERF\phi' = \lambda Adv[PAST(Adv[ASP_{IMPF}\phi])]$, where PAST, Adv, and ASP_{IMPF} are of type t/t , and:

$[[PAST\psi]]^{s,ST} = 1$ iff $\exists s' \subseteq w_s [s' <_t ST \ \& \ [[\psi]]^{s',ST} = 1]$

$[[ASP_{IMPF}\phi]]^{s',ST} = 1$ iff

$\forall s''[R(s'',s') \rightarrow [[\phi]]^{s'',ST} = 1]$ &

$\forall s''[s' \leq s'' \rightarrow \forall s'''[R(s'',s''') \rightarrow [[\phi]]^{s''',ST} = 1]]$,

where either:

- (a) Progressive case: $R = \{ \langle s, s' \rangle : s$ is an inertia-situation for $s' \}$, or
 (b) Habitual case: $R = \{ \langle s, s' \rangle : s$ is a characteristic subsituation of $s' \}$

Under this translation and interpretation, *IMPERF* ϕ is of type $(t/t)/t$, taking a sentential adverbial, such as *en una hora* or *por una hora*, to yield an expression of type t . We could impose further, sortal restrictions on the adverbials which can serve as internal adverbs in this translation, but we won't investigate that here. In order to account for the possibility of iterating these adverbials, we can push up their type so that the adverbials take *IMPERF* ϕ' as argument, yielding an expression of the same type, $(t/t)/t$. In case the sentence takes no adverbials, we can use a dummy adverbial as argument to (32), basically an identity function. In such a case, the combined translation and interpretations of *PAST* and *ASP_{IMPF}* in (32) yield the same interpretation as the earlier (30). Note that the possibility of introducing adverbial meanings internal to the interpretation of the *imperfecto* does not preclude permitting the same adverbials to take narrower or wider scope than the *imperfecto*.

One final note: (30)/(32) do not guarantee that the situation s'' at which ϕ is true is itself in the past. The definition could be easily modified to ensure this. However, we have not done so because of intentional examples like (33):

- (33) Juan dijo que venia mañana.
 Juan said.PRET that come.3sg.IMPF tomorrow
 'Juan said that he was coming tomorrow.'

In (33), the intended event of John's coming corresponding to the complement clause is specified to be realized, if at all, after the speech time. We will argue in the following section that intentional readings of the *imperfecto* are a type of progressive, so that all

¹³Dowty (1979:332ff) argues that aspectual adverbials like *in an hour* and *for an hour* should be VP adverbs, of type IV/IV. Notice that that is not open to us here: the scope of the tense portion of the meaning of the *imperfecto* is clearly sentential, type t in the translation offered, and hence that of the aspectual portion of its meaning must be too. Hence adverbials taking intermediate scope between these two portions must take type t arguments (the result of adding the aspectual meaning to the basic clause meaning) to yield a type t argument for the tense portion of the meaning, i.e. be of type tt .

readings of the Spanish *imperfecto* are covered by the cases given in (30)/(32) above. Given (33), then, we do not want to guarantee that s'' in (32) be in the past with respect to the time of evaluation (for (33), the Speech Time).

§3.2.2 Accounting for available readings of the *imperfecto*

Now let us return briefly to review the data in the first section, and show how our truth conditions for the *imperfecto* account for them. We have already discussed how the aktionsart for the *imperfecto* are constrained to be atelic. We also see that the progressive and habitual readings of the *imperfecto* are straightforward examples of cases (a) and (b) of (32), respectively. It remains only to discuss how the intentional and iterative readings of the *imperfecto* arise.

First, with respect to the intentional reading, note that we might try to derive it by adding a third clause to (32), as in (32c):

- (32) c. Intentional:
 $R = \{ \langle s, s' \rangle : s \text{ is a situation realizing the intentions in } s' \text{ of the agent in } s \}$

And placing the condition in (34) on the relation of being a situation (world-time pair) which realizes an agent's intentions:

- (34) Constraint on the Intentional Realization Relation:
 For all s, s' , if s realizes someone's intentions in s' , then there is an s'' which is a final-subinterval of s and which properly follows s' , i.e. which is such that $s' < s''$, and the realization of the agent's intentions is concluded in s'' .

