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The present perfect puzzle*

Abstract

In John has left London, it is clear that the event in question, John's leaving London, has occurred in the past, for example yesterday at ten. Why is it impossible, then, to make this the event time more explicit by such an adverbial, as in Yesterday at ten, John has left London? Any solution of this puzzle crucially hinges on the meaning assigned to the perfect, and the present perfect in particular. Two such solutions, a scope solution and the 'current relevance'-solution, are discussed and shown to be inadequate. A new, strictly compositional analysis of the English perfect is suggested, and it is argued that the incompatibility of the present perfect and most past tense adverbials has neither syntactic nor semantic reasons but follows from a simple pragmatical constraint, called here the 'position-definiteness constraint'. It is the very same constraint, which also makes an utterance such as At ten, John had left at nine pragmatically odd, even if John indeed had left at nine, and hence the utterance is true.

1. The problem

In an utterance such as

(1) John has left his wife.

the event talked about, John's leaving his wife, is clearly in the past (relative to the time of utterance TU). It may still be particularly relevant to the present in one way or the other, and some authors argue that this is the reason why the present perfect is used here, rather than the simple past. But there is little doubt that the event as such is over at TU.¹ It could have been yesterday, or last fall, or some ten years ago. Why is it impossible, then, to say:

- (2a) *John has left his wife yesterday.
- (2b) *Yesterday, John has left his wife.
- (3a) *John has left his wife last year.
- (3b) *Last year, John has left his wife.
- (4a) *John has left his wife some ten years ago.
- (4b) *Some ten years ago, John has left his wife.

The constraint is not restricted to some specific adverbials, nor to a particular position. There are, however, some exceptions, for example

- (5a) John has just arrived.
- (5b) John has recently arrived.
- (5c) John has been in Pontefract before.

Take the last case: It may not be entirely clear when John's previous stay in Pontefract was - but it is clear that it is sometime in the past, and not during the time of utterance.

There is a second apparent exception to the constraint in cases such as

- (6a) Has John ever been in Pontefract? - Yes, last year.
- (6b) John has been in Pontefract - yesterday, in fact.

In these cases, the adverbial is not really integrated into the present perfect construction: it is a kind of continuation which, when made fully explicit, would be completed by and this was yesterday rather than by and this has been yesterday. So, we can ignore these cases. In contrast to examples like (5a-c), they do not form a real exception to the general rule that the present perfect does not go with an adverbial referring to the past.

This 'past-adverb-constraint' is well-known. Less known is the related fact that it is even impossible to ask for the time of the event with the usual Wh-word:

- (7a) When has John left his wife?
- (7b) When has John been in Pontefract?

Again, this 'when-constraint' is not without exceptions. Consider, for example:

- (7c) When has John ever been in Pontefract?

This is clearly possible, especially (but not only) if it is meant to imply that he has never been there.

Both constraints are in remarkable contrast to the so-called perfect in otherwise quite related languages, like German and Dutch, as well as to the perfect in French:

- (8a) Hans hat gestern seine Frau verlassen.
- (8b) Gestern hat Hans seine Frau verlassen.
- (8c) Wann hat Hans seine Frau verlassen?
- (9a) Jean a quitte sa femme hier.
- (9b) Hier, Jean a quitte sa femme.
- (9c) Quand a Jean quitte sa femme?

Why, then, is this not possible with the English present perfect? Various solutions are possible, and have been suggested in the literatureⁱⁱ. In what follows, I will discuss some of these solutions and show that they fail to explain the constraint and some other, related facts. In sections 3 - 5, a new solution will be suggested.ⁱⁱⁱ

2. Two types of solution

An elegant feature of the English perfect is its transparent formal structure:

PAST PERFECT John had left his wife
PRESENT PERFECT John has left his wife
FUTURE PERFECT John will have left his wife

In all of these cases, the 'event' is John's leaving his wife, which is expressed in the non-finite part of the utterance. In order to have a fairly neutral terminology, I will call the time of this event the 'INF-time'. In the first two examples, it is in the past; in the case of the future perfect, it can be in the past, but need not. On the other side, we have the time associated to the finite element had/has/will (have). Let me call this time 'FIN-time': it varies from past to present and future in this case. A suggestive analysis is therefore to partition the temporal meaning into two parts: a first component which relates FIN-time to TU (before TU, including TU, after TU), and a second component: FIN-time after INF-time. Under this analysis, the perfect as such simply marks the 'time after' INF-time, and FIN-time falls into this 'time after'; FIN-time in turn is related to TU. This is the idea behind many analyses of the perfect (and tense), ranging from Paul (1888) via Reichenbach (1947) to many recent treatments. In Reichenbach's terms, for example, FIN-time is the 'point of reference' R, INF-time is the 'point of the event' E, and TU is his 'point of speech' S. We shall return to his analysis section 3.1 below.

There is no a priori guarantee that the way in which the meaning of the three perfects is composed from its parts indeed matches this transparent formal structure. But such a parallel compositional analysis would be clearly preferable over one which stipulates a particular meaning to the present perfect, a meaning which is compound in some different way or even not compound at all. Under a parallel compositional analysis, the only way to solve the present perfect constraint seems to be a scope solution.

2.1 The scope solution

The idea of the scope solution is roughly this: The entire clause includes two time specifications, one by the present tense morpheme has, and a second one by the temporal adverbial, for example yesterday. There may be good reasons to assume that that adverbials of this type are sentential adverbs, rather than VP-adverbs. Therefore, they have scope over the entire sentence including FIN. Hence, there is a clash between the time specified by the adverb (before TU) and by FIN (including TU).

A precise formulation of this idea presupposes an elaborate theory of adverb modification. Such a theory in turn includes an in-depth analysis of various types of (temporal) adverbials, on the one hand, and an analysis of how these adverbials interact with the remainder of the clause. Neither of these tasks is easy to solve, and a detailed discussion, let alone a solution, is beyond the scope of this paper. Therefore, I will only highlight some aspects which seem indispensable for an understanding of the scope solution, and why it does not work.^{iv}

With many other authors, I assume that the relevant entities of temporal reference are not time points, but intervals ('time spans'), which are elements of a structure. Opinions vary somewhat on how this structure is to be defined. But minimally, it must have order relations (such as 'a before b', 'a after b', etc, where a and b are time spans) and topological relations (such as 'a included in b'); further, there must be a distinguished time span, the time of utterance TU. All time spans within that structure have a position relative to TU, they have a fixed length which can be measured (i.e., they have boundaries and a duration), and they can be counted. All of these properties can be specified by temporal adverbials. Hence, we have temporal adverbials which serve

- to specify the position of a time span on the time axis: then, yesterday at ten, two weeks ago, on March 1st, 1987.

- to specify the duration (or, not exactly the same, but a related possibility, the boundaries) of a time span: for two days, all night, from two to four.

- to specify the frequency of time spans: twice, most often, regularly.

There are other types of temporal adverbials (such as already, still, again), but they are not directly relevant to the present problem.

The important class in the present context are those which specify the position of a time span. Their analysis is not easy. Of the many aspects to be taken into account, only two will be mentioned here.

First, there are, on the one hand, time-position adverbials which refer to some specific time span, most often in relation to some other specific time span which is supposed to be given in context (such as TU or the time of some previously mentioned event); this is the case for yesterday at ten o'clock p.m., last Sunday, two years later, some minutes ago, on March 1st, 1991. There are, on the other hand, time-position adverbials which characterise a class of time spans, such as on Sunday, at Christmas, at lunchtime, at six. In a given utterance situation, there is only one 'next Sunday', but many 'at Sunday' - namely one per weeks, just as there are two time spans per day which can be characterised as 'six o'clock', or one time per year which can be characterised as 'Christmas'. This does not necessarily exclude that, for example, at Christmas in some utterance relates to a particular Christmas, for example if the year in question is clear from context. But this is not part of the meaning of the expression at Christmas.

Second, both types of temporal adverbials often give only the **maximal boundaries** of the time span(s) in question. Thus, on Sunday means 'at some time which is included in a day which is a Sunday'. Similarly, yesterday means 'at some time span which is included in the day which precedes the day which includes

TU'. Neither the exact position nor the duration of the time span(s) referred to are fully specified by on Sunday or yesterday; but they can, if there is need, for example by on Sunday from two to four or yesterday at ten. Note that this additional specification does not change the fundamental difference between the two types of position adverbials. We can say Usually, they met on Sunday from two to four., but not *Usually, they met yesterday from two to four. In the former case, an indefinite number of time spans, all of them being on Sunday from two to four, are involved, in the latter, only one time span is referred to. We shall return to this important difference in later parts of this paper.

