

The Simple Past Puzzle

A Study of Some Aspects of the Syntax and Semantics of Tense*

Nino Gulli (New York)

Abstract

In this paper, I claim that the so-called present perfect puzzle is, in reality, a puzzle about the simple past. It is the latter, I argue, that shows a puzzling behavior, given that it can be used not only in definite contexts but also in seemingly indefinite ones. I employ the notions of time frame and specificity to show how the obvious distinction between the two tenses in terms of temporal logic can be accounted for. I also propose that the past morpheme *-ed* be considered a kind of verb determiner which selects a temporal XP as a complement. Such complement can be (and usually is) expressed either in the sentence or in the larger discourse; however, it can also remain implicit, or covert.

1 Introduction

One of the central issues in discussing tense is what in the literature has been referred to as the "present perfect puzzle": the impossibility to use the present perfect when a past temporal adverbial is present (cf. Klein 1992), as shown in the contrast in (1).

- (1) a. John left yesterday.
b. *John has left yesterday.

The existence of the puzzle is illustrative of the fact that the distinction between the present perfect and the simple past in English has been, and probably still is, a poorly understood phenomenon; most accounts that have attempted to explain and formalize the two tenses have needed to posit additional mechanisms, often borrowing on pragmatics, in order to account for this puzzle.

Indeed, several solutions have been proposed to account for the puzzling behavior of the English present perfect; however, it has been often pointed out that existent approaches to the semantics of the present perfect and the simple past seem to be bound to fail outside of English since this peculiar distinction does not hold cross-linguistically, not even within Germanic languages (cf. Giorgi/Pianesi 1997). Naturally, an interesting question to ask is whether a similar distinction exists even in languages where only one verb form is used for the past – a distinction which in English is made obvious by the use of two morphologically distinct verb forms. The real question, then, is whether the surface distinction found in English reflects two distinct, and possibly universal, temporal logical structures, or whether such a distinction is a mere idiosyncrasy of English and some other languages. In this paper, I would like to explore the first possibility. I will conclude that, indeed, the English present

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perfect and the English simple past correspond to two distinct structures and that, crucially, these structures are present even in those languages in which no surface distinction is noticeable.

Interestingly, even in English it is at times difficult to capture, even informally and intuitively, the fine semantic line distinguishing the two tenses. This is in itself indicative of the possibility that the surface distinction in question can be dispensed with, as is often the case with many other such surface distinctions. Many English speakers will freely use the simple past with the value of the present perfect provided that no ambiguity arises, as in (2). In fact, some of my (American) informants said they saw no difference whatsoever between (2a) and (2b) and that, in general, at least in casual speech, they even preferred the former to the latter. However, (3) shows that, if one is to give a unified account of these two tenses across aspectual classification, such a distinction cannot be marginalized.¹

- (2) a. I saw that movie.
 b. I have seen that movie.
- (3) a. I lived in New York for many years.
 b. I have lived in New York for many years.

Another interesting fact, again indicative of the superfluousness of a formal distinction, is that said distinction becomes neutralized in the morphology when a modality other than the indicative is involved,² when a gerund or an infinitive is present, when a clause is embedded under a matrix in the past tense, or simply when, given the right context, the past perfect is used even in a simple sentence. As is likely clear by now, the position taken in this paper is that such morphological neutralization, however, is not a reflection of a structural one.

On closer inspection, it is the present perfect that turns out to be better behaved than the simple past, and, as a result, it will be accounted for more straightforwardly. The use of the present perfect will be shown to be regulated by two strict conditions (4) defined on the notion of *time frame*.³

- (4) The present perfect can occur when
- (a) the time frame T within which an event E occurs is open;
- (b) the interval of time $t \in T$ at which E occurs is unspecified.

The simple past, in contrast, works out to be the anomalous case. Being the definite counterpart of the present perfect, it should function under the converse conditions, namely, that the time frame not be open, and that the time t at which E occurs be specified. Yet, the simple past is also found in seemingly indefinite contexts (5a) (cf. Richards 1982), as well as in sentences that apparently contain an open time frame and no specific time (5b).⁴

- (5) a. Brutus killed Caesar.
 b. I walked to school today.

¹ See appendix for the existential/continuative distinction.

Conversely, there are cases (what McCawley (1993) dubbed the "hot news" present perfect), as in (i), where one finds the present perfect despite the fact that, according to loose guidelines, one would expect to find the simple past (given that, obviously, once a person is assassinated, s/he cannot be assassinated again).

(i) President Kennedy has been assassinated.

See also Declerck (2006: 250), who points out that if a "recency reading" is a hot news reading, the progressive is off-limit. This strengthens the claim that this use of the present perfect is, at best, idiosyncratic.

² An example would be the pair of clauses "If I had eaten something.../If I had eaten in the morning..."

³ These conditions will be slightly modified in section 3.3, where the real issue turns out to be specificity.

⁴ Discussed on page 16 as (27a).

When giving a formal account of the simple past, one would have to decide whether in (5a) the context is really indefinite, as Richards (1982) maintains, or implicitly definite, as argued in Partee (1973); as for (5b), one has to decide whether the time frame is "today," or whether there is a smaller, implicit time frame included in "today" within which the event of *walking to school* occurs.

Given the above, it is worth considering whether the "present perfect puzzle" is not in fact a puzzle about the simple past.⁵ In other words, instead of asking "Why can't the present perfect be used in the presence of adverbials such as yesterday?" one should perhaps ask "Why must the simple past be used with yesterday?", "Why can it also be used with today?", "Why can it be used in contexts that appear to be indefinite?" These questions underlie the approach taken in this paper.