However, apart from the problem of trying to define what it is to be the agent of a situation (which would surely require relativization to a particular event-type realized in that situation), we believe that adding (32c) is neither necessary nor sufficient to capture all the relevant readings, and that it is preferable instead to treat them as subcases of the progressive interpretation of the *imperfecto*. First, to see that such an addition would not be sufficient, notice that there are examples of a reading which is very close to the intentional but which does not involve an agent. This is exemplified by (35) and (36):¹⁴

- (35) El mecanismo de autodestrucción se detonaba en 30 minutos.
 The mechanism of self-destruction detonate.IMPF in 30 minutes
 'The self-destructing mechanism would be activated in 30 minutes.'

- (36) Eran las 6. Los campesinos comenzaron a preparar el fuego.
 be.IMPF 6. the peasants start.PRET to prepare the fire
 El sol se ponía a las 6:50.
 The sun 3-REFL set.IMPF at 6:50

'It was 6 o'clock. The peasants started to prepare the fires. The sun would set at 6:50.'

But also, under certain assumptions about what constitutes an event, (32c) is just a subcase of (32a), i.e. the existence of such readings would be predicted by our truth conditions for the progressive. The main assumption we require is that an event may

¹⁴In the case of example (35), even though the presence of an agent is not explicit, one can assume that there has been some agent involved in the programming of the mechanism. In (36), however, no connection to an agent can be established.

consist not only of the changes in state typically associated with that type of event (see Dowty 1977), but also with what Moens & Steedman (1988) call a preparatory process: a subpart of the event before any culmination (of the change of state) occurs, during which the preparations for its occurrence are completed. If this assumption is made, then the *IMPF* ϕ might be true under the progressive reading if the preparatory phase of ϕ -ing is underway.

In a similar though not quite identical fashion, Partee (1984) discusses the possibility that, in order to derive the correct semantics for temporal adverbial clauses in examples like (37), we might think of an event of throwing a party as including not just the actual party, but also the planning, sending the invitations, preparing the food, etc.:

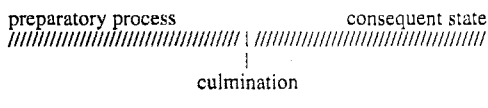
(37) When Juanita threw a party, she spent a long time preparing the food.

If we include the period during which one holds intentions to perform some act as part of the preparatory phase of an extended event, then the extended event is in progress during the preparatory phase, during the period when one holds those intentions. If one's intentions are carried out as planned, then in all the inertia situations corresponding to that period, the event itself will come about. From this perspective, the intentional readings are a subtype of the progressive. As is usual in the progressive, there is no assumption that the eventuality is fully realized. But the preparatory phase need not involve the intentions of a planner, yielding the intentional reading, but may instead simply reflect the fact that all the wheels are in motion which would ordinarily lead to an event like the sun setting, as in (36).

If intentional readings are subcases of the progressive interpretation of the *imperfecto* given in (32a), then we have to explain why the Spanish progressive does not give rise to such readings, as illustrated by the lack of an intentional reading in the past progressive counterpart to (3a) in (3b), discussed earlier. The fact that the Spanish progressive does not have the intentional reading supports our contention that the intentional reading arises from the meaning of the *imperfecto* itself, rather than, e.g., being the result of combining the *imperfecto* with a progressive operator (cf. Dowty's 1979 compositional treatment of the English futurate progressive in this way). Our understanding of the Spanish progressive is that in some sense it can only be used to refer to events when the change of state in question is actually in progress, though not yet complete.

To see what we mean, consider Moens & Steedman's suggested internal structure of telic events:

(38) Moens & Steedman's (1988) internal structure of a telic event ("Nucleus")



They argue that what the preparatory process involves might be interpreted differently for different examples, these differences arising, presumably, from real-world pragmatic knowledge plus the truth conditions of the examples involved. One type of construal would be where this process comprises the actual beginning of the change of state which leads to the culmination, as in the progressive reading of the *imperfecto* in examples like (2b), repeated here:

- (2) b. Ibámos a la playa cuando nos encontramos con Miguel.
 go-1plu.IMPF to the beach when RECP. meet-1plu.PRET with Miguel
 'We were going to the beach when we ran into Miguel.' (progressive)

But another would be where the preparatory process would comprise something like a planning phase, as in examples like (37) or, as we argued, the intentional readings of examples like (2d):