The way in which time position adverbials interact with the remainder of the clause, varies. In simple clauses such as (1) - (5), they can in principle specify the position of FIN-time, or the position of INF-time. This depends on a number of factors, notably position within the sentence and intonation. The interplay of these and other factors is highly complex, and we shall not try to disentangle it here.^vWhy is it impossible to front the durational adverbial here? An answer to this problem is far beyond the scope of this paper (see, for a possible explanation, Klein 1991, chapter 9.2). The scope solution of the present perfect puzzle, to which we will now return, simply says that adverbs like yesterday or last year, irrespective of whether they are in initial or in final position, and irrespective of their intonation, can only specify FIN-time, but not INF-time. And since the time specified by these adverbials must precede TU, whereas FIN in the present perfect includes TU, there is a clash.

This straightforward explanation is nicely corroborated by two facts. First, adverbs like yesterday indeed cannot appear in a position where they (normally) would have scope only over VP:

(10a) *John has yesterday arrived.

(10b) *John has last year been in Pontefract.

Second, exactly this position is possible for at least some of the 'exceptional' past adverbs, like just or recently, as illustrated in (5a, b). Moreover, when such an adverb indeed appears in sentence-initial position, the result is odd:

(11) *Recently, John has arrived.

Unfortunately enough, the scope solution, attractive as it looks, suffers from several serious shortcomings. The first of them is illustrated by a look at the syntactically fully parallel pluperfect. Consider the following two sentence pairs (cf. McCoard 1978: 91; Comrie 1985: 65-69, where examples of this type are discussed):

(12a) (Yesterday, Mary came to John's office at six). But John had left at six.

(12b) (Yesterday, Mary came to John's office at seven). But John had left at six.

In (12a), John must have left some time before six: The time of had, which is in the past, is six o'clock yesterday, and at this time, John is no longer there. Hence, at six specifies FIN-time (or 'reference time', as many authors would say). This is different in (12b). Here, FIN-time is at seven, and at six is the time of John's leaving. In other words, an adverbial such as (yesterday) at six, which refers to a time span in the past, can modify FIN-time as well as INF-time. It can have scope over either the one or the other. Now, there is no reason why this should not apply to the completely parallel present perfect construction. This would lead to a clash if it modifies FIN-time (has). But there is no reason why it should not modify the 'event time'. At this point, the present perfect constraint starts looking like a real puzzle.

Before turning to the next problem, two points in connection with (12) should be noted. First, the 'event-time'-reading seems hardly possible with the adverb in initial position, whereas the 'reference time'-reading clearly is (in fact, initial position is perhaps even better). Second, there seems to be a distinct intonation difference between (12a) and (12b): In (12a), the adverb is de-stressed. Moreover, it could be

entirely omitted in this case, or replaced by at that time.

The second argument against a scope solution concerns adverbs in non-finite clauses:

(13a) John claims to have been in Pontefract last year.

(13b) John seems to have left his wife yesterday.

This shows that a temporal adverbial can easily specify the time of the event. Note that in these cases, the adverb does **not** have scope over the entire non-finite component. It is not meant in (13a) that John was last year in the afterstate of being in Pontefract, i.e., that his being there was actually two years ago. Nor does (13b) mean that John left his wife the day before yesterday, such that by yesterday, he was in the afterstate of leaving her. We must conclude, therefore, that an adverb like yesterday can have very narrow scope. Roughly speaking, the scope of the non-finite part of (13b) is

(13b)' **perfect marking** (yesterday (leave his wife)).

If we consider the past perfect participle (left) to be part of the perfect marking - surely a reasonable assumption -, then this means that the adverb yesterday even 'pervades' the word boundary in this case. We shall not follow up this somewhat perplexing fact. What matters in the present context, is simply: Why should this narrow scope of an adverbial like yesterday not be possible, if the clause is finite, as in (2a) or (2b)?

There is a third, somewhat less salient argument against the scope analysis. If the problem is due to a clash between the present time reference of FIN and the past time reference of the adverb, then the present perfect should be easily possible with adverbials which refer to the present, such as at present. But exactly this is hardly possible, in either position:

(14a) At present, John has been in Pontefract.

(14b) John has been in Pontefract at present.

There are some present time adverbials which can go with the present perfect, for example now (at least in some uses). But clearly, this is not generally true, as should be the case, if the problem were only due to scope.

Finally, the scope solution cannot explain the 'when-constraint' (cf. examples (7)). One would have to argue that when has scope over the entire sentence. But when is clearly possible with future perfect and pluperfect, and the time asked for is INF-time:

(15a) (He will start writing tomorrow.) But when will he have completed the entire manuscript?

(15b) (He completed the entire manuscript only today.) But when had he signed the contract?

In conclusion, the scope solution, attractive as it may look at first, cannot explain the present perfect puzzle. Hence, we seem to be forced to sacrifice a the idea of parallel composition: the present perfect must have a special function which does not allow to combine it with past time adverbials. Several proposals to this effect have been made, among which the 'current relevance'-analysis is best-known; therefore, it will be discussed here.

2.2 The present perfect as the expression of current relevance

There is a strong feeling that the present perfect, in contrast to the simple past, in a way participates both

in the past and in the present. One way to capture this intuition is the notion of 'current relevance': The event, process or state, although as such situated in the past, has some on-going relevance which prolongates it somehow into the present. This becomes particularly clear in immediate comparison with the simple past:

(16a) John has left his wife.

(16b) John left his wife.

In (16a), we clearly have the feeling that he is now in a different state - being alone, for example, or whatever the consequences of his leaving her may be -, whereas in (16b), some past event is reported - although in both cases, the leaving may be equally far in the past.

This intuition is very strong, and somehow it must be explained. But the notion of 'current relevance' or, as Comrie (1976: 52) puts it, 'the continuing present relevance of a past situation', cannot explain the present perfect puzzle. There are at least three major problems.

The first problem has to do with this notion of 'current relevance' itself: It is not clear how to determine the 'relevance'. If no criterion is given, a 'current relevance' analysis can hardly be falsified: It is always possible to find a reason why the 'event' is still of particular relevance to the present. And moreover, this is also possible for the simple past. Take the following examples:

(17a) Why is John so cheerful these days? - Well, he won a million in the lottery.

(17b) Unfortunately, he bought oil shares with all of his money. He lost every penny, so, he is now as poor as before.

We would not say that the two events 'winning a million in the lottery' or 'buying oil shares', reported in the simple past, are without current relevance. In fact, they are the reason for the ensuing present state. So, the intuition about 'current relevance' of the present perfect may well be strong. But the notion itself is in need of a more precise definition.

The second problem is quite different. The 'current relevance'-analysis cannot explain at all why (18a) is possible, but (18b) is not:

(18a) John was dead.

(18b) John has been dead.

One surely cannot that his being dead has no further relevance in (18a), nor does the 'current-relevance'-analysis explain why (18b) is entirely impossible (unless you believe in resurrection).

Finally, the current relevance analysis, even if it were appropriate as an analysis of the present perfect, cannot explain why the event (or process or state) - whose consequences are still relevant in the present - cannot be precisely localised in time. After all, the event at such occurred some time ago, and it should be possible to specify when exactly this was. The speaker may even know when John was in Pontefract, or left his wife - but he is simply not allowed to add the appropriate adverbial without changing the construction. So, the 'current-relevance'-analysis catches an important intuition; but it cannot explain the present perfect puzzle.

A different way to capture the particular involvement of the present perfect with the present is the notion of an 'extended now' which has been advocated by, among others, by Bennett and Partee (1973), McCoard (1978), Dowty (1979), and Richards and Heny (1982). Its basic idea is 'the view that the perfect serves to locate an event within a period of time that began in the past and extends up to the present moment.' (Dowty 1979: 341). This idea has been implemented in various ways. There are a number of problems with this idea, independent of its particular implementation (cf. also Richards and Heny 1982). For example, if it is indeed the case that John left his wife yesterday, there is **always** a time span which begins in the past, includes the event, and ends with TU, and this is entirely independent of whether the

simple past or the present perfect is used. Hence, if the 'extended now' is simply a time span with these properties, we have an 'extended now' both in the case of the present perfect and of the simple past; hence, it cannot discriminate between present perfect and simple past. In Dowty's analysis, the 'extended now' is marked by an adverbial in initial position (for example since Christmas). But this is surely no necessary condition for the use of the present perfect, and if contextual information is sufficient, then it should also be sufficient in the case of the simple past.