The paper is organized as follows. In section 2, I discuss the basic differences between the present perfect and the simple past, arguing that the former should not only be regarded as a past tense, but, in fact, as the core past tense.⁶ I also introduce and define the notion of time frame T. Section 3 is divided into four subsections. In the first, I define the notion of time frame with respect to Reichenbach's (1947) notion of reference time R and explain why a time frame is useful in discussing tense. In the second, I show that the puzzle cannot be accounted for by simply invoking the notion of open and closed time frames; during the discussion, it becomes evident that the internal structure of T has to be taken into consideration, too. This is what the third subsection is devoted to. Here, I define the notion of \pm specifiability of intervals of times t contained in T. In the fourth subsection, I propose that the past morpheme *-ed* be considered a kind of verb determiner which takes a temporal XP as a complement. In section 4, I provide a compositional account of the two tenses under investigation and, briefly, of the past perfect. In the appendix, I discuss the stative/eventive distinction, arguing that, at least in the case of these two tenses, said distinction can be reduced to that between continuative and existential readings.⁷

2. The Present Perfect vs. The Simple Past

2.1. The Present Perfect is a Past Tense

The most obvious difference between the present perfect and the simple past is that the former requires that the time at which an event has occurred not be specified.⁸ This, however, does not mean that a given event may actually have taken place at some non-specific time, but simply that the time either is not known or is not relevant to the context. This lack of explicit temporal information has led to considerations of the present perfect as an aspect rather than a tense. One view is, for instance, that the present perfect should be understood in terms of

⁵ A similar question is asked later on by Schaden (2007, 2008, 2009).

⁶ One of the anonymous reviewers pointed out that the claim that the present perfect is the core past tense is not proven in this paper, and that the fact that the present perfect can be used in the future, while the simple past cannot, as is pointed out in this paper, if anything, indicates that the core past tense is the simple past. The point is very well taken. However, given that nothing hinges on this in this paper, for the time being, I would still like to entertain and pursue the idea that the core past tense is the present perfect. In my opinion, the fact that the simple past cannot appear in the future can be used to argue both ways. Past, present, and future are just logical constructs; what counts is whether an event happens before (or to the left of) another event (or a reference time) on the time line. I don't give **n** (i. e., now) a priority status; **n** is a **t** just like all the others, except for the fact that it is also the utterance time. Because all perfect tenses can occur to the left of another event, they do seem to me to indicate past time.

⁷ Or "continuative" and "non-continuative", as in Portner (2003). Also see discussion of Portner (2003) in Caudal (2012).

⁸ Unless it appears as an afterthought, with a right-dislocation intonation. Some scholars (e. g., Klein 1992) consider adverbs such as *just* and *recently* as a second exception to this constraint.

current relevance.⁹ On this view, an event E has come to completion and has created a new state S which still holds; thus, a sentence such as (6a) could be informally interpreted as (6b).

(6) a. I have eaten.

b. The event of eating has occurred before now, and I am now in the state of having eaten.

However, although no one can deny that this is the correct interpretation of the aspectual feature of at least one of the uses of the present perfect, there is also a tense quality to it which would be difficult to account for from this perspective.

Treating the present perfect as a tense, on a par with the simple past, leads to a simpler account of the temporal location of the expressed event. The question arises, though, whether the difference between the two tenses is due to some pragmatic or contextual factor, or whether there is a logical distinction between them. I agree with Guenther (1977) that there is a tense logical distinction. In fact, if anything, it is the aspectual feature that might be pragmatically or contextually determined. For instance, (7a) may be ambiguous as to whether John is here now or not. But (7b) and (7c) do entail respectively that now I am in the state of having eaten or of having broken my arm, not much differently from their present perfect counterparts.

(7) a. John left an hour ago.

b. I ate an hour ago.

c. I broke my arm yesterday.

Given that both the simple past and the present perfect¹⁰ temporally locate an event on the time line before now, the question is: how are they related? I suggest that the former is a specific and more restricted instance of the latter, which I take to be the core manifestation of past tense.¹¹ The simple past, in fact, entails the present perfect, that is, the present perfect is the tense that, in the default case, expresses a past event. For instance, (8a) entails (8b), but not vice versa.

(8) a. I read this book ten years ago.

b. I have read this book.

This view is not without precedent. As Bennett and Partee (1978) point out, Montague's (1974) brief discussion of tense¹² pairs the present perfect with the simple future, a view

⁹ This view originates with Jespersen (Dowty 1979).

¹⁰ At least almost always. As we will see, there are cases in which the present perfect refers to an event e occurring after *now*, as long as this event e occurs in a time frame containing both e and *now*. For the time being, I am going to focus on cases in which the event in question precedes *now*.

¹¹ A similar situation obtains in the future, where, however, the morphological distinction between the definite and the indefinite readings becomes neutralized, as pointed out by Bennett and Partee (1978) and shown below.

i) I will call John. (Mirror image of "I have called John.")

ii) I will call John tomorrow. (Mirror image of "I called John yesterday.")

Thus, two distinct temporal logical structures in the past have mirror images (to use Bennett and Partee's term) in the future; but in the future there is no morphological distinction, just as there is no morphological distinction in the past in other languages. In such languages, one could argue, one past verb form and one future verb form have respectively two different readings, the indefinite and the definite one, which correspond to two different temporal logical structures.

¹² Montague uses the symbol W for "it will be the case that"; H for "it has been the case that".

Bennett and Partee point out that Montague's account of the present perfect is incorrect, in that it does not make reference to an interval of time I which starts in the past and extends up to the present.

usually not found in either linguistics or traditional grammar. My interpretation of this pairing is that Montague, too, regards the present perfect as the core past tense.¹³

2.2. Temporal Adverbials as Time Frames

There is another way in which the present perfect is to be distinguished from the simple past, and the distinction lies in the notion of time frame. I define *time frame*¹⁴ as

the interval of time within which an event E may or may not occur and a state S may or may not hold.

In being an interval, the time frame for a given tense will be specified in terms of the location of its lower and upper bounds on the time line. The distinction, then, between the simple past and the present perfect is a reflex of where the upper bound is located on the time line, the lower bound being located before *now* in both cases. For the simple past, the upper bound must be located prior to now, while for the present perfect, the upper bound must at least include *now* (and might extend into the future). Taking *now* to be the "dividing instant" between past and future time, a time frame is closed ($_cT$) just in case both the lower and the upper bounds either precede or follow *now*. A time frame is open ($_oT$) just in case only the lower bound precedes *now*. Temporal adverbials which express intervals such as *yesterday*, *last year*, *last century*, on the one hand, and *tomorrow*, *next year*, *next century*, on the other, inherently define time frames closed in the past and the future respectively. Temporal adverbials such as *today*, *this year*, *this century* inherently define open time frames.