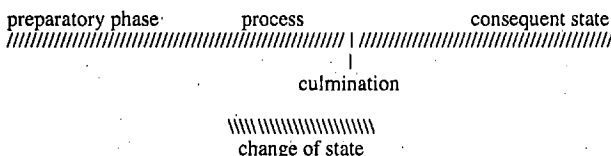
- (2) d. Hasta ayer, íbamos a la playa de vacaciones,
 until yesterday go-1plu.IMPF to the beach on vacation

pero hoy Pepa dijo que no hay dinero para eso.
 but today Pepa say-3sg.PRET that not there is money for that

'Up until yesterday we were going to the beach on vacation but today Pepa said that there is no money for that.' (intention-in-the past)

But if the Spanish progressive is only felicitous in examples like (2b), and not in those like (2d), then some differentiation must be made between the two types of preparation for change of state. We seem to need something more like (39):

(39)



The culmination is point-like, i.e. temporally non-extended. In the complex telics (i.e. accomplishments), the change of state is more than the culmination; it is extended. We capture this by saying that there is a non-empty process leading to the culmination. In an achievement (simple telic), the process is empty. As a process of approaching the culmination, the pre-culmination portion of the change of state has a certain sort of homogeneity. But the preparatory phase is qualitatively different from the change of state, including the pre-culmination process, and hence isn't homogeneous with the process: In the preparatory process, nothing is going on which would concretely lead to the change of state. The Spanish progressive may only refer to the pre-culmination process of the actual change of state associated with a telic eventuality, after the preparatory process, if any.¹⁵

Note that this account of the intentional readings predicts that they may arise with achievements as well as accomplishments. This is confirmed by the acceptability of examples like the following:¹⁶

¹⁵It is interesting to note that English, with no distinct imperfective past tense form, uses the past progressive to indicate the intentional reading, as we see in the translations in the intentional examples in (2) - (4). This supports the idea that the restriction on the interpretation of the Spanish progressive is probably designed to take advantage of the *imperfecto* vs. past progressive split to make as many semantic distinctions as possible.

¹⁶We have chosen the complex achievement predicate *empezar el régimen*, with the inchoative aspectual verb *empezar*, because the intentional reading is generally easiest to get with agentive predicates, and, as Dowty (1979:124) notes, few, if any, simple achievement verbs involve agentivity.

- (40) María empezaba el régimen el lunes. Pero hoy se enteró
 María begin.IMPFF the diet the Monday but today learn.PRET.

que sus amigos le van a hacer una fiesta el lunes a la noche,
 that her friends' dat-3 go.PRES to make a party the Monday the evening

asi que decidió no empezar hasta el otro lunes.
 so decide.PRET not begin until the other Monday

'María was going to start her diet on Monday. But today she learned that her friends are going to throw a party for her Monday evening, so she decided not to start until the following Monday.'

Since we are not principally concerned here with the progressive, we will not explore how the ontology of event-parts sketched in (39) should be realized in the semantics. We only offer this here by way of tentative explanation of the difference between the *imperfecto* and the Spanish progressive.

At this point we would like to comment on the iterative interpretation often attributed to the *imperfecto* (cf. Binnick 1991) or considered as a subtype of the habitual (cf. Comrie 1976). English examples like (41) can only have iterative interpretations:

- (41) Stephen kicked the door for ten minutes. (iterative)

(41) means that throughout a ten minute interval, Stephen repeatedly kicked the door. Spanish examples like (42) can have the same type of interpretation, but without the durative adverbial, in the appropriate type of context:

- (42) Esteban pateaba la puerta.
 Esteban kick.IMPFF the door
 'Esteban was kicking/used to kick the door.' (progressive or habitual)

We believe that the iterative interpretation of the *imperfecto* is a progressive interpretation, and furthermore, that the iterativity itself does not arise from the meaning of the *imperfecto*, but in another fashion. To see why, note that the obvious Spanish translation of the earlier English example (41) is (43), with the *pretérito*, not (44), with the *imperfecto*:

- (43) Esteban pateó la puerta por 10 minutos.
 Esteban kick.PRET the door for 10 minutes
 'Esteban kicked the door for ten minutes.' (iterative)
- (44) Esteban pateaba la puerta por 10 minutos.
 Esteban kick.IMPFF the door for 10 minutes
 'Esteban used to kick the door for 10 minutes.' (habitual + iterative)
- (45) Esteban pateó la puerta.
 Esteban kick.PRET the door
 'Esteban kicked the door.' (default interpretation: telic)