Finally, it is hard to see how the 'extended now'-analysis could account for the scope problems discussed in connection with examples (12) or the difference between John was dead and John has been dead (cf. (18) above). It seems, therefore, that this analysis cannot really solve the present perfect puzzle.

Summing up, it appears assigning a special function to the present perfect within the 'perfect system' does not help to solve the problem. It also has the additional disadvantage of not respecting the apparent parallel compositionality of this system. In the next section, we will sketch an analysis which indeed respects this formal structure and explains the temporal meaning of the various perfect forms in terms of a simple interaction of two types of temporal relations.

3. FIN-time and INF-time

In an analysis which matches the formal composition of the various perfects, three types of time spans must be given an appropriate interpretation:

- TU, i.e., the time at which the utterance is made;
- INF-time, i.e., the time which is related to whatever is expressed by the non-finite component of the utterance;
- FIN-time, i.e., the time which is related to whatever is expressed by the finite component.

Among these, TU is relatively straightforward. It may be disputable sometimes, what the TU of a complete novel is, whether TU is the time of speaking (writing) or the time of listening (reading) if there is a divergence, etc. But in general, the notion of TU does not create major problems.

The case is more complicated for INF-time. The term most commonly used in this connection is probably 'event time', except that events are only a special case, and perhaps not even the most typical one: It is that entity which is somehow localised in time. This can be an event, a state, a process, or some 'timeless' state of affairs like two plus two's being four. These distinctions are important because the various cases behave very differently with respect to both tense and aspect. To illustrate the point, compare

(19a) John left his house.

(19b) The door was open.

(19c) The door was iron.

In (19a), the 'event' is clearly before TU (as one would predict from the tense form). In (19b), this need not be the case at all; it is only said that at some (definite?) time before TU, the door was open. If the door's being open is considered to be the 'event', then it need not be the case that the event precedes TU (although this is not excluded, either). And in (19c), there is good reason to assume that the door, if it still exists at TU, is also still iron at TU. Hence, the 'time of the event' includes TU, a temporal constellation which is normally supposed to be characteristic of present tense.

This is only one of many problems with INF-time and its interpretation. We shall turn to this point in section 4. For the time being, we will simply say that the time linked to INF is the 'time of the situation', in short TSit: It is the time of whatever is described in the non-finite part of the utterance.

By far the most difficult notion is FIN-time. The best-known interpretation is Reichenbach's (1947) 'point

of reference' R. Reichenbach's system has been adopted by many authors. We shall not discuss it here in general, but briefly consider what it says about the present perfect, its difference from the simple past and possibly reason why the former does not go with past time adverbials.

3.1 Reichenbach's R

In Reichenbach's system, simple past and present perfect only differ in that in the simple past, the 'point of event' E (our TSit) and R fall together, both preceding S (our TU); whereas in the present perfect, S and R fall together, both following E. So, they do not differ with respect to the relation between S and E. Any possible difference between present perfect and simple past which could explain the different behaviour towards past time adverbials hinges on what is understood by R.

What, then, is R? If R is just some arbitrary point in time, which is simultaneous to either E or S, then this analysis is not helpful at all. What does it mean to say that, in the one case, there is some arbitrary point in time which is simultaneous to E, whereas in the other case, there is some arbitrary point in time which is simultaneous to S? Clearly, there is also some arbitrary point in time A which, in the case of the present perfect, is simultaneous to E, and some arbitrary point in time A which, in the case of the past, is simultaneous to S.

Reichenbach is not very specific about what R is, beyond being a point in time. All he says is that R is the time of some other event.^{vi} The rich literature based on Reichenbach has basically maintained this understanding of 'point of reference' (or rather 'time of reference', since most subsequent authors tend to consider R to be a more or less extended time interval, rather than a 'point'): It is the time of some event which is typically mentioned in the preceding context and which, for example, can also be in the past. This notion is very suggestive, indeed, in the analysis of the pluperfect:

(20a) When Mary came to the party, John had left.

(20b) Mary looked pale. She had been very ill.

Here, the pluperfect expresses that TSit is before the 'event' of Mary's coming to the party, or of Mary's looking pale, both these events being in the past themselves.

But even in the case of the pluperfect, the 'reference time' need not be the time of some other contextually given event:

(21) At nine o'clock, Mary had left the building.

The reference time prior to which Mary left the building is apparently nine o'clock. But this is simply a time span, not necessarily the time of some other contextually given event (as in 20a or 20b). The same is true for the future perfect:

(22) Tomorrow at four o'clock, I will have finished this paper.

It may be the case that there is some important event tomorrow at four. But nothing is said or implied about such an event. The reference time is simply 'tomorrow at four o'clock', if we follow the Reichenbachian analysis of the future perfect.

What does the 'other event'-interpretation give us in the case of the simple past? Here, R and E are simultaneous (in Reichenbach's own analysis), or they overlap (as assumed by some other authors). But what is the 'other event' in simple cases like

(23a) Last year, John was in Pontefract.

(23a) On March 1st, Dickens married his greatniece Joan.

There is no other event involved, as far as one can tell. It is true, again, that the time of John's stay in Pontefract, as well as the time of Dickens' marriage, can be the time of some other event mentioned in the context; but this is clearly not a **necessary** condition.

Consider finally the present perfect itself in which R is supposed to be simultaneous to S: If R is the time of some 'other event', what is this 'other event' in standard cases like

(24) Some of us had expected it for ages. But now, it is a fact: John has left his wife.

Surely, the 'other event' cannot be what is said in the preceding sentences.

In conclusion, the idea that the reference time is the time of some other event may be quite true, at least in many cases. But it cannot be the defining criterion, even in the most suggestive cases, pluperfect and future perfect. The 'other event' is at best the way in which, in a given situation, the reference time is **specified**, and ample use is made of this possibility in text structure (see, for example, Nerbonne (1985); Klein und von Stutterheim 1987). Hence, the idea that FIN-time is the 'reference time' does not say very much.

3.2 Topic time

We shall suggest here a very different interpretation of FIN-time: It is the time for which, on some occasion, a claim is made (or, in the case of questions, a claim is raised). The point is best illustrated by a simple example.

Suppose a witness is asked in court:

(25) What did you notice when you checked the cellar.

Then, the witness might truthfully answer:

(26) (a) The door was open. (b) It was iron.

In such a case, the door may have been open for a very long time already, and it may still be open at TU. But the witness **makes a claim only for a very limited time span in the past - the time for which he or she is asked to make a claim**. This is, in this case, the time at which he checked the cellar. I will call this time 'topic time' (in brief, TT). The topic time is the time span to which the claim made on a given occasion is constrained. By saying (26a), it is only claimed that the door was open at TT, and this TT is somewhere in the past. This time span is in contrast to TSit - the time span of the door's being open. In this case, TT is properly included in TSit (there are other possible relations between TT and TSit, to which we shall return in a moment). TT precedes TU; but nothing is directly said about the relation between TSit and TU; it could well be that the door is still open at TU.

In (26b), the situation is the door's being iron.^{vii} This, as it looks, is a permanent property of the door, in contrast to a temporary property of the door like its being open. So, TSit, being permanent, includes TU (if the door still exists at TU), i.e., it does not precede TU. Still, the past tense is used here, and quite appropriately so. The witness could hardly have said in such a situation: It is iron, although this would have been clearly true. But he is not asked to make a claim about what is presently the case; he is asked to talk about some time in the past. IT is TT, not TSit, which precedes TU. The conclusion is, therefore, that tense does not mark the relation between the time of utterance and the time of the situation, but the relation between the time of utterance and the topic time.

Various such relations are possible, and their exact nature depends on what is assumed to be the underlying time structure. At least three such relations should be distinguished:

PAST: TT before TU
PRESENT: TT includes TU
FUTURE: TT after TU

Note that PAST, PRESENT and FUTURE are abstract temporal relations. The tense marking system of a particular language may cluster them in various ways, for example having one morphological form for each of them, or having one form for PRESENT and FUTURE and a different for PAST, or even collapsing all of them in a single form; in this last case, the language is 'tenseless', i.e., there is no formal discrimination between the various possible relations between TT and TU. We shall not follow up the various possibilities here (see Comrie 1985; Dahl 1985).