Thus, temporal adverbials are crucial in defining time frames. Restricting our attention to the simple past and the present perfect, little more than what has been said is needed to account for sentences such as (12a) and (10b) below. However, sentences (9a) and (9b), where there is no explicit time expression, as well as sentences (10a) and (14a), where a simple past is used within an apparently open time frame, cannot be accounted for as easily. I will claim that in both cases there is an implicit closed time frame. Our analysis should also explain the ungrammaticality of sentence (11b), where the time frame can be open, and of sentence (14b), where the time frame is clearly open. This is what the next section is devoted to.

(9) a. John left.

b. John has left.

(10)a. John left today.

b. John has left today.

(11)a. John left at two.

b. *John has left at two.

(12)a. John left yesterday.

b. *John has left yesterday.

(13)a. John left at two yesterday.

b. *John has left at two yesterday.

(14)a. John left at two today.

b. *John has left at two today.

¹³ Bennett and Partee themselves follow standard practice and pair the simple future with the simple past.

¹⁴ Similar, but not totally, to Bennett and Partee's (1978) notion of frame time. For Bennett and Partee, a frame time is like Reichenbach's R point in some respects; for example, for them so-called punctual adverbials such as *now* or *at three o'clock* can also function as a frame time. Here, such adverbials, if anything, would be R.

3 The Internal Structure of the Time Frame

3.1 Benefits of Positing a Time Frame

Taking seriously the idea that truth conditions for sentences should be defined relative to an interval of time (e. g., Bennett/Partee 1978, as well as much of the literature after them), I propose that such an interval of time be a time frame *T*, always present in the logical structure of sentences. Such a notion should be further defined especially with respect to Reichenbach's (1947) notion of reference time, which turns out to be dispensable in a discussion of the distinction between the present perfect and the simple past.

In his discussion of tense, Reichenbach employs the notions of speech time *S* (in this paper replaced with *U* = utterance time)¹⁵, event time *E*, and reference time *R*. While *U* and *E* are uncontroversially accepted, there is now some debate over whether *R* exists and what its status is. Hornstein (1990), for instance, claims that, being a principle of universal grammar, *R* is always present, although it may be invisible, as in the present perfect in simple sentences, where *R* equals *U* and therefore seems to be informationally redundant. In contrast, Stowell (1995) argues that *R* can be dispensed with, except in the case of perfect tenses.¹⁶ Whichever position one takes, while it is true that *R* is visibly present in the past perfect and in the future perfect – and therefore it proves useful when these are discussed – in the case of the present perfect, despite the presence of *R*, the "puzzle" still remains and more is needed to explain it. This is in line with the often-made comment that it is not easy to decide whether the present perfect should be given the same account as the other perfect forms, or whether they should be accounted for differently (e. g., Binnick, 1991).

Another problem with using *R* in distinguishing the two tenses is that one still has to rely on their aspectual difference. Thus, the simple past would be used when a given event *E* is viewed from a point that overlaps with it; the present perfect is used when the event is viewed from a point that overlaps with *now*. But dispensing with *R* creates the unwanted problem that the two tenses under examination appear to be the same; the presence of *T* disambiguates the structures underlying the two tenses. My claim is, therefore, that a more satisfactory explanation of the distinction between the present perfect and the simple past can be achieved by introducing the notion of time frame *T* and its internal \pm specificity. These are the two notions that make up the two conditions regulating the use of the present perfect stated in (4).

For Reichenbach, *U*, *E*, and *R* are points (or instants, or moments), but in neo-Reichenbachian approaches to tense they are generally considered to be intervals, although especially *R* and *U* could also be (or be perceived as) instants, the distinction here being purely conceptual.¹⁷ A time frame *T*, on the other hand, which I take to be a set of times *t*, is always an interval and

¹⁵ In this paper, *S* stands for state. For this reason, utterance time *U* is used throughout in lieu of speech time *S*.

¹⁶ According to Stowell, representing the simple past as *E*___*U* rather than as *E*,*R*___*U* would still allow for it to be distinguished from the present perfect.

¹⁷ Another thing that has emerged in neo-Reichenbachian approaches is that these points/intervals do not interact freely; as a result, all tenses are treated as complex forms. To be more concrete, *E* and *U* cannot relate unless the relationship is mediated by *R*. Thus, the present perfect would be represented as *U*,*R* for present and *E*___*R* for perfect, and the simple past as *R*___*U* for past and *E*,*R* for simple (or neutral, as some call it). When they are put together, the former will yield *E*___*U*,*R* and the latter *E*,*R*___*U*. However, although such analyses are more fine-grained and more explanatory, they do not account for the present perfect puzzle. In my opinion, there is no distinction between instants and intervals, as indicated by the mere fact that *now* and *then* can be extended (at least, extended enough) to accommodate a smaller event (e. g., He arrived while I was eating. He always calls while I am eating.)

would like to reformulate the puzzle as one about the simple past, by asking "Why must the simple past be used with *yesterday*? Why can it also be used with *today*? Why can it be used in contexts that appear to be indefinite?" An additional restriction, and another piece of the puzzle, is that even when the time frame is open, the present perfect cannot be used if the time is specified, as shown in (11b) and (14b) above.

Even a cursory look at the data above (repeated here for ease of reference) shows that the notion of time frame, and therefore condition (4a) alone, does not fully account for the puzzle, however.

(9) a. John left.

b. John has left.

(10) a. John left today.

b. John has left today.

(11) a. John left at two.

b. *John has left at two.

(12) a. John left yesterday.

b. *John has left yesterday

(13) a. John left at two yesterday.

b. *John has left at two yesterday.

(14) a. John left at two today.

b. *John has left at two today.

The real difference between (9a, *John left*) and (9b, *John has left*) may be hard to define. In (9a), the simple past is either used with the value of the present perfect (i. e., the speaker has in mind an open time frame but does not make it explicit),¹⁹ or it is used as what has at times been called the indefinite use of the simple past (although Partee (1973), with whom I agree, argues that such a use does not exist). Sentences such as (9b), on the other hand, have been used to show that the present perfect has current relevance, that is, according to (9b), John is not here now.²⁰

As for (10a, *John left today*) and (10b, *John has left today*), the question is: What is *today*? If one takes seriously the claim that temporal adverbials are capable of modifying either E or R (e. g., Hornstein 1990; Klein 1992), what does *today* modify? Provided that in (10a) the simple past is used with the value of the simple past, then, on a Reichenbachian view, the representation for (10a) and (10b) would be (16a) and (16b) respectively:²¹

(16) a. E,R__U

b. E__R,U

But it is clear that *today*, in both cases, includes E, R, and U. Therefore, a Reichenbachian explanation would not be enough. In (16a) "today" would modify E but not U; conversely, in (16b), "today" would modify U but not E. The notion of time frame (which includes both E and U), on the other hand, seems to be more adequate, and in fact R, in these two cases, could be dispensed with. Bennett and Partee (1978) account for (10b, *John has left today*) by

¹⁹ In this paper, I will not take into consideration such a colloquial use, but will focus on the more formal one.