Standard accounts of the iterative interpretation of (41) assume that it comes not from the inherent meaning of *kick the door*, which is basically a simple telic, but from the necessity of reconciling this basic meaning with the durative adverbial *for ten minutes*, which only modifies an atelic event. Intuitively, since the duration of a kicking of a door is typically quite short and the associated event is telic, the only way to reconcile these two elements is to shift to an iterative interpretation of the main clause (resulting in

atelicity); a progressive interpretation would be odd because such an event ends almost immediately after it begins. Similarly, we would argue, in (43) the iterative interpretation comes not from the *pretérito* itself, which is compatible with the basic telic aktionsart of the predicate, but is a zero-morphological shift necessitated by the need to reconcile that telicity with the durative adverbial. Then also in (44), which generally is taken to mean that Esteban habitually kicked the door (repeatedly) for 10 minutes, it is not the aspect which forces the iterative interpretation, but the same combination of a telic predicate and a durative adverbial. The difference between the *pretérito* and the *imperfecto*, however, is that an example like (44) but without the adverbial, as in (42), can have a progressive interpretation in the proper context: 'Esteban was in the process of repeatedly kicking the door', whereas (45) without the adverbial does not have an iterative interpretation. Our treatment of the *imperfecto* as entailing atelicity predicts that the progressive interpretation of the *imperfecto* is like a durative adverbial in forcing a non-complex telic to have an iterative interpretation in order to be atelic. So, though the iterative interpretation is forced by the *imperfecto*, it is not part of the meaning of the *imperfecto* itself, but is just another instance of a general strategy for reconciling the telicity of the main predicate with the atelic requirements of an element with wider scope, be it an atelic adverbial or the atelic aspect. In turn, this also would correctly predict that the iterative reading can arise with the past progressive construction as well. But nothing in the meaning of the *pretérito* forces the shift to an iterative interpretation; in general, it seems that such shifts must be forced as in the *imperfecto* cases. Hence, the *pretérito* does not by itself yield iterative interpretations.

Finally, note that the purportedly durative and continuous aspectual character of the *imperfecto* are accounted for by the subinterval property associated with its atelicity: durative in the same sense that the compatible durative adverbials are (and also see the discussion of Reference Time in §3.3.2), continuous in that the subinterval property (here, more properly, a substitution property) entails that there are no gaps in the eventuality concerned. We believe that the purported indefiniteness is really just by way of contrasting the *imperfecto* to a perceived definiteness of the *pretérito*, and has no independent content that we can determine.

§3.3 *Pretérito*

§3.3.1 Truth conditions for the *pretérito*

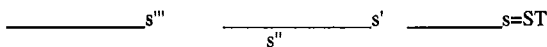
Presupposing the definitions in (46) and (47), (48) gives the truth conditions for clauses in the *pretérito*:

- (46) s temporally overlaps s' , $s \circ s'$, iff, there is a situation s'' such that $s'' \leq s$ and $s'' \leq s'$.¹⁷
- (47) Situation s is a temporally final sub-situation of situation s' , $s \leq_{\text{final}} s'$, iff $\text{Time}(s) \subseteq_t \text{Time}(s')$ and there is no $s'' \leq s'$ such that $\text{Time}(s) <_t \text{Time}(s'')$.
- (48) **Meaning of the *Pretérito*** (preliminary version)
 $[[\text{PRET}\phi]]^{s,ST} = 1$ iff
 $\exists s' \subseteq w_s [s' <_t ST \ \& \ [s' <_t s \vee s' \leq s] \ \& \ \phi\text{-minimal}(s') \ \& \ \forall s'' [s'' \circ s' \ \& \ \phi\text{-minimal}(s'') \rightarrow \forall s''_1 [s''_1 \leq_{\text{final}} s'' \rightarrow \exists s''_1 [s''_1 \leq_{\text{final}} s' \ \& \ (s''_1 = s'_1 \vee s''_1 \leq_t s'_1)]]]]$

¹⁷This follows from the assumption about the relationship between subsituations and their times, (19) above.