Note that the tense form itself does not say anything about how **long** the topic time is. It can be very short, as in the case of (25), where the preceding question fixes it to exactly the time at which the witness checked the cellar. It can also be very long. It can even include the 'entire time', i.e., the claim is not temporally confined at all. Then, it also must include TU, and we get 'eternal statements', like The world is sad or Nineteen is a prime number. This explains in a natural way the various 'uses' of the English present tense.

Henceforth, I shall use 'TT<' as an abbreviation for 'TT < TU' (i.e., for a TT in the past), TT> as an abbreviation for 'TT > TU', and TT₀ for a TT which includes TU. Note, however, that there is an important difference between TT< and TT>, on the one hand, and TT₀, on the other. Two TT₀, say TT₀' and TT₀", may well differ by their duration. But TT₀' cannot be before TT₀", or after TT₀". This is different for TT< (and similarly for TT>). If there are two topic times TT<' and TT<", then TT<' may be before TT<", after TT<", or both may overlap. Consequently, there is an important difference between expressions which mark TT₀, such as the English present tense form, and expressions which mark TT<, (or TT>). I shall say that an expression of the former type is **position-definite** (in short, **p-definite**), but not **boundary-definite** (in short, **b-definite**). The English present tense forms are p-definite, but not b-definite; the English past tense forms are neither p-definite nor b-definite. In other words: The meaning of the past tense is a set of time spans, all preceding TU; they may be longer or shorter, and they may precede or follow (or overlap) each other. The meaning of the present tense is also a set of time spans; but they only differ by their precise boundaries: they cannot precede or follow each other.

Since this distinction is crucial to the analysis of the present perfect, it will be helpful to illustrate it by a comparison to the meaning difference between the two deictic terms here and there. Both depend on the position of the speaker: here means something like 'place which includes the position of the speaker'; and there means something like 'place which does not include the position of the speaker'. In both cases, the **boundaries** of these places are not lexically fixed: the boundaries of here are quite different in Was anybody sitting here? and Here, life is more expensive than in China. The same is true for there. So, both terms are not b-definite. So far, they are the same. But if we ignore boundaries, then there is always one 'here' in a given utterance situation; but there can be many 'there's'. So, here is p-definite, and there is not. This is quite analogous to the difference between the tense forms is and was: If we ignore duration, there are many 'wases', but only one 'is'.

This distinction will be taken up below. Let us return now to our main point, the interpretation of FIN-time. Under the analysis suggested here, FIN-time is the time to which, on a given occasion, the claim is constrained. This corresponds to the fact that it is the 'finite component' of a verb which is the carrier of the claim. In general, a finite verb such as went or calls integrates a finite and a non-finite component. The latter is primarily the semantic content which, for example, distinguishes went from came. The former is compound again: it bundles several types of meaning, in particular the claim and a time specification^{viii}. This is best illustrated by a copula, which is finite and whose semantical content is more or less void. If such a copula is marked by contrastive stress, as in

(27) John WAS ill.

then this marks a contrast to two alternatives which are excluded:

(27a) John IS/WILL BE ill.

(27b) John was NOT ill.

FIN combines both meaning components: a claim, and a time component. In (27b), the former is highlighted, and (27a), the latter. It is the function of the time component in FIN to constrain the claim being made by some utterance to some time which either includes TU, precedes TU, or follows TU. Exactly this is meant by the notion of 'topic time'.

Tense, then, is a relation between TT and TU. Nothing was said about how TSit - the time which corresponds to INF - is related to TT. This relation is what is called **aspect**. Both TT and TSit are time spans. So, they can precede, follow, or (partly or fully) contain each other. Among the various possibilities, some seem to be of particular importance, and they are often systematically encoded in the languages of the world. These include:

PERFECT TT after TSit (or: TT in the posttime of TSit)

PERFECTIVE TT including end of TSit and beginning of posttime of TSit

IMPERFECTIVE TT properly included in TSit

PROSPECTIVE TT before TSit (or: TT in pretime of TSit)

Again, these are abstract relations, and languages may cluster them in various ways into particular forms. There is the radical possibility that all of them are collapsed in one single form, i.e., the language has no aspect marking, as is probably the case for modern German. English has a rather straightforward system:

1. The simple form encodes PERFECTIVE
2. The continuous form encodes IMPERFECTIVE
3. The perfect encodes PERFECT

There is no systematical morphological marking of the PROSPECTIVE (although there are good arguments that the form be going to serves this function; but since this point does not matter here, we leave it open). There are also some well-known exceptions, such as the lack of an expanded form for some verbs such as to know or to remember, and for the copula (again with some exceptions). Again, this is not relevant to our present concerns.

3.3 The English perfect

What has been said so far can be summed up in two central points:

Tense relates the time for which a claim is made, to TU, or, in slightly different words, tense imposes a temporal constraint on the claim made in an utterance.

Aspect relates the time of the situation to the time for which a claim is made.

Both tense and aspect are relations between time spans: Tense is the relation between TU and TT, aspect the relation between TT and TSit. These relations are orthogonal to each other. But this does not necessarily mean that the tense and aspect marking system of a particular language fully maintains this orthogonality. English does so to a large extent. This is particularly clear for the perfect in which we are interested here. We get:

	Tense part	Aspect part	
John had been in York	TT < TU	TT in posttime of TSit	
John has been in York	TU in TT	TT in posttime of TSit	
John will have been in York	TT > TU	TT in posttime of TSit	

Note that 'posttime' simply means: the time after TSit. The notion of 'posttime' is not defined by what is the case at TSit, nor by what is the case after TSit: it is just the time after TSit.

Aspect does not say how **long** TT is after TSit: TSit may immediately precede TT, but it may also be in the distant past. Only contextual information can tell us something about this distance. Nor does the perfect say anything about the **frequency** of John's being in York. There must be at least one such stay; otherwise, John could not be in the posttime of being there. Normally, we are inclined to assume that there was indeed only one. But contextual information on the one hand, and the particular type of situation on the other may suggest a different understanding. Compare, for example

(28a) My father has slept.

(28b) My father has slept for sixteen hours.

The first of these two utterances is slightly odd at first, and the reason is simply that, given our world knowledge about human beings, it is somewhat trivial that there was at least one time before TU at which he slept (whereas it is not trivial that he ever slept for sixteen hours). In a context where this is not obvious, (28a) is perfectly appropriate (for example in a context in which not the entire past is at issue but some limited time span - say the last two years - and where it is known that father suffered from insomnia).

The fact that both distance and frequency of TSit are left open, gives rise to different 'readings' of the perfect, such as 'experiential perfect, resultative perfect', and others (see, for example, the survey of 'types of perfect' in Comrie 1976, section 3.1). But these readings are not due to an inherent ambiguity of the perfect. They stem from contextual information which tells us, for example, that TSit immediately precedes TT ('perfect of recent past'), or that the consequences or whatever the situation was are still to be felt '(resultative perfect)', etc.

Three points about this analysis of the perfect, and the present perfect in particular, must be added. The first point concerns the 'indefiniteness' of the (present) perfect, which is sometimes considered to be its characteristic difference from the simple past (see McCoard 1977, chapter 3, for a discussion of 'indefinite past theories' of the perfect). According to the present analysis, the perfect neither specifies the exact position of TSit, nor its duration, nor its frequency. In John has been in Pontefract, John's being in Pontefract could have been yesterday or twenty years ago, it could have lasted for three years or for one day, and he may have been there once or fifty times. The present perfect is 'indefinite' with respect to these properties of TSit. Thus, the indefinite nature of the perfect simply follows from the analysis suggested here. Note, however, that it is 'p-definite' with respect to TT - the time for which the claim is made - much in contrast to a form such as John was in Pontefract.

The second point concerns the notion of 'current relevance' discussed in section 2.2 above. Our analysis nicely accounts for this strong feeling connected with the the present perfect: It makes a claim about a time span which includes TU, and it relates this time span explicitly to some 'event' in the past. This applies analogously to the future perfect and past perfect, except that the relevance is not 'current' or 'present'; but it is 'on-going'.

The third point concerns a possible objection. If John has been in Pontefract is true (on some occasion), then this does not exclude that John is in Pontefract is true (on the same occasion). The seems to be at variance with the idea that TT (here including TU) must be in the **posttime** of John's being in Pontefract.