²⁰ But see page 7.

²¹ Actually, Reichenbach uses R,E__U; but the order is really irrelevant.

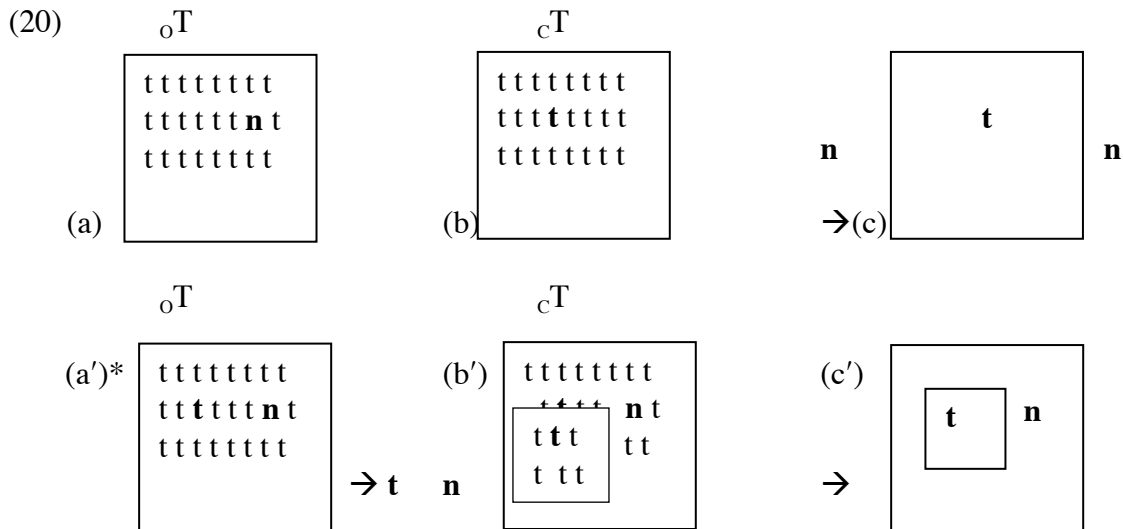
(18) The present perfect can occur when

- (a) The time frame T within which an event E occurs is open;
- (b) The interval of time $t \in T$ at which E occurs is unspecifiable.

(19) The simple past can occur when

- (a) The time frame T within which an event E occurs is closed;
- (b) The interval of time $t \in T$ at which E occurs is specifiable.

In both (17a) and (17b), if $T = \text{today}$, then one of the t 's will be *now*, as shown in (20a) below. If $T = \text{yesterday}$, *now* will be outside and to the right of T, as shown in (20b) below, which is then mapped to (20c). If $T = \text{tomorrow}$, *now* will be to the left of T (this would be the mirror image of (20b), not shown here.)



${}_oT$

tttttttt
 ttttttnt
 tttttttt

(a)*

${}_cT$

tttttttt
 ttttttnt
 tttttttt

ttt
 ttt

(b')

(c')

\mathbf{t}

\mathbf{n}

→

The time frame represented in (17a) (modified in (20a) above) can only be open; this is shown by the fact that \mathbf{n} ($\mathbf{n} = U$ in this paper) counts as one of the t 's within T. In (20a), the position of \mathbf{n} is not fixed: it does not have to be the final subinterval of T; as a result, a given E can also be about a $t > \mathbf{n}$, as in (21).

(21) When I have done my homework, I will watch a movie.

Diagram (17b) is more problematic in that it seems to be applicable not only to sentences such as (12a, *John left yesterday*) and (13a, *John left at two yesterday*), but also to (10a, *John left today*) and (14a, **John has left at two yesterday*). The question is, then, can diagram (17a) stand for either a closed T (20b) or an open T (20a'), or is (20a') an inaccurate representation? I believe the second question should be answered affirmatively. Diagram (20a') is inaccurate in that it does not indicate that there is a closed T contained in the open one, unlike what is shown in (20b'), which is then mapped to (20c').²⁴ Some evidence for this is provided by the sentences in (22).

(22)a. I had breakfast today.

b. *When I did my homework, I will watch a movie.

If (22a) is uttered in the evening, the relevant time frame will be "breakfast time," not "today." As for (22b), unlike its present perfect counterpart (21), it shows that \mathbf{t} must be earlier than \mathbf{n} . If \mathbf{t} is contained in a ${}_cT$ in the past, then $\mathbf{t} < \mathbf{n}$ follows.

²⁴ I focus on the simple past. Of course, the mirror image of (20b') would be one in which \mathbf{t} follows \mathbf{n} , in which case the simple future would be used.

Back to the data, informally we can say that (20a) accounts for (9b, *John has left*) and (10b, *John has left today*), except for the fact that in the former the time frame is implicit, while in the latter it is explicit. Applied to (9b), (20a) shows that the event of leaving takes place at any out of the times t included in the same T as n . The same goes for (10b), except for the additional information: and $T = \text{today}$.

(9a, *John left*), (12a, *John left yesterday*), and (13a, *John left at two yesterday*) are accounted for by (20b); again, in (9a), T is implicit, while in (12a) and (13a), T is explicit. (10a, *John left today*) and (14a, *John left at two today*) are accounted for by (20b'). As for (11a, *John left at two*), it seems that either (20b) or (20b') can account for it.

Why (12b, **John has left yesterday*) and (13b, **John has left at two yesterday*) are ruled out is clear: the present perfect can only be used when one of the times t within T is n . As for (11b, **John has left at two*) and (14b, **John has left at two today*), they are ruled out because all the times t (except for n) must be unspecified.