PRET ϕ is true in a situation *s* if and only if there is a situation *s'* such that (a) *s'* is prior to the Speech Time; (b) *s'* is either prior to *s* or else a sub-situation of *s*; (c) *s'* is ϕ -minimal; and (d) all ϕ -minimal situations *s''* which overlap *s'* are such that all their temporally final subsituations either precede or are a temporally final subsituation of *s'*. The second disjunct of condition (b) makes persistence possible -- e.g., *s* might itself be *w_s*. We call condition (d) the **end-point requirement** of the *pretérito*. The *pretérito* permits past truth in overlapping situations and hence in supersituations, thus permitting atelic readings; but all these situations must end at a certain point, the end-point, which is intuitively the final moment of the largest ϕ -minimal situation. Note that (48) doesn't require truth in overlapping situations, so that telic readings are possible as well.

Note that (48) would permit *PRET* ϕ to be true in the situation *s* in the following diagram, where *s'*, *s''*, and *s'''* are all ϕ -minimal situations and the subsituation of *s''* extending from the end of *s'''* to the beginning of *s'* is not a ϕ -minimal situation:



This is intuitively undesirable. However, note that in this case, ϕ would be neither telic nor atelic, by the definitions given in §3.1. Like those in Dowty (1979), those definitions fail to define a partition on the set of all possible propositions. We feel that this is appropriate; certainly it is possible to define a proposition in a predicate calculus which is neither telic nor atelic. Instead, the fact that all propositions expressed by natural languages are either telic or atelic is possibly a natural language universal of considerable interest, reflecting something about how we conceive of events and realize those conceptions in the lexical semantics for verbs and other predicate expressions. If so, it would be this natural language universal that would rule out the truth of *PRET* ϕ in the diagram described above, and no modification of (48) is required for this purpose.

As with the *imperfecto*, aspectual adverbials typically take intermediate scope between the tense portion of the meaning of the *pretérito* and the aspectual portion. Again, we will reflect this technically in our final definition by introducing an adverbial argument with intermediate scope, without pretending that we view this solution to be explanatory:

(49) **Meaning of the Pretérito (final)**

$PRET\phi' = \lambda Adv[PAST(Adv[ASP_{PRET}\phi])]$, where PAST, Adv, and ASP_{PRET} are of type *t/t*, and:

$[[PAST\psi]]^{s,ST} = 1$ iff $\exists s' \subseteq w_s[s' <_t ST \ \& \ [s' <_t s \vee s' \leq s] \ \& \ [[\psi]]^{s',ST} = 1]$ ¹⁸

$[[ASP_{PRET}\phi]]^{s,ST} = 1$ iff ϕ -minimal(*s'*) &

$\forall s''[s'' \circ s' \ \& \ \phi\text{-minimal}(s'') \rightarrow$

$\forall s''_1[s''_1 \leq_{final} s'' \rightarrow$

$\exists s'_1[s'_1 \leq_{final} s' \ \&$

$(s'_1 = s'_1 \vee s''_1 \leq_t s'_1)]]$

As in (32), when the only adverbial applied to the translation and interpretations in (49) denotes the identity function, the resulting interpretation is just a stepped-function version of that given in (48).

¹⁸Note that this definition corresponds with the definition of *PAST* ψ in the truth conditions for the *imperfecto* in (32) above.

§3.3.2 Accounting for available readings of the *pretérito*

As noted in §1, the *pretérito* may have either an atelic or a telic reading, depending on a number of other factors in the utterance in question, including the predicate itself, the count vs. mass character of one or more of its arguments, and certain types of adverbials. With respect to argument type, we saw in examples (12) and (13) one instance of the sort of difference discussed in §2 using examples (26) and (27):

- (12) Corrió petróleo por las cañerías.
 flow-3sg.PRET oil through the pipes
 'Oil flowed through the pipes.' (atelic)
- (13) Corrieron 3000 litros de petróleo por las cañerías.
 flow-3plu.PRET 3000 liters of oil through the pipes
 '3000 liters of oil flowed through the pipes.' (telic)
- (26) María tomó cerveza.
 María drink.PRET beer
 'María drank beer.'
- (27) María tomó una cerveza.
 María drink.PRET a beer
 'María drank a beer.'

In (12), as in (26), drinking a certain portion of the substance denoted by the mass NP, here *petróleo*, entails a number of sub-eventualities of drinking parts of that portion of substance. In (13), as in (27), the count noun suggests an eventuality in which the entire measure of the substance, here *3000 litros de petróleo*, has flowed through the pipes; no sub-eventuality would involve the entire 3000 liters, so the proposition would be atelic. As noted earlier, it is possible to contextually force an atelic reading in such cases, at least for (13) and its ilk, where it's possible to imagine the flowing as a continuous, circular process. However, the telic seems to be the default, though, as argued in §2, this is only due to conversational implicature.