But in fact, TSit is not the same in both cases: there is a time at which John has been in Pontefract, and a time, at which he is in Pontefract, and these may be adjacent. The point is best made clear when looking at this constellation the other way around. Suppose you **are** in Pontefract right now. Then, you may truthfully say I am in Pontefract. But in this situation, you may also truthfully say I have been in Pontefract, because in this situation, there must be some time which properly precedes TU and during which you have been in Pontefract. **But the time of your being in Pontefract, and the time of your having been in Pontefract are not the same.** Suppose you arrived there exactly three hours before TU. Then, you can make a claim such as I have been in Pontefract only for a TSit shorter than three hours. The fact that John has been in Pontefract does not exclude John is in Pontefract is only due to the fact that a hidden parameter - the duration of TSit - is ignored; this is possible because the perfect is not b-definite with respect to TSit: For John has been in Pontefract to be true, all that is required is that **some** time span, at which John was in Pontefract, precedes TU.

4. Inherent temporal properties of the lexical content

So far, we have not considered different types of situations, such as events, processes, states. Numerous attempts have been made to categorize 'events' according to their temporal properties, from Aristotle to Vendler's (1957) four time schemata (which are more or less well reflected by four verb types) and, for example, Dowty's (1979) formal reconstruction of these time schemata. This discussion cannot be resumed here in any detail. But I will sketch some distinctions which I feel are relevant to the problem at hand.

Clearly, a distinction must be made between the temporal properties of the 'events' or 'situations' referred to, on the one hand, and the properties of the expressions which serve to refer to these events. In

(29) John has been twice in Pontefract

the two states of being in Pontefract have a limited duration. But the corresponding expression be in Pontefract does not say anything about this duration. The specification of this duration does not belong to the **lexical content** of an expression such as be in Pontefract.

By 'lexical content', I mean that part of the meaning of a (simple or compound) expression which stems from the lexicon. Lexical content in this sense is in contrast to contextual information, on the one hand, and to what is referred to, on the other. The lexical content of the word John, for example, is the property of being called John;^x this is in contrast to the reference of this expression, when used on a particular occasion. The lexical content of the word here is something like 'place around the present speaker', and in some given utterance situation, contextual information tells us who the speaker is and thus what, on this particular occasion, the place around the speaker is (although not necessarily what the boundaries of this place are). We shall not expand on this point here but only consider some temporal features of lexical contents.

More precisely, we are interested in the lexical content of INF, i.e., the non-finite component of the utterances. This is primarily the verb (or copula) and its arguments; they can be enriched by various types of adverbs, a possibility to which we shall return below. There is no really elegant way to refer to the lexical content of an utterance like John has been in Pontefract; I shall use the non-finite expression and put it into hooks, i.e. <John be in Pontefract> in this example.

Compare now

(30a) The door was iron.

(30b) *The door has been iron.

In both cases, the lexical content is <the door be iron>; but there is a noticeable difference in the use of the

simple past and the present perfect. While (30a) sounds quite appropriate when uttered, for example, in a court setting (cf. (26b)), (30b) is definitely odd. Under the analysis of the perfect given above, the reason is immediately clear: Being iron is a permanent property of the door, hence there is no reasonable time **after** TSit. Therefore, TT cannot be placed into the posttime of TSit, here the door's being iron: there is no such posttime.^x

The case is quite different for

(31a) The door was open.

(31b) The door has been open.

The past tense utterance (31a) means that the time for which a claim is made falls into the time of the door's being open - no matter now long this TSit may last (it may include TU, for example). In (31b), TT falls into the posttime of the door's being open; TT itself includes TU.

This shows that lexical contents of the type <the door be open> exhibit a different behaviour towards tense and aspect than lexical contents of the type <the door be iron>. I shall call the former type '1-state contents', and the latter, '0-state contents'. One way to state this difference is the notion of a **TT-contrast**. If a 1-state content like <the door be open> is assigned to some TT, as in (31a), then it makes sense to contrast this to some earlier or later TT at which the door is not open. This is not possible for 0-state contents: In (30a), TT is in the past, as well; but it does not make sense to contrast this TT to some other (earlier or later) TT at which that very door is iron.

There is an interesting intermediate case which could be called 'one-sided 1-state contents'. I mean cases like <John be dead>: they allow for a TT-contrast to some earlier TT, but not to a later one. Hence, when linked to some TT in the past, as in

(32a) John was dead. (= 18a)

then this is done in contrast to some prior possible TT at which John was not dead, but not in contrast to some later TT. This immediately explains why

(32b) John has been dead. (= 18b)

is odd. T<John be dead>, i.e., the time of John's being dead, has no posttime: Once dead, forever dead. Under a resurrection conception of death, (32b) is possible, of course. Note, finally, that a lexical content such as <John be dead for seven days> **has** a posttime - the time at which John is dead for more than seven days. Therefore,

(32c) John has been dead for seven days

should be appropriate. And so it is.

The distinction between '0-state' and '1-state' lexical contents is not the only one which matters for the use of tense and aspect. There are verbs (and, as a consequence, full INFs), whose lexical content involves two contradictory states, such as being open and being not open, or being dead and being not dead. Such is the case for to open (a window) or to die. I shall say that verbs of this type have a '2-state lexical content'. Of course, both states, being mutually exclusive, cannot obtain at the same time, and this has consequences for the ways in which such contents are linked to some TT. The two states must be inherently ordered. I shall call the first state of such a '2-state content', **source state**, and the second state, **target state**. In the case of to die, the source state is not being dead^{xi}, and the target state is being dead. In leave (the kitchen), the source state is (or more precisely, includes, because there may be other features which characterise the source state) being in (the kitchen), the target state is not being in (the kitchen), and so on. Note, again, that the lexical content by itself does not say anything about the time span to

which any of these two states within such a 2-state content is eventually linked, nor about its duration. Moreover, it does not say anything about the **transition** between both states - for example, whether it is abrupt or smooth. Whatever we know about the nature of this transition stems from world knowledge.

Lexical contents do not occupy a place on the time axis. But they can be linked to time in a finite utterance (in various tense and aspect forms). Only then, it makes sense to talk about the time of situation TSit. In the case of 1-state contents, TSit is simply some limited time span (about whose position relative to TU and about whose duration nothing is lexically specified), In the case of 2-state contents, TSit is compound. It consists of two parts, TSit of the source state and TSit of the target state. Let us assume, for example, that the source state of <John leave the kitchen> can be characterised as John being in the kitchen, and somehow being active to reach the target state; this target state is his not being in the kitchen. In section 3.3 above, we gave a definition of the English aspect. According to this definition, the continuous form (i.e., the PROGRESSIVE) marks that TT is included in TSit. The simple form (i.e., the PERFECTIVE) marks that TT includes the end of TSit and the beginning of the posttime of TSit; and the perfect (i.e., the PERFECT) places TT in the posttime of TSit. This definition easily extends to cases in which the lexical content includes two contradictory states, if we assume that in English, the source state of 2-state contents is treated like the single state of a 1-state lexical content. This means that, in the case of the progressive, TT must fall into TSit of the source state. Thus,

(33a) He was leaving the kitchen.

means that at TT, which is prior to TU, he is in the source state of leaving, i.e., in the kitchen and active in bringing about the target state. No claim is made as to whether he reached the target state within the time for which the claim is made.

The perfect,

(33b) He had left the kitchen.

places TT in the time after the source state, i.e., in the time which corresponds to the target state (or even later). And the perfective

(33c) He left the kitchen.

means that a bit of the source state and a bit of the target state must fall into TT, which in turn is before TU. In other words, within the time for which a claim is made, he must first be in the kitchen and then out of the kitchen.

It may be helpful to illustrate this by some simple diagrams (a precise model-theoretical definition is given in Klein and von Stechow 1991). In what follows, TT, here $TT < TU$, is marked by brackets [], the time of the source state by —, and the time of the target state by +++++ (in the case of 1-state contents, +++++ is lexically not specified, and in the case of 0-state contents, ---- has no boundaries):

John was leaving Pontefract.

—[----]-----+++++

John had left Pontefract.

-----++++[++++]++++

John left Pontefract.

-----[-----]+++++

In order to keep the diagrams simple, we have marked a 'sharp' boundary between source state and target state; but note that the lexical content itself leaves this unspecified.

From the diagrams, it becomes immediately clear that if John left Pontefract at $TT<$, then there must be some $TT'<$ which only falls into the time of the source state of his leaving Pontefract. Hence, someone who claims John left Pontefract is also committed to claim John was leaving Pontefract - **but he is not committed to make this claim for the same time**. In fact, $TT<$ and $TT'<$ must be different. Similarly, someone who claims that John left Pontefract is committed to the claim that John has left Pontefract - but again, TT is not the same in both cases.

On the other side, the claim that, upon some time, John was leaving Pontefract, does not include the claim that John reached the target state within that time (or at all). He may have changed his mind. But note that is not allowed, either, to conclude from John was sleeping to John slept or to John has slept, **if the time for which the claim is made is kept constant**. This is in contrast to a view commonly held in the literature. See, for example, the discussion of the so-called 'imperfective paradox' in Dowty (1979: xxx). I think the paradox disappears if the relevant parameters are kept constant. If, for example, TT is fixed by a question like What was John doing when you looked into his room, then the answer He was sleeping is a claim about exactly this time, say two minutes before TU (if you happened to look into the room two minutes before TU). It is true, then, that he has slept and that he slept. But any such claim is for a different time span than exactly two minutes before TU . The conclusion from John was sleeping to John slept is like the conclusion from He was dead to He was alive, which is correct if the time parameter is not kept constant: If he was dead at some time, then there must be a preceding time at which he was alive.

This ends our discussion of lexical content of INF for the moment. As was said above, it is important to distinguish between the properties of some $TSit$ - which, being a time span, always has boundaries and a position relative to TU - and properties of the lexical content. A lexical content, such as $\langle \text{John be in Pontefract} \rangle$ does not say anything about boundaries and position. But such a lexical content can be enriched by elements which do exactly this, for example adverbials. Exactly this is important for a solution of the present perfect puzzle to which we will return now.

5. The P-definiteness constraint

According to the analysis suggested here, the present perfect has a tense component and an aspect component. The tense component says that TT includes TU ; hence TT cannot be specified by an adverbial like yesterday whose lexical meaning is 'at some time span within the day which precedes the day which includes TU '. The aspect component says that TT is in the posttime of $TSit$; hence $TSit$ itself is in the past. There is no reason why this time cannot be made explicit by some past time adverbial. The case of (12b), repeated here,

(12b) (Yesterday, Mary came to John's office at seven.) But John had left at six.

shows that a temporal adverbial indeed can specify $TSit$, here the time of John's leaving. It is strange now that in the very same situation one cannot say:

(34) At seven, John had left at six.

Clearly, (34) is true in this constellation. But it gives the somewhat unfortunate impression that at some other time yesterday, John had not left at six. Now, if John had left at yesterday six, then John had left at six is

- nonsense for any $TT<$ earlier than six
- true for any $TT<$ after six.

Therefore, it would be odd to give an explicit specification of some TT. If TT is before yesterday at six, say yesterday at five, then the claim is nonsense. It does not make sense to claim for yesterday at five, that he had left yesterday at six. And it would be odd to single out some specific TT after six, in contrast to any other possible TT after six. The explicit specification of some time span only makes sense, if some other possible time spans are **excluded** in this way. This is not only the reason for the oddity of (34) but also the reason for the incompatibility of the present perfect and past time adverbials. We will now work out this idea in some more detail.

Suppose the two utterances

(35a) John had left.

(35b) John had left yesterday at six.

are made on the same occasion. Then TSit, the time of John's leaving, could well be the same. The difference is only that in (35a), the position of TSit in relation to TU is not lexically fixed. Nothing in the lexical content <John leave> tells us how TSit is related to TU, and if we know anything about the position of TSit, then it is only via the finite verb: TSit must precede TT, and TT in turn is before TU. This is different for (35b). Here, the lexical content <John leave yesterday at six> itself tells us something about the position of TSit in relation to TU (where TU itself has to be taken from contextual information, of course).

Resuming the terminology of section 3.2, I shall say that an expression, whose lexical content explicitly specifies the position of a time span in relation to TU, is 'p-definite': It fixes a definite position on the time axis. Similarly, an expression whose lexical content specifies the boundaries of some time span I will call 'b-definite'.^{xii} For instance, the lexical content <John be in Pontefract> is neither p-definite nor b-definite. The lexical content <John be in Pontefract on March 1st, 1990> is p-definite but not b-definite. The lexical content <John be in Pontefract from two to four> is b-definite but not p-definite. And finally <John be in Pontefract yesterday from two to four> is both p-definite and b-definite.^{xiii}

In all of these examples, the lexical specification of position or boundaries concerns TSit - the 'event time'. But the finite utterance contains a second time span, TT. TT is expressed by expressed by FIN. Is FIN p-definite? As was argued in section 3.2, this is different (in English) for present tense forms, on the one hand, and future tense and past tense forms, on the other. The former specify TT₀, the latter TT< and TT>, respectively. Present tense is always p-definite but not b-definite - a morpheme such as is fixes the position of TT₀, but not its boundaries: TT₀ must contain TU, but it can be short or long. In John is ill, the duration of TT₀ is not lexically specified, but there cannot be two TT₀ which precede or follow each other. This is different for John was ill. Here, we may have two TT<: they can precede each other, follow each other, overlap with each other. In a word, past tense morphemes (and similarly future tense morphemes) are neither p-definite nor b-definite.

P-definiteness, b-definiteness etc are properties of expressions; they depend on what the lexical content of these expressions is. This is not quite correct for deictic and anaphoric expressions whose lexical content requires systematic completion by context. The pure lexical content of, for example, the adverbial five minutes ago is something like 'five minutes before TU': It specifies a time span in relation to TU, and what TU is, must be added by contextual information. Hence, an expression such as five minutes ago is strictly speaking not p-definite, since its lexical content by itself does not suffice to specify a fixed time span on the temporal axis. What is p-definite, is 'the expression-in-use', i.e., when used in a context which provides the necessary information, here about TU. This applies analogously for anaphorical expressions, such as three days after that, which fixes a position of a time span on the temporal axis in relation to the time of whatever that refers to - and this information must come from (preceding) context. In what follows, we shall say that an expression is p-definite, iff its lexical content **in appropriate context** fixes the position of a time span on the time axis.^{xiv}

Now, we can state the following pragmatic principle:

(36) P-definiteness constraint

In an utterance, the expression of TT and the expression of TSit cannot both be independently p-definite.

This excludes utterances like

(37) At seven, John had left at six.

(38) John has left at six.

In both cases, the lexical content of INF <John leave at six>, hence the expression of TSit is p-definite. In (37), the position of TT is explicitly specified (in context!) by the p-definite adverbial at seven. And in (38), the position of TT is explicitly specified by the present tense morpheme has, which is p-definite. Note that nothing in the actual temporal constellation excludes (37) or (38): If John indeed left at six, then both (37) and (38) are true. The P-definiteness constraint is a pragmatic, not a semantic or even syntactic constraint.

The pragmatic reason for the constraint is easy to see. Suppose it is claimed that John left at six. Then, it is clear that any time span after six falls into the posttime of John's leaving. Hence, it would be pointless to single out some particular time span, in contrast to some other one, and to claim for this time span that it falls into the posttime of John's leaving. If, however, the claim only extends over John's leaving, as for example by John had left, then the position of the poststate of TSit is not lexically fixed. Therefore, it makes sense to single out some TT, in contrast to some other TT, for which this claim is made, as in:

(39) At seven, John had left.

It may well be that at five, he had not left. So, there is a reasonable contrast.

The P-definiteness constraint allows maximally one of the two time spans, TT and TSit, to be expressed by a p-definite expression. It will be interesting to have a look at cases where only one or even no time span is lexically specified. In

(40a) John has been in Pontefract.

the expression of TT (has) is p-definite, whereas the expression of TSit is not: We do not know the time of his stay, except that it must be before TT, hence in the past. In conventional terms: The 'time of the event' is in the 'indefinite past' (cf. section 3.3 above and McCoard (1977), chapter 3).

In the simple past variant

(40b) John was in Pontefract.

neither the expression of TT nor the expression of TSit are p-definite. Therefore, such an utterance is somehow 'hanging in the air', unless it is clear from contextual information when either TT or TSit are. The same is true for the future

(40c) John will be in Pontefract.

Again, either context must provide the necessary specification, or some explicit adverbial.

6. Three apparent exceptions

The P-definiteness constraint is a pragmatic constraint: It is not false to have both TT and TSit expressed by p-definite expressions, nor do syntactical rules forbid this. It just does not make sense. It is imaginable

that under specific pragmatic conditions, the constraint does not apply. Three possible exceptions will be discussed here; it will turn out that none of them really violates the constraint.

The first case concerns past time adverbials which indeed go with the present perfect (cf. examples (5), repeated here):

(41a) John has been in Pontefract before.

(41b) John has just left.

(41c) John has recently arrived.

In all of these cases, TT is expressed by a present tense morpheme; moreover, the adverbial places TSit - the time of John's previous stay in Pontefract, his departure, his arrival - in the past. But this does not necessarily mean that <John be in Pontefract>, <John just leave> or <John recently arrive in Pontefract> are p-definite. In fact, I think that adverbials such as just, recently (in this position) and bare before can fix the position of TSit independent of TT. Let us consider these cases in turn.

Bare before specifies a time span in relation to some other time span, which I will call here its RELATUM. Bare before means 'before RELATUM'. What is this RELATUM? It cannot be the time of utterance (as is the case for ago), because then, (41a) would mean the same as John has been in Pontefract, with TSit being before TU = RELATUM.

But the RELATUM cannot be the time of some previously mentioned 'event', i.e., some anaphorically given TSit, either. It is not possible to say:

(42) Last week, John arrived in London. He has been in Pontefract before.

with the intended reading: before his arrival in London. In order to get that reading, one would have to say Before that, he was in Pontefract or, less good perhaps, He was in Pontefract before that.

In (41a), two **possible** stays of being in Pontefract are involved. One is at issue right now - I will call its time TSit' - an earlier one, with time TSit". The RELATUM of bare before is TSit', the time of the second possible stay in Pontefract. So, we have: T<John be in Pontefract before> = before T<John be in Pontefract>. And the **claim** made by (41a) is - according to the general definition of the present perfect - that TT falls into the posttime of T<John be in Pontefract before>, where TT includes TU. The case is fully analogous for

(43) John had been in Pontefract before.

with the only exception that here, TT must precede TU.

Note that (41a) does not claim that John is in Pontefract at present. It does not even mean that John was there twice, as becomes clear from a sequence like

(44) John and me are going to Pontefract. I have no idea what this place is like, but John should know. He has been in Pontefract before.

In this case, TSit' - the time of John's possible second stay there - is in the future (and no claim is made about whether John will indeed ever be there in the future), and TSit" is before that time (because of the bare before) and before TU (because of the has).

Since the position of TSit' is not lexically specified, the position of TSit" is not lexically specified, either. Therefore, (41a) does not violate the p-definiteness constraint.

The case is somewhat different for adverbs such as just, recently. They express an immediate past, a time which immediately precedes TU, and therefore show a specific relation to the present. It is this

immediacy, so the assumption goes, which make them compatible with the present perfect. I do not think that this explanation is correct. The notion of immediacy may vary according to context, but it seems plausible to assume that, for example, one minute ago is fairly recent in

(45) *One minute ago, John has left the room.

Nevertheless, this is odd. Note, further, that one cannot say

(46) *Recently, John has left Pontefract.

although there is no reason to assume that recently is less recent in initial position than before VP. Hence, the notion of 'immediate past', attractive as it looks, cannot be the full truth.

In fact, these adverbials need not be related to TU at all. Consider

(47a) John had just left.

(47b) John had recently arrived in Pontefract.

Apparently, adverbs like just, recently in middle position mean 'a short time before TT', and TT may be in the present or in the past (and, in the case of just, also in the future). If this is correct, these adverbials do not specify a time span, here T<John leave> and T<John arrive in Pontefract>, **independently** of FIN and TT, as is the case for adverbials like yesterday at ten or on March 1st, 1990. Hence, they do not violate the P-definiteness constraint.

Note that recently, when used in other positions, does not relate to the TT of the same sentence, but to some other RELATUM. This is illustrated by

(47c) Recently, John had arrived in Pontefract.

Here, recently specifies the time of had itself, and not some time which immediately precedes the time of had. And for exactly this reason, (44) is impossible.

I have no explanation for the fact why the possibility of having adverbials in a position where they can take up TT is limited to relatively few like just or recently.

Let us turn now to a second class of possible exceptions. It is odd to say

(48a) *At Christmas, John has been in London.

(48b) *John has been in London at Christmas.

The reason seems clear: the adverbial at Christmas specifies some time in the past, the time of John's stay in London. Hence, both utterances violate the P-definiteness constraint.

But consider now:

(48c) Why is John in jail? - He has worked at Christmas, and working at Christmas is strictly forbidden in this country.

This is possible, because at Christmas does not necessarily relate to some specific time in the past (as becomes particularly clear in the non-finite continuation working at Christmas). In other words: Adverbials such as on Sunday, at Christmas, in spring need not be p-definite, and under a non-p-definite reading, they are in fact compatible with the present perfect.

The same considerations apply to adverbials such as at ten. Every day has a time span (in fact, two time spans) which can be characterised by at ten, whereas only one time span can be characterised by yesterday at ten p.m. (if TU is given). The difference is illustrated by utterances such as

- (49a) The traffic makes it often almost impossible to leave London at ten.
(49b) *The traffic makes it often impossible to leave London yesterday at ten p.m.

Consider now the following utterance (pointed out by an anonymous referee) which, at first glance, seemS to violate the constraint:

- (50) John has left at very different times: He has left at ten, he has left at eleven, ...

Clearly, at ten does not fix a single time span here, and hence these cases are not at variance with the P-definiteness constraint.

Note, further, that (50) could easily continued by

- (51) Today, for example, he has left at six.

What is not possible, however, is

- (52) *He has left today at six.

In this case, today at six would indeed fix a specific time span on the temporal axis, and (52) would mean 'right now (for example at seven), he is in the poststate of leaving today at six'.

The role of the initial adverbial today in (51) is it to mark the (maximal) boundaries of the topic time. The present tense form has is p-definite but not b-definite: it says that TT must include TU, but it does not say anything about how long TT is. This is also the function of the initial adverbial in utterances such as (again, these examples were brought to my attention by an anonymous referee):

- (53a) Today, John has finished his work.
(53b) This morning, John has finished his work.
(53c) This spring, John has finished his work.

In all of these cases, TT is specified twice: The form has says that it must include TU, and the initial adverbial specifies the (maximal) duration of the time for which a claim is made by this utterance. Nothing is directly said about TSit. Normally, we are inclined to assume that TSit also falls within the boundaries of today (or this morning, or this spring). After all, there would be no reason to confine the claim to today, unless there is reason to assume that before today, he was not in the poststate of finishing his work. But consider a sequence such as

- (54) I am not sure, but I think, yesterday morning, you could easily have met him here in London. But today, he has left London.

This does not exclude that his actual leaving, hence TSit, was yesterday evening.

The third problem is illustrated by utterances such as

- (55) Yesterday, John had left at six.

It would appear that (55) contains two independent p-definite expressions, as is illustrated by

- (56) Yesterday, John had left.
(57) John had left at six.

In (56), yesterday specifies TT, and in (57), at six specifies TSit. Taken together, we get (55), and this should be odd. But it isn't. The reason is simple: The two adverbials in (55) need not necessarily be p-definite. Utterance (55) can mean that yesterday at six, he was in the posttime of leaving (i.e., only TT is specified), or else, that at some unspecified time in the past, he was in the posttime of leaving at six (i.e. only TSit is specified). The former reading is invited, if the main stress is on left, the latter reading is invited, if the main stress is on at six. In other words, there is only one p-definite time specification in (55), namely yesterday at ten, which, depending on intonation, specifies either TT or TSit, but not both. If (55) is indeed interpreted as containing two independent p-definite adverbials, it would be odd, as in

(58) Yesterday at seven, he had left yesterday at six.

It is an interesting question why in (55), part of the single time specification yesterday at six is fronted, whereas the other is at the end. But this is a question which would lead us to far afield from the problem of the present perfect puzzle.

7. Conclusion

Two questions raised in section 1 remain to be answered. First, why are questions such as

(59) When has John left his wife? (= 7a)

so odd? When is clearly not p-definite - it does not specify any time span but asks for the specification of a time span. But any legitimate **answer** to this question would violate the P-definiteness constraint, and therefore, it is odd to ask such a question.^{xv}

We note in passing, that the oddity of these questions cannot be due to a possible scope restriction of when, according to which when can only ask for TT, not for TSit. Since has in (59) already specifies the position of TT, the question is redundant, if when asks for TT. The question would not be redundant, however, if when can also ask for TSit, i.e., for the time of John's leaving his wife. Suppose now that John's wife was murdered yesterday at ten. Then, it would be perfectly correct for the coroner to ask at the inquest:

(60) When had John left his wife?

if he wants to find out the time of John's leaving, i.e. TSit. In fact, it is even difficult in this particular context to obtain a reading, in which the time of the had is to be specified.

The second question is, why does the perfect, or at least the present perfect, in German, Dutch, French behave so differently? Since the pragmatic factors underlying the P-definiteness constraints should be no less operative in other languages, the reason must be that the 'tense component' of the present perfect in these languages is not p-definite. In German, for example, it is equally possible to say (in appropriate context):

(52) Ich habe den Antrag gestern eingereicht.

I have the application yesterday turned in.

(53) Ich habe den Antrag morgen eingereicht.

I have the application tomorrow turned in.

What (53) means, is: At some time tomorrow, I will have turned in the application. The adverbial specifies TT. i.e., a time span which, in this case, excludes TU. Hence, habe is not p-definite. In (52), the

normal reading is that gestern specifies TSit. And since there is no reason to assume that habe is p-definite, this does not violate the p-definiteness constraint. A precise analysis of the German present is not an easy task to accomplish (see, e.g., Ehrich 1991), and surely beyond our present concerns.

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ⁱ1. This may be less clear if not a real 'event' but a 'state' is meant, as in John has been ill., a point to which we shall return in section 4.

ⁱⁱ2. There is a rich literature on the English perfect, and the present perfect in particular. Good and comprehensive surveys are McCoard (1978) and, more recently, Fenn (1987). The notion of perfect in general is best dealt with in Comrie (1976), chapter 3.

ⁱⁱⁱ3. Throughout this paper, I will only deal with main clauses. In principle, the solution to the puzzle suggested here, as well as the general analysis of tense and aspect, work analogously in subordinate clauses. But their analysis is complicated by at least one major factor: The meaning, here in particular the temporal meaning, of a subordinate clause is also affected by the type of complementizer, and the semantic function of this operator may be very different. In some cases, as in before he left, the complementizer takes some time span (the time of his leaving) and assigns it another time span (here the pretime of this leaving). This is very different, for example, for if-clauses or for whether-clauses. The inclusion of subordinate clauses would inevitably have

to include an analysis of various complementizer types and their function. This, however, is beyond the scope of this paper. For an excellent analysis of the role of temporal complementizers, see Herweg (1990).

^{iv}4. For a detailed discussion of these problems, and a solution of some of them, see Klein (1991), chapters 7-9, and Klein and von Stechow (1991). The latter paper contains a model-theoretical semantics of tense, aspect and (many types of) temporal adverbials along the lines globally sketched here.

^v5. The complexity of the problem is nicely illustrated by the following set of examples (which also relate to the present perfect puzzle). It is possible to say (x) but not (y):

(x) John was dead.

(y) *John has been dead.

On the other hand, it is possible to say (y), when it is expanded by a durational adverb:

(z) John has been dead for two days.

In fact, we will explain below (cf. examples (32a-c)) why this is so. But note that it is odd again to say

(u) *For two days, John has been dead.

^{vi}. In his immediate comparison of simple past and present perfect, Reichenbach says that in this latter case '... the past events are seen, not from a reference point situated also in the past, but from a point of reference which coincides with the point of speech.' (1947: 289). But then 'is seen from' must be more than 'being simultaneous to'. What Reichenbach seems to have in mind here, is apparently a kind of aspectual function - different ways of seeing the event in question. But this idea (which, as Reichenbach's complete analysis, is found in Paul (1888)) is not further elaborated.

^{vii}7. There is a number of interesting complications with the notion of 'permanent property'. What, for example, is understood by the door? It is surely possible to say When I was a child, the door was iron; but now, it is wooden. Under this understanding of the door, its being iron is surely not a permanent property. This and many related problems will be ignored in the present context (although they are important for any deeper analysis of tense and aspect and hence cannot be ignored in a more comprehensive study of temporality in natural language).

^{viii}8. There are also other meaning components, such as modality, which are not relevant here. In general, modality should be seen as a different constraint on the claim raised in FIN; it does not restrict it to a particular time but "mellows" it in a systematic way.

^{ix}9. It is sometimes assumed that proper names have no lexical content. I do not share this view. I think they have some particular syntactic properties (such as being full noun phrases), and some special conditions of use (normally, they serve to identify an object or person, but they can

hardly used as predicates); but their lexical meaning is simply to be called such and such.

^{x10} As was said in footnote 7, it is usually possible to give a non-permanent reading to lexical contents such as <the door be iron>, too. Under such a reading, (30b) is perfectly appropriate. (For example, if we imagine that there is a chemical process which makes it possible to transform iron doors into plastic doors).

^{x11} This need not be the only characteristic feature of the source state of to die. This state may also involve something like getting worse, as is suggested by utterances such as He was dying. In general, a precise characterization of the full lexical content of some verb (or compound expression) is a difficult task. Consider, for example, a lexical content like <John cross the street>. Should we say, for example, that the source state is 'John be at the one side of the street', and the target state 'John be at the other side of the street'? According to the definition of '2-state lexical contents', the two states should contradict each other. Hence, it would be more appropriate to analyse the target state as 'John be at the other side of the street' and the source state as a combination of 'John not be at the other side of the street' and 'John being active to reach the target state in some particular way.' It may also be that source state (and similarly target state) are compound in themselves, i.e., consist of substates. These problems are extremely complicated. In fact, they belong to the most difficult in linguistics, and I shall not try pursue them here, in particular since they are not directly relevant to our present concern.

^{x12} There is also the possibility that expressions are 'q-definite', i.e., their lexical content specifies a definite frequency, such as <John be twice in Pontefract> vs. <John be in Pontefract>. This case is not directly relevant here, so we will not consider it here.

^{x13} Note, however, that a distinction has to be made between lexical specification of boundaries and lexical specification of a definite duration - a case which we may call 'd-definite', as in <John sing for two hours>. 2-state contents can never be d-definite, since their TSit consists of two components, TSit of the source state and TSit of the target state. Thus, the lexical specification of a duration can at best relate to one of the two states, as for example in <John leave London for two weeks>. Thus, John plans to leave London for two weeks can mean that he plans to be in the target state 'away from London' for two weeks; some people also accept a reading under which the duration of the source state is meant, i.e., the being in London and the being involved in bringing about the target state lasts that long. But it is definitely excluded that for two weeks simultaneously specifies the duration of the source state and the target state. This explains the otherwise mysterious fact why it is impossible to specify the duration of events, like John's leaving London, by a durational adverbial. After all, events last, and the notion of duration itself is nothing but the multiple (or fraction) of some regular event.

^{x14} The structural context-dependency of deictic and anaphoric expressions must not be confused with the global context-dependency of virtually all utterances made on a particular occasion. Since this point may easily lead to confusion, let me illustrate it by an example. Consider

(x) Yesterday, I went by train to York. My wife picked me up at the station.

(y) Yesterday, I went by train to York. My wife picked me up at the station there.

After (x), we are inclined to assume that my wife picked me up at the station in York. But this is not stated, it is a global (and plausible) inference. In (y), it is explicitly stated by the deictic adverbial there - in contrast to at the station here or at the station just before York.

^{xv}15. An anonymous referee has pointed out, as a possible counterexample, the following legitimate question-answer sequence: When has John ever left her bedside? - Only once, to get coffee for her. I must admit that I have no ready explanation for cases of this type, i.e., with the negative polarity item ever. But note that they are different from 'normal' when-questions in at least two respects. First, When did John leave her bedside? presupposes that he indeed left her bedside. This is not so with When did John ever leave her bedside? In fact, this question seems to carry the implicature that he never did. And second, the 'normal' when-question asks for the specification of some specific time span, and hence is appropriately answered by, for example, Yesterday at ten o'clock (he left her bedside). Such an answer seems somewhat inappropriate after the ever-question. To be clear: These observations do not explain why When has John ever left her bedside? is possible. Such an explanation seems impossible without a careful discussion of the role of negative polarity items.