Given the discussion above, the truth conditions for sentences (9) through (14) can be stated as follows:

(9) a'. $\llbracket \text{John left} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge {}_c T(T) \wedge t \in T \wedge (+\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

Which reads as there is an E (event), there is a T (time frame) and there is a t (interval of time) such that T precedes n (now) and T is a closed time frame²⁵ and t is a member of T and t is specifiable and E occurred at t and E is leave and the agent of E is John.²⁶

(9) b'. $\llbracket \text{John has left} \rrbracket = 1$ iff

$\exists E \exists T \exists t [n \in T \wedge {}_o T(T) \wedge t \in T \wedge t < n \wedge (-\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

Which reads as there is an E , there is a T and there is a t such that T includes n and T is an open time frame and T includes t and t precedes n and t is not specifiable and E occurred at t and E is leave and the agent of E is John.

(10)a'. $\llbracket \text{John left today} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge {}_c T(T) \wedge T \in \text{today} \wedge t \in T \wedge (+\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

In this case, T is not "today," but rather a time frame which is included in "today." Some evidence that $T \neq \text{today}$ comes from sentences such as (22) above.

(10)b'. $\llbracket \text{John has left today} \rrbracket = 1$ iff

$\exists E \exists T \exists t [n \in T \wedge \text{today}(T) \wedge t \in T \wedge t < n \wedge (-\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

(11)a'. $\llbracket \text{John left at two} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge {}_c T(T) \wedge t \in T \wedge (+\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

(11)b'. $\llbracket \text{John has left at two} \rrbracket = 1$ iff

²⁵ The information and T is a closed time frame may be redundant given that $T < n$. The same holds of (9b'), where $n \in T$ really means that T is an open time frame. I insert this information, however, to be consistent with cases in which T is explicit.

²⁶ In this case the order between t and n doesn't have to be made explicit: if $t \in T$ and $T < n$, it follows that $t < n$.

$\exists E \exists T \exists t [n \in T \wedge {}_oT(T) \wedge t \in T \wedge t < n \wedge (-\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

This sentence satisfies condition (18a), but is ruled out by condition (18b), since the time t is specified ($t = \text{at two}$).

(12) a'. $\llbracket \text{John left yesterday} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge \text{yest}(T) \wedge t \in T \wedge (+\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

(12) b'. $\llbracket \text{John has left yesterday} \rrbracket = 1$ iff

$\exists E \exists T \exists t [n \in T \wedge \text{yest}(T) \wedge t \in T \wedge (-\text{spec})t \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

Here one can easily see that $\text{yest}(T) = T < n$. Obviously n cannot be both included and preceded by T . As a result, the sentence is incorrect.

(13) a'. $\llbracket \text{John left at two yesterday} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge \text{yest}(T) \wedge t \in T \wedge (+\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

(13) b'. $\llbracket \text{John has left at two yesterday} \rrbracket = 1$ iff

$\exists E \exists T \exists t [n \in T \wedge \text{yest}(T) \wedge t \in T \wedge (-\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

This sentence is ruled out by both conditions (18): t is specified as "at two," and T would have to both include and totally precede now.

(14) a'. $\llbracket \text{John left at two today} \rrbracket = 1$ iff

$\exists E \exists T \exists t [T < n \wedge {}_cT(T) \wedge T \in \text{today} \wedge t \in T \wedge (+\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

(14) b'. $\llbracket \text{John has left at two today} \rrbracket = 1$ iff

$\exists E \exists T \exists t [n \in T \wedge \text{today}(T) \wedge t \in T \wedge t < n \wedge (-\text{spec})t \wedge \text{at-two}(t) \wedge AT(E,t) \wedge \text{leave}(E) \wedge \text{agent}(E) = \text{John}]$

Like (11b), this sentence is ruled out by condition (18a).

3.4 -ed as a Determiner

While the simple past requires and establishes definiteness, the present perfect requires and establishes indefiniteness. As we have seen, the mirror image of such a situation obtains in the future, too, although in the future the distinction is morphologically unmarked. And since the same distinction also obtains in the past in the past and in the past in the future (expressed in English using the past perfect and the future perfect respectively), one could draw the generalization that \pm definiteness obtains either preceding or following any R point on the time line. Again, in English, this is morphologically visible only when a time frame starts before $R=U$ and E precedes them (that is, in the present perfect and in the simple past). In Italian, however, there still exist two distinct forms for the past perfect –the *trapassato prossimo* ('near past in the past') and the *trapassato remoto* ('remote past in the past'); and although the latter is somewhat literary and more restricted in usage,²⁷ one could perhaps look at the distinction as one similar to the present-perfect/simple-past distinction in English, as suggested by Binnick (1991).

²⁷ See Renzi (1988).

The definiteness issue should be seen in terms of the internal structure of T. In other words, externally T is always definite, regardless of whether it is closed or open, implicit or explicit, but internally it can be + or – definite. In order to keep the two notions apart, I have been referring to internal definiteness as \pm specific/specifiable.

In the simple past, the time frame can be instantiated by adverbials such as *yesterday*, *last year*, *when I lived in Spain*, *in his/her life* (provided that the person being talked about is no longer alive), and so on; in the present perfect, it can be instantiated by *today*, *this year*, *since John arrived*, *in my life*, and so on.²⁸

If it is true that a time frame is always present in the logical structure of a sentence, then it is possible that tenses in general come with associated time adverbials, which can be either explicit or implicit. The tense marker itself would be what determines the verb, and the time adverbial what restricts it, much like a determiner determines a noun and a relative (or adjectival) clause (or phrase) may restrict it. Although this may be true of all tenses, it seems to apply straightforwardly to the simple past and, in a different way, to the present perfect.

I would like to propose that, by analogy with relative clauses, which restrict nouns and can be considered as complements of *the* (cf. Kayne 1994), a time phrase or clause be taken as a restriction on the verb and a complement of tense, that is, of *-ed*.²⁹ Such a restriction could be left out just in case the sentence is implicitly definite, such as Partee's (1973) example, reported in (23), where obviously the simple past is not being used with the value of the present perfect, but rather it is used deictically.³⁰

(23) I didn't turn off the stove.

In such a case, the time clause or phrase can be empty precisely because the verb need not be explicitly modified, just as the DP *the sun* does not have to be explicitly modified, as there is only one sun – the one everybody knows about.