Now consider the use of the adverbials in (15c) and (15d), repeated here:

- (15) c. Frida ensayó el libreto por una hora.
 Frida rehearse.PRET the libretto for an hour
 'Frida rehearsed the libretto for an hour.' (atelic: iterative or progressive)
- d. Frida ensayó el libreto en una hora.
 Frida rehearse.PRET the libretto in an hour
 'Frida rehearsed the libretto in an hour.' (telic)

When an atelic predicate such as *por una hora* in (15c) combines internally with the *pretérito*, then the resulting interpretation must be atelic, by virtue of the fact that that adverbial itself requires distributivity of the proposition within its scope (see Dowty 1979 for truth conditions of the corresponding English *for an hour*). The truth conditions given in (49) are compatible with the definition of atelicity in (23), so long as the endpoint requirement is satisfied. When a telic predicate or a sentence with a telic adverbial like *en una hora* 'in an hour' in (15d) combines internally with the *pretérito*, the resulting aktionsart is telic. Nothing in the meaning of the *pretérito* forces an atelic reading, and the telicity of the predicate or adverbial (again, see Dowty 1979 on *in an hour*) would be incompatible with an atelic interpretation.

Similarly, the adverbial *a la tienda* with the *pretérito* in (17) suggests a goal which, once reached, defines a telic eventuality, leading to the default telic interpretation of (17). This contrasts with the *imperfecto* in (18), which can only have an atelic interpretation, and hence the habitual or progressive:

- (17) Juana corrió a la tienda.
 Juana run.PRET to the store
 'Juana ran to the store.' (telic)
- (18) Juana corría a la tienda.
 Juana run.IMPF to the store
 'Juana ran/was running to the store.' (atelic: habitual or progressive)

Again, we predict that an atelic reading of (17) is possible, but it seems to be strongly overridden here by the possibility of unequivocally atelic *imperfecto* (or the progressive). The only atelic reading possible for (17) is the habitual, e.g. with an adverbial like *todos los días*; the progressive is not a possible reading.

We take it that the endpoint requirement in (48-49) is the source of the notion that the *pretérito* is aspectually terminative. The claim that it is definite, in the sense defined earlier, will be true only when the *pretérito* has a telic interpretation. When it is interpreted atelically, then a progressive-like reading is possible, one which does not denote an eventuality which is intuitively "entire", but only a subpart of the eventuality-typically associated with the predicate.

We also noted that traditionally some authors have spoken of the *pretérito* as punctual in character when compared to the durative *imperfecto*. There is now a substantial literature on the use of the Reichenbachian notion of Reference Time in interpreting tense in natural language, and especially on how the aspect of an utterance both plays a role in the way in which the current Reference Time constrains its interpretation and also contributes to the determination of the Reference Time for subsequent utterances (see especially the work by Hinrichs 1981, 1986; Kamp 1981; Kamp & Rohrer 1983; and Partee 1984). Basically, these researchers claim that in discourse, eventualities correlated with atelic propositions (call these *atelic eventualities*, for short), such as those denoted by utterances with the Spanish *imperfecto*, are asserted to be temporally inclusive of the current Reference Time. Further, atelics do not establish a new Reference Time but simply pass along the current Reference Time at the time of their utterance; since a telic eventuality is taken to more or less immediately follow its Reference Time, atelics are often taken to also be temporally inclusive of a subsequently mentioned telic eventuality. On the other hand, telic eventualities are taken to follow the current Reference Time, and in turn to establish a new Reference Time for the following discourse. In short, telics tend to move the narrative forward; hence they act as indivisible eventualities. Atelics, on the other hand, do not move Reference Time forward but instead are taken to include any telic eventualities under discussion; they hence display duration. Kamp (1981) argues that this difference in the Reference Time functions for French correlates with the use of the *passé simple* versus the *imparfait*, and that this accounts for the often cited punctuality of French *passé simple* versus the durativity of the *imparfait*. However, at least in Spanish (and we suspect in French, as well), we would argue that the correct distinction as to whether or not a new reference time is established should be atelic versus telic, rather than *passé simple* (*pretérito* in Spanish) versus *imparfait* (Spanish *imperfecto*).¹⁹ Consider the following example:

¹⁹Kamp (1981) ignores the issue of aktionsart in his analysis of French, as do Kamp & Rohrer (1983). Hinrichs (1981, 1986), Partee (1984), and Dowty (1986) all argue convincingly that the differentiating factor for Reference Times in English is aktionsart.

