THE CORE SEMANTICS OF THE PRESENT PERFECT*

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1. Perfectly compositional?

1.1. The problem

The present perfect in German is one of three perfect constructions in this language, which are illustrated in (1-1). In each of these constructions, the verb appears in the past particial form and is combined with an auxiliary - in this case, *haben* ('have'); other verbs form their perfect constructions with the auxiliary *sein* ('be'). The auxiliary can then be combined with a tense - i.e. the present tense as in (1-1a), the past tense as in (b), or the future tense as in (c).

(1-1) a. PRESENT PERFECT: Hans *hat* seine Freundin *angelogen*.
             Hans has his girlfriend lied-to
         b. PAST PERFECT: Hans *hatte* seine Freundin *angelogen*.
             Hans had his girlfriend lied-to
         c. FUTURE PERFECT: Sie *wird* ihn bald *verlassen haben*.
             She become him soon left have

The ultimate goal of this paper is to start explaining the semantics of these three perfect constructions. As will shortly become clear, however, the present perfect is the most intricate of the perfect constructions; hence, I will focus on the present perfect. The idea behind this strategy is that if the semantics of the present perfect has been figured out, the semantics of the past perfect and of the future perfect should fall out automatically as a by-product of the semantics of the present perfect combined with an account of the past tense and the future tense.

· This paper approaches the German present perfect by asking whether the present perfect can be given a compositional analysis, and if so, how. In principle, the task seems clear. The construction consists of the morphosyntactic items listed in (1-2),

$$(1\text{-}2) \quad \text{verb} + \text{past participle morph.} + \begin{bmatrix} \text{auxiliary } haben \\ \text{auxiliary } sein \end{bmatrix} + \text{present tense}$$

and thus, it seems obvious what we have to do - namely, to see what the semantic contribution of each item is and then glue everything together. Viewed from a different angle, the task may also be described as follows: we have to see what

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semantic components we have to attribute to the present perfect construction in order to describe its semantics adequately; the next step would be to investigate how the semantic components are distributed on the morphosyntactic material shown in (1-2).

Yet there is a strong disagreement in the literature on whether the present perfect can be given a compositional analysis. While most traditional grammarians and historical linguists as well as many modern theoretical linguists (e.g. Wunderlich (1970), Comrie (1985), Nerbonne (1985), Bierwisch (1996)) believe that the present perfect cannot be analyzed compositionally, many other linguists pursue compositional accounts. These latter accounts start out with the assumption that the construction corresponds to the combination of three components semantically - the verb, a component that expresses anteriority, and the present tense. Such accounts were proposed, for instance, by Bäuerle (1979)[1], Janssen (1988), Fabricius-Hansen (1986, 1994), Ballweg (1989), Ehrich/Vater (1989), Ehrich (1992), Zeller (1994), and Grewendorf (1995). Even the compositional proposals differ, however, both with regard to the question of how the components are combined and of what the semantic contribution of each component is. Ballweg (1989), for instance, suggests an analysis like (1-3a), where the combination of the participle morpheme and the auxiliary expresses the anteriority, called "perfect". Contrasting with this, Grewendorf (1995) proposes an analysis like (1-3b). According to him, the auxiliary and the present tense are a unit semantically, the auxiliary is virtually semantically empty, and the past participle morpheme expresses completedness of the situation denoted by the verb.

(1-3)   a.   V + [$_{perfect}$ PART + AUX] + PRES
        b.   V + PART$_{compl}$ + [AUX$_\varnothing$ + PRES]

Note that what Ballweg's and Grewendorf 's accounts have in common is that they do not assign crucial content to the auxiliary as such. One of the reasons for this is that in general, combinations of auxiliaries and participles or infinitives are highly idiosyncratic semantically. This is sketched in the table in (1-4).

(1-4)

auxiliary	verb form	resulting meaning
haben ('have')	infinitive (+ *zu*)	modal, necessity
	past participle	perfect
sein ('be')	infinitive (+ *zu*)	modal, necessity/possibility
	past participle	depending on the verb: (a) stative passive, or (b) perfect
werden ('become')	infinitive	(a) future (b) modal, supposition of the speaker
	past participle	eventive passive

Thus, it seems difficult - if not impossible - to assign uniform denotations to the auxiliaries as such. Facing this situation, taking auxiliaries as semantically vacuous items does not seem to be the worst strategy. But not only the analysis of the auxiliaries contained in present perfect constructions is problematic; the semantic

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[1] To be precise, Bäuerle (1979) assumes this for one reading of the present perfect; he assumes that the present perfect is ambiguous. For more on ambiguity accounts of the present perfect, see below.

analysis of the simple present tense and the semantic analysis of the past participle morpheme turn out to be difficult as well because there do not seem to be well-established analyses available for either of these components.