From a syntactic point of view, the analogy drawn between *the* and *-ed* (heading, respectively, DP and TP projections) can be extended to *a* and *have...en*,³¹ as shown in (24) and (25).

(24) a. John is *the* man *who left*.

b. John arrived *in Boston an hour ago*.

(25) a. John is *a* man.

²⁸ Whether the present perfect requires that the person the subject-DP refers to be alive is controversial. This is what Chomsky (1972) assumes, but Bennett and Partee (1978), McCawley (1993), Michaelis (1994), among others, disagree. For instance, *Einstein has visited Princeton* is acceptable if one is listing all the luminaries who have visited Princeton. But, as Michaelis points out, this would not be an existential statement about Einstein. In any case, if the subject is the 1st or 2nd person, the simple past can be used with the value of the present perfect (though not in the continuative reading) without any problems. Obviously in (i) I must be alive, but in (ii), John may very well be dead now. Sentence (iii), on the other hand, entails that John is still alive.

(i) I ate at three today.

(ii) John ate at three today.

(iii) John has eaten (today).

²⁹ For a similar view see Stowell (1995). Stowell posits a projection TP dominating ZP, which in turn dominates VP.

³⁰ The deictic use arises when the time referred to is not part of a previous linguistic context, but is determined extralinguistically (in this case, for instance, the sentence is uttered while driving down the highway). Partee draws an analogy between the deictic use of tenses and pronouns. One of the sentences that she compares to (23) in drawing the analogy is (i):

(i) He shouldn't be here.

³¹ I leave out here the important question of whether *the* and *a* occupy the same structural position. Possibly they don't, just as *-ed* and *have...en* don't.

b. John *has left*.

Just as the relative clause "who left", in (24a), can be left out when the context is transparent as to which man we are talking about, so can the time phrase "an hour ago" in (24b). And just as omission of the relative clause doesn't change the status of the DP "the man" to –spec, so omission of the adverbial clause in (24b) doesn't turn the event of "arriving" into a nonspecific one (provided, again, that the simple past is used with the value of the simple past).

Turning to (25), modification of neither the noun nor the verb is required. However, it is interesting to note that modification of the noun or of the verb would not disrupt the specificity status, that is, both sentences would remain –spec. Thus, in (26a), John is one out of the many men you can trust, and in (26b) leaving has occurred at one out of the many times *t* contained within today.

(26)a. John is *a man you can trust*.

b. John *has left today*.

As was observed above, there are cases in which it is not clear whether the temporal adverbial present in the sentence is the actual modifier of the verb, or whether the relevant modifier is an implicit time frame, contained within the explicit adverbial, which can be recovered through the context (linguistic or extralinguistic). This is illustrated again in (27a).

(27)a. I walked to school (today).

b. I went to the supermarket.

If (27a) is uttered in the evening, say, the modifier of *walk* is not *today*, but rather a more specific one (i. e., the time within which I usually go to school), just like in (27b) the implied relative would be "...I usually go to." And just as (28b) would be odd, so would (28a). If this is correct, then one can conclude that the simple past is always used in a closed time frame.

(28)a. ? I've *walked* to school today.

b. ? I went to *a* supermarket.

4 A Compositional Account

4.1 The Present Perfect and the Simple Past

In the previous section, I suggested that *-ed* can be said to subcategorize for a time adverbial, which modifies the verb, just like *the* subcategorizes for a relative clause³² which modifies the noun.

Partee (1973, 1984) draws an analogy between pronouns and tenses, not only in their deictic use but also, and especially, in their anaphoric use. In (29), both the pronoun *he* and the simple past tense are used anaphorically, in that they refer back to their respective antecedents "John" and "John got home."

(29) John got home. He called Mary.

My analysis is in line with Partee's, in that it employs a referential approach that draws an analogy between DP and TP. However, I would like to claim that just as it might be the case that the determiner *the* is always followed by a CP (or XP), so *-ed* is followed by a temporal adverbial, explicitly or implicitly present in the structure. In other words, instead of taking *-ed* to be anaphorically like a pronoun, I would like to consider it on a par with *the* and to see the

³² This is only implicit in Kayne (1994), but it was made explicit in class (class notes, fall 1997).

anaphoric relationship as one between an antecedent and a CP (or XP) following *-ed*, rather than with *-ed* itself. This is illustrated in (30a) and (30b), where the parentheses indicate that the CP is empty.

- (30)a. I saw a man inside the house. I knocked. *The* man (*I saw inside the house*) answered the door.
 b. [John got home]_i. He called *ed* Mary (*after [he got home]_i*).

Partee (1984) notes that the past tense seems to be redundant when an adverbial is present. If one, then, adopts the view that an implicit adverbial is always present in the structure, one would have to conclude that *-ed* is always redundant. An alternative to this, however, would be to see the adverbial and *-ed* as contributing differently to the meaning of a sentence. The adverbial denotes a time frame, which is, after all, a set of times,³³ while *-ed* is a determiner, whose function it is to indicate internal specificity.

This is related to the scope paradox, noted by Dowty (1982) and Richards (1982), among others. On a standard tense logical approach, a sentence such as (31a) could be represented as either (31b) or (31c).

- (31)a. John left yesterday.
 b. P (Y (leave, j))
 c. Y (P (leave, j))

Both are shown to be inadequate. (31b) says that there is a time in the past such that John leave occurred yesterday with respect to that time; (31c) says that it was the case yesterday that John leave occurred at some time in the past.

Several solutions have been proposed to solve the paradox, among which is one that introduces tense and the adverbial simultaneously (Dowty, 1979, 1982). Obviously, sentences without adverbials become problematic because the tense seems to carry out the job by itself. But when the adverbial is present, what is the meaning of tense? I would like to propose that the adverbial, implicit or explicit, is what takes scope over the whole sentence, while *-ed* simply determines past specificity (P spec). Such +spec feature needs to be matched with a +definite temporal adverbial complement of *-ed* such as *yesterday*. If there is no explicit adverbial, then the empty XP that *-ed* subcategorizes for takes scope and meets the matching requirement. These facts are illustrated in (32) and (33).