- (50) a. Los guerreros se enfrentaron.
the warriors RECP-3 PL confront.PRET
- b. Corrió mucha sangre.
run.PRET much blood
- c. Los victoriosos quemaron la fortaleza.
the victorious burn.PRET the fortress
- d. Fue una tragedia.
be.PRET a tragedy

'The warriors confronted each other. A lot of blood ran. The victors burned the fortress. It was a tragedy.'

All the verbs in this paragraph are in the *pretérito* but only sentences (a) and (c) advance the narrative, i.e. establish a new Reference Time. (a) and (c) are telic while (b) and (d) are atelic, reflecting the fact that the *pretérito* is compatible with both telicity and atelicity. But only those propositions which are telic may establish a new Reference Time, and it is precisely those cases in which the *pretérito* is interpreted as punctual. Therefore, the punctuality of the *pretérito* does not come about every time this form is used, but only when the resulting utterance receives a telic interpretation. Hence, aktionsart is finally the key to the full range of aspectual characteristics of the Spanish *pretérito* and *imperfecto*, and the behavior of the *pretérito* in contexts such as (50) is predicted by our truth conditions and the definitions of telicity and atelicity in §2.

§4 Conclusion

We have argued that aktionsart and aspect are independent categories. Though Spanish has two aspectual variants in the past tense, the *pretérito* and the *imperfecto*, these do not display a one to one correlation with the two main types of aktionsart. Rather, both atelic and telic aktionsart may be displayed by the *pretérito*, though the *imperfecto* displays only atelic aktionsart.

We laid the foundations of a truth conditional account of these forms within the framework of situation semantics, showing how Dowty's earlier characterizations of the aktionsarten could be realized in this framework while retaining Kratzer's requirement of persistence. Given these assumptions, and Portner's notion of the *minimality* of a situation relative to a proposition, we provided relatively simple truth conditions for the Spanish past tense forms. In contrast to traditional claims that the *imperfecto* is ambiguous, with as many as four meanings (the progressive, habitual, intentional, and iterative), we claim that it is unambiguous and that the subinterval property of the *imperfecto* (with varying contextual restrictions), along with variants on the modal accessibility built into the truth conditions, accounts for all the uses usually ascribed to it. In particular, what we have called the "intention in the past" reading of the *imperfecto* gets a principled explanation which was absent from traditional accounts in the Spanish literature. Whether the resulting interpretation of the *imperfecto* involves ambiguity or not seems to us to be a terminological matter: if we take the two types of modal accessibility which are permissible with the *imperfecto* to define two distinct senses, then the form is ambiguous, but it is also clear that the two senses are essentially the same in another sense, with the accessibility relation chosen a relatively minor variation. We also offered truth conditions for the *pretérito* which capture the fact that it is compatible with atelic, as well as telic readings. Finally, the truth conditions plus an understanding of

how aktionsarten influence Reference Time in discourse permitted us to elucidate the source of several traditional aspectual characterizations of the *imperfecto* and *pretérito*.