Thus far we have looked at the morphosyntactic components that the present perfect construction comprises. Let us now take a brief look at the main semantic characteristics of the construction and consider the question of what semantic components we might need in order to describe its semantics.

1.2. Some characteristics of the present perfect

It is well-known that the present perfect can express some kind of anteriority that is similar to the anteriority expressed by the simple past tense. Thus, the sentences in (1-5) seem to have exactly the same meaning.[2]

(1-5)   a.   PRESENT PERFECT: Hans *hat* gestern einen Brief *geschrieben.*
                                    Hans has yesterday a letter written
        b.   PAST TENSE: Hans *schrieb* gestern einen Brief.
                                    Hans wrote yesterday a letter

However, it is also well-known that the present perfect and the past tense cannot always be substituted by each other without a loss of acceptability or a change of meaning. Thus, the examples in (1-6) illustrate that the acceptability of the present perfect or the past tense can vary in some constructions for some reason or other. The particular examples in (1-6) suggest that one trigger of effects like this might be restrictions on the use of the past tense in embedded clauses.

(1-6)   a.   Daß ich Gereon *gesagt habe*, ich würde gehen, war falsch.
             that I Gereon told have I would leave was wrong
        b.   ?? Daß ich Gereon *sagte*, ich würde gehen, war falsch.
             that I Gereon told I would leave was wrong

(1-7) and (1-8) illustrate another difference between the present perfect and the past tense. It seems that the past tense can only be combined with past time adverbials (1-7), while the present perfect can be combined with past time as well as present time or future time adverbials (1-8).

(1-7)   a.   PAST ADVERBIAL: Hans schrieb *gestern* den Brief .
                                    Hans wrote yesterday the letter
        b.   PRESENT ADVERBIAL: *Hans schrieb *jetzt* den Brief.
                                    Hans wrote now the letter
        c.   FUTURE ADVERBIAL: *Hans schrieb *morgen* den Brief.
                                    Hans wrote tomorrow the letter

(1-8)   a.   ·PAST ADVERBIAL: Hans hat *gestern* den Brief geschrieben.
                                    Hans has yesterday the letter written
        b.   PRESENT ADVERBIAL: Hans hat *jetzt* den Brief geschrieben.
                                    Hans has now the letter written
        c.   FUTURE ADVERBIAL: Hans hat *morgen* den Brief geschrieben.
                                    Hans has tomorrow the letter written

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2 Note that in the glosses, I translate German occurrences of the present perfect with the English present perfect, regardless of whether the result is acceptable.

It is important to note that these examples indicate that positional temporal adverbials in present perfect constructions - and in fact in all perfect constructions - differ from adverbials in simple tense clauses insofar as in principle, they can specify two different kinds of time that are important for the interpretation of perfect constructions. One option is that they specify the event time or SITUATION TIME (TS) of the verb. The other option is that they specify the time from which the situation time of the verb is calculated; roughly speaking, this is the time that is associated with the auxiliary and that can be located after the situation time of the verb. Using Reichenbach's (1947) term, let us call the latter time the REFERENCE TIME (R). For presentational reasons, this is illustrated with English past perfect clauses and their preferred readings in (1-9).

(1-9) a. TS-SPECIFICATION: He had left *at 10.* = The leaving took place at 10.
       b. R-SPECIFICATION: *At ten,* he had left. = He was gone at ten.

Preferences for one reading or the other can be triggered by several factors. In English, the initial position of the adverbial or its position right after the subject support R-specification (1-10). The corresponding versions of German sentences do not trigger any of the readings particularly, cf. (1-11a, b). But TS-specification is strongly supported when the adverbial is topicalized together with the (rest of the) VP (1-11c). Moreover, stress on the auxiliary supports R-specification (1-12b), while stress on the past participle supports TS-specification (1-12a).

(1-10) a. TS-SPECIFICATION: He had left *at ten.*
        b. R-SPECIFICATION: *At ten,* he had left.

(1-11) a. TS- or R-SPECIFICATION: Er war *um zehn* weggegangen.
                                     he was/had at ten left
        b. TS- or R-SPECIFICATION: *Um zehn* war er weggegangen.
                                     at ten was/had he left
        c. TS-SPECIFICATION: [*Um zehn* weggegangen] war er.
                                     [at ten left] was/had he

(1-12) a. TS-SPECIFICATION: weil er um 10 WEGgegangen war
                                     since he at 10 LEFT was/had
        b. R-SPECIFICATION: weil er um 10 weggegangen WAR
                                     since he at 10 left WAS/HAD

The following examples illustrate another property of the present perfect which is actually crucially related to the ways in which adverbials can relate to perfect constructions. (1-13a), a case of R-specification, is compatible with the fact that Hitler's attack took place before September 2, 1939 - namely, on September 1, 1939. But (1-13b) is hopelessly false; the past tense in this sentence wrongly requires the attack to have taken place on September 2 in order to make the sentence true because it can only be combined with a TS-specifying temporal adverbial.

(1-13) a. Am 2.9.1939 hat Hitler Polen überfallen.[3]
            on 2.9.1939 has Hitler Poland attacked
        b. Am 2.9.1939 überfiel Hitler Polen.
            on 2.9.1939 attacked Hitler Poland

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[3] Examples from Thieroff (1992).

Similarly, the sentences in (1-14), where the present perfect and the past tense are each combined with the adverbial *schon* ('already') express different meanings.

(1-14) a. Er hat schon gegessen. = He finished his meal.[4]
           he has already eaten
       b. ≠ Er aß schon. = He already started eating.
           he ate already

While the present perfect version in (1-14a) suggests that his meal is finished, the past tense version in (1-14b) only suggests that he has already started eating.

Since examples like (1-13a) and (1-14a), but not (1-13b) and (1-14b), seem to refer to completed attack-situations and completed eating-situations, respectively, they may suggest that the kind of anteriority expressed by the present perfect differs from the one expressed by the past tense. Thus, Grewendorf (1995), Ballweg (1989), Ehrich and Vater (1989) attribute some kind of completedness of the situation denoted by the verb to the perfect construction. Comrie (1976), Fabricius-Hansen (1994), and Zeller (1994), however, suggest that the present perfect in German expresses the same kind of anteriority as the past tense. At a closer look it seems clear that completedness of the situation cannot be required of present perfect constructions in general; that the present perfect expresses something like anteriority does not mean that the whole situation must be anterior. The examples in (1-15) illustrate that it is enough if there is an interval before the time of utterance where the sentence can be asserted to be true. In this respect, the present perfect is similar to a past tense. For example, with respect to (a), we do not want to say that Martin's having a headache is over at the time of utterance. With (b), we do not want to claim that Ralf's knowing a lot about aspect is over. And similarly, (c) does not necessarily imply that the tiger has woken up.

(1-15) a. (Ralf hat heute morgen Martin getroffen.) Martin hat Kopfweh gehabt.
           (Ralf has today morning Martin met) Martin has headache had
       b. (Gestern habe ich mit Ralf gesprochen.) Ralf hat viel über Aspekt gewußt.
           (Yesterday have I with Ralf talked) Ralf has much about aspect known
       c. Der Tiger hat geschlafen.
           the tiger has slept

But what about the occurrences of present perfect constructions that can hardly be understood without assuming that the situation denoted by the verb is completed - i.e. sentences like (1-13a) and (1-14a)? - Of course, we are still left with the possibility that the present perfect is ambiguous between an "aspectual reading" where it implies completedness and a "tense reading" where it does not. In fact, several ambiguity accounts of the present perfect have been proposed. Thus, Wunderlich (1970), Bäuerle (1979), and Klein (1997) analyze the German present perfect as ambiguous between an aspectual completedness reading and a past tense reading. There will be much more to be said about this possibility later.

Having become acquainted with some important properties of the present perfect, we are now ready to approach the intricate behavior of the present perfect in more detail, to start explaining it, and to ask to what extent its behavior is due to semantic, syntactic, or pragmatic factors. Before finishing this introductory section however, let me briefly introduce a general framework of temporal semantics that will be helpful for describing the behavior of the construction. Because I want to avoid

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