- (32)a. John left yesterday.
 b. John left yesterday.
 yesterday
 (cT)
 John left
 ed John leave
 +P spec John leave
- (33) a. John left.
 b. John left_{cT}
 cT John left
 ed John leave
 + P spec John leave

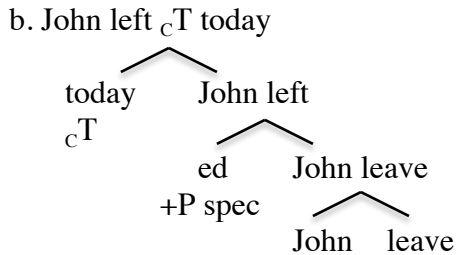
Sentences in the simple past where the time frame is apparently open, such as (34a), can be represented as in (34b). In (34), although *today* expresses an open time frame, there is a smaller T' included in T, which is specified as closed.

³³ I see a similarity with relative clauses. In both (i) and (ii), the relative clause *who came* denotes a set; in (i), *who came=he came* is a singleton set; in (ii), *who came = men came* is the set of all the men who came.

(i) ... the man who came ...

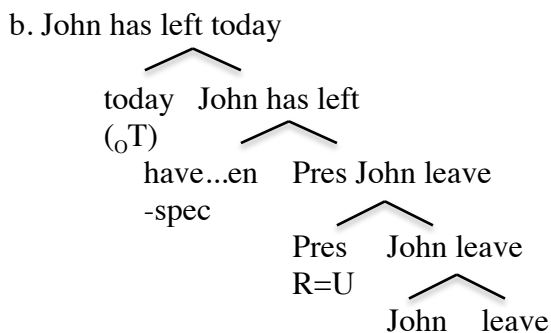
(ii) ... one of the men who came ...

(34)a. John left today.

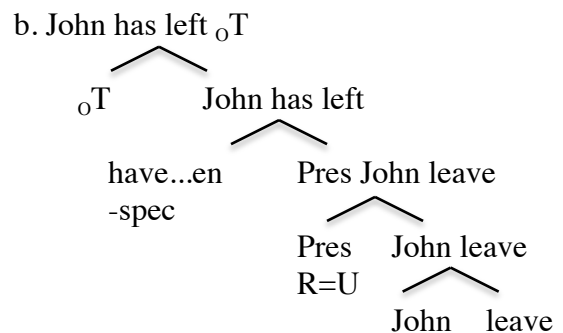


Turning to the present perfect, it is obvious that, in Reichenbachian terms, the *-s* morpheme (and its null counterpart \emptyset) means that $R=U$, that is, that the present is somehow relevant to the interpretation of this tense. This should be seen as a specification of the fact that oT includes 'now' and not, say, an R point in the past or in the future, which is also compatible with an oT . As for *have...en*, I adopt Dowty's (1982) view that *-ed* is a redundant element and will treat *have...en* as a discontinuous unit which says that the time t at which E occurs is *-specifiable*. This *-spec* feature does not require, in fact it precludes, matching with a definite temporal adverbial. As a result, the present perfect can be used without one and still get an indefinite reading. If an adverbial such as *today* is present, the reading is still indefinite (within the definiteness of *today*) since matching cannot obtain. As a result, it is impossible to specify when exactly within "today" the event occurred. The conclusion would be that temporal adverbials are complements of *-ed*, but have an adjunct-like status with respect to *have...en*. (35b) and (36b) are the representations of two sentences in the present perfect.

(35)a. John has left today.



(36) a. John has left.



A comparison of (32) and (33) with (35) and (36) shows that a definite reading of a sentence arises when a temporal adverbial or a time frame, which is always definite, is matched with a *+spec* marker (e. g., *-ed*). In other words, definiteness comes from within.

4.2 The Past Perfect

As was observed earlier, it is controversial whether the past perfect and the future perfect should be treated as the past and future counterparts of the present perfect, or whether they should receive a different treatment. I assume that underlying each of these two tenses there is the same logical distinction in structure that in the case of the present perfect and the simple

past is morphologically visible. As a result, both the past perfect and the future perfect have to be given two different accounts. Here, I will briefly discuss only the past perfect.

The sentences expressed in the past perfect in (37) would take the present perfect and the simple past respectively if, instead of being evaluated with respect to a past R point (= *then*), they were being evaluated relative to U (= *now*).

(37)a. I was in Mexico last year. I had been there before.

b. I was in Mexico last year. I had been there the year before.

As I said above, the morphological neutralization that takes place should not be seen as reflecting one in the logical structure.

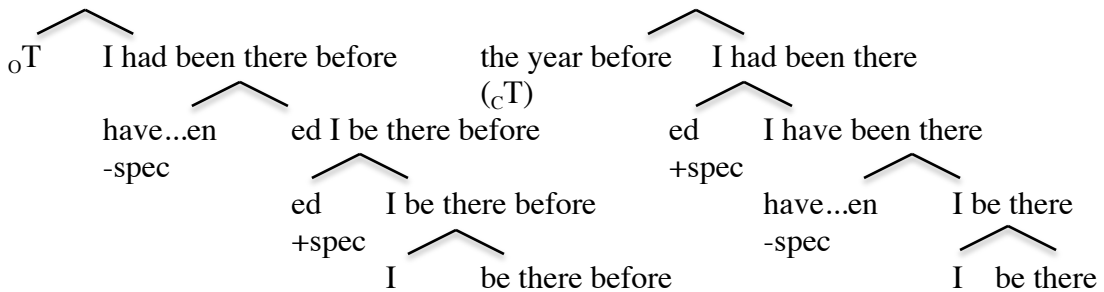
Given the discussion of the present perfect and the simple past above, one could see the distinction in terms of whether *-ed* takes scope over *have...en* or whether the converse holds. Thus, the relevant parts of (37a) and (37b) can be represented as in (38) and (39).

(38)a. I had been there before.³⁴

(39) a. I had been there the year before.

b. I had been there before _oT

b. I had been there the year before.



In (38b) matching cannot obtain since *have...en* is *-spec*. In (39b) the definiteness of the time frame matches the *+spec* feature of *-ed*.