References

- Abusch, Dorit. 1985. *On Verbs and Time*. Ph.D. dissertation, University of Massachusetts at Amherst.
- Binnick, Robert. 1991. *Time and the Verb: A guide to tense and aspect*. New York: Oxford University Press.
- Comrie, Bernard. 1976. *Aspect: An introduction to the study of verbal Aspect and Related Problems*. Cambridge: Cambridge University Press.
- Cooper, Robin. 1986. Tense and Discourse Location in Situation Semantics. *Linguistics and Philosophy* 9:17-36.
- Dowty, David. 1979. *Word Meaning and Montague Grammar*. Dordrecht: Reidel.
- Dowty, David. 1987. Aspect and Aktionsart. Ms., The Ohio State University.
- Garey, Howard. 1957. Verbal Aspect in French. *Language* 33:91-110.
- Gili y Gaya, Samuel. 1961. *Curso superior de sintaxis española*. Bibliograf: Barcelona.
- Hinrichs, Erhard W. 1981. *Temporale Anaphora im Englischen*. Unpublished Zulassungarbeit, University of Tübingen.
- Hinrichs, Erhard W. 1985. *A Compositional Semantics for Aktionsarten and NP Reference in English*. Ph.D. dissertation, The Ohio State University.
- Hinrichs, Erhard W. 1986. Temporal anaphora in discourses of English. *Linguistics and Philosophy* 9:63-82.
- Horn, Laurence R. 1984a. Ambiguity, negation, and the London school of parsimony. *Proceedings of NELS 14*, University of Massachusetts at Amherst.
- Horn, Laurence R. 1984b. Toward a new taxonomy for pragmatic inference: Q-based and R-based implicature. In Deborah Schiffrin (ed.) *Meaning, Form, and Use in Context: Linguistic applications (GURT '84)*. Washington: Georgetown University Press.
- Kamp, Hans. 1979a. Events, instants, and temporal reference. In R. Bäuerle, U. Egli, and A. von Stechow (eds.), *Semantics from Different Points of View*, 376-417. Berlin: Springer-Verlag.
- Kamp, Hans. 1979b. Some remarks on the logic of change. Part I. In C. Rohrer (ed.) *Time, Tense and Quantifiers*. Tübingen: Niemeyer, 135-174.
- Kamp, Hans. 1981. Évènements, représentations discursives et référence temporelle. *Langages* 6:439-464.
- Kamp, Hans & Christian Rohrer. 1983. Tense in texts. In R. Bäuerle, C. Schwarze, and A. von Stechow (eds.) *Meaning, Use and Interpretation of Language*. Berlin: de Gruyter, 250-269.
- Kenny, Anthony. 1963. *Action, Emotion, and Will*. London: Routledge and Kegan Paul.
- King, Larry. 1992. *The Semantic Structure of Spanish*. CILT 90. Amsterdam: John Benjamins.
- Kratzer, Angelika. 1988. Stage-level and individual-level predicates. Ms. University of Massachusetts at Amherst.
- Kratzer, Angelika. 1989. An Investigation of the Lumps of Thought. *Linguistics and Philosophy* 12:607-653.
- Krifka, Manfred. 1986. *Nominalreferenz und Zeitkonstitution. Zur Semantik von Massentermen, Pluraltermen und Aspektklassen*. Ph.D. Dissertation, University of Munich. Published by Wilhelm Fink, Munich.
- Krifka, Manfred. 1987. Nominal reference and temporal constitution: Towards a semantics of quantity. FNS-Bericht 17, Forschungsstelle für natürlich-sprachliche Systeme, Tübingen. And in J. Groenendijk et al. (eds.) *Proceedings of the 6th Amsterdam Colloquium*, ITALI, University of Amsterdam, 153-173.

- Link, Godehard. 1983. The Logical Analysis of Plurals and Mass Terms: A Lattice-theoretical approach. In Rainer Bauerle, Christoph Schwarze, and Arnim von Stechow (eds.), *Meaning, Use, and Interpretation of Language*. Berlin: de Gruyter.
- Moens, Marc and Mark Steedman. 1988. Temporal Ontology and Temporal Reference. *Computational Linguistics* 14:15-28.
- Montague, Richard. 1973. The Proper Treatment of Quantification in Ordinary English. In Jaakko Hintikka, Julius Moravcsik, and Patrick Suppes (eds.), *Approaches to Natural Language: Proceedings of the 1970 Stanford Workshop on Grammar and Semantics*. Reidel, Dordrecht, 221-42. Reprinted in Thomason (ed.) (1974) *Formal Philosophy: Selected Papers of Richard Montague*. New Haven: Yale University Press, 247-270.
- Partee, Barbara. 1984. Nominal and Temporal Anaphora. *Linguistics and Philosophy* 7:243-286.
- Portner, Paul. 1992. *Situation Theory and the Semantics of Propositional Expressions*. Ph.D. dissertation, University of Massachusetts at Amherst.
- Portner, Paul. 1994. A Uniform Semantics for Aspectual *-ing*. *The proceedings of NELS 24*.
- de Swart, Henriette 1992. *Adverbs of Quantification: A generalized quantifier approach*. Ph.D. dissertation, University of Groningen.
- Yoo, Eun-Jung. 1996. Interpretation of Korean temporal Markers *-ESS* and *-NUN*. this volume.
- Yoon, Jae-Hak. 1996. Interpretation of relative tenses in Korean time adverbials. this volume.