5 Conclusion

Since the present perfect seems to behave less anomalously than the simple past, I have proposed that the "present perfect puzzle" be rephrased as the "simple past puzzle." The question, then, has become: Why can the simple past occur in indefinite and unspecified contexts or in apparently open time frames? By introducing the notion of time frame and by defining the \pm specifiability of its internal structure, I have shown that the "puzzle" is not a puzzle at all. The use of both the simple past and the present perfect is regulated by two strict conditions: the closeness/openness of the time frame T and the \pm specifiability of the intervals of time t contained in T. I have also proposed that tense morphemes be associated with temporal adverbials, explicit or implicit, which function as time frames, and I have shown that, at least in the case of the simple past, such adverbials can be seen as complements of *-ed* and as a restriction on the verb itself.

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³⁴ I don't consider "before" the relevant time frame, which in this case would be something like "in my life".

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Appendix: Events and States³⁵

As far as the present perfect and the simple past are concerned, and perhaps more generally, the distinction between events and states can be reduced to the distinction between the existential and the continuative reading. In the general case, the former is associated with events, the latter with states. However, it is important to bear in mind, as Kamp and Reyle (1993: 507, 509) note, that the distinction between events and states is "a matter of how a situation is conceptualized" and that such a distinction is "gradual rather than sharp."

Assuming the existence of a time frame instead of or in addition to a reference time, generally, events can be said to be contained within the time frame, whereas states start, continue, and end together with it. In other words, states overlap with the time frame. Thus, the relationship between a given verb and the time frame is determined by the aspectual class which that particular verb belongs to, which is related, as Bach (1986), among others, notes, to the mass-count distinction within nouns. States, then, can be thought of as "extending" easily in time (just as one might think of noncount nouns as extending in space (e. g. water) or somehow abstractly (e. g. happiness)); on the other hand, just like count nouns, events can be counted, while states can't, unless they are used without time expressions of duration such as *since 1995* or *for three years*.³⁶ In this case, states too get an existential (and therefore, more event-like) reading rather than a continuative one, as in (1). In these sentences, the time frame would obviously be *my life*.

- (1) a. I've lived there before.
b. I've lived in Boston twice.

Just as states can be conceptualized and perceived as event-like, so events can be conceptualized and perceived as state-like (except, of course, for achievements). This is the general case for processes, but accomplishments too can easily become states if, for instance, a determinerless noncount or plural noun is used, as in (2).

- (2) a. I drink coffee.
b. I paint houses.

As such, these sentences can have a continuative reading in the present perfect, as in (3).

- (3) a. I've drunk coffee all my life.
b. I've painted houses since 1990.

Of course, without the adverbials *all my life* and *since 1990*, these sentences, too, would get an existential reading, as in (4).

- (4) a. I've drunk coffee many times.
b. I've painted houses before.

A state used in the present perfect with a "for-adverbial," on the other hand, is open to both a continuative and an existential reading, as in (5), (Dowty 1979: 343).³⁷

³⁵ The terminology varies when it comes to aspectual classes of verbs. Some authors use the term *eventuality* for all verbs (for instance, Bach 1986, though Bach himself subdivides verbs into events and states); others make an outright distinction between events and states; yet others subdivide events into smaller classes such as processes (*John walked*), accomplishments (*John read a book*), and achievements (*John died*) (See, for example, Vendler 1967).

³⁶ Since- and for-adverbials behave differently, though. In the present perfect, the former get only a continuative reading, while the latter can have either a continuative or an existential one.

³⁷ But Dowty himself notes that the existential reading is the secondary one in that it needs a well-defined context. Such a context might be the following:

- (i) Since I graduated from college, I've lived in Boston for four years, in Chicago for three years, in Los Angeles for two years...and so on.

(5) John has lived in Boston for four years.

These observations indicate that the relationship between the time frame and a given verb should be looked at not so much in terms of events as opposed to states, but rather in terms of existential as opposed to continuative reading. According to McCawley (1981), these are the two basic readings of the present perfect, and the resultative one, as in (6), can be reduced to the existential one (quoted in Michaelis 1994, who holds a different view).³⁸

(6) I've broken my arm.

I agree with McCawley on this issue. As for the distinction between the two readings, I propose that it be defined in terms of the relationship that each of them has to the time frame: a continuative reading is obtained just in case the eventuality (to use Bach's term) overlaps with the time frame, while an existential one is obtained when the eventuality occurs within the time frame. It just so happens that states give rise more easily to a continuative reading, whereas events are more readily interpreted as having an existential one; but this is not always necessarily so.

It seems to me that the same holds of the simple past: (7a) has a continuative reading; (7b) an existential one.

(7) a. From 1980 to 1990, I lived in Boston.

b. From 1980 to 1990, I lived in Boston twice.

If so, one can conclude that S overlaps with T when S holds continuously during a given T, regardless of whether T is open or closed. In such a case, we get a continuative reading. If S doesn't hold continuously during a given T, we get an existential reading. If T is closed, the simple past is used; if T is open, the present perfect is used.

Johnson (1981) says that while R (reference) can be either an interval or a moment, E (event) is always an interval and U (utterance) always a moment. This is debatable. Binnick (1991) and Van Benthem (1983), among others, point out that U is really an interval, as a sentence cannot be uttered in a moment. But if U is not a moment, what about R? In a sentence such as (8), the adverbial clause *when John arrived* can easily be replaced by *then*, which, for all intents and purposes, is really a past now, or even a past right now.

(8) I was eating when John arrived.

Now, "when John arrived" contains an E, which is said to be an interval (Johnson); at the same time, the whole adverbial clause functions as R with respect to the main clause. R, again, can be either an interval or a moment. But in the simple past E and R are supposed to overlap, so one might conclude that in "John arrived when" both R and E are intervals. If they are intervals, is "when John arrived" an interval or a moment with respect to the main clause? It seems to me that it should be an interval since, although "arrive" is an achievement (= punctual occurrence) (Mourelatos 1981), sentence (9) is perfectly acceptable.

(9) John was just arriving home when he had a heart attack.

But if *when John arrived* is an interval, so should *then* and *now*. In other words, *now* happens, just like any other event. Another way of looking at it, however, is to say that moments and intervals are relative terms, at least in the mind of the speaker, who can choose to look at an eventuality (state or event) as either a punctual occurrence or a continuous one, always with respect to the time frame. The first modality gives rise to the existential reading; the second to the continuative one.

³⁸ Also see Portner (2003: 463–464) for a discussion of the resultative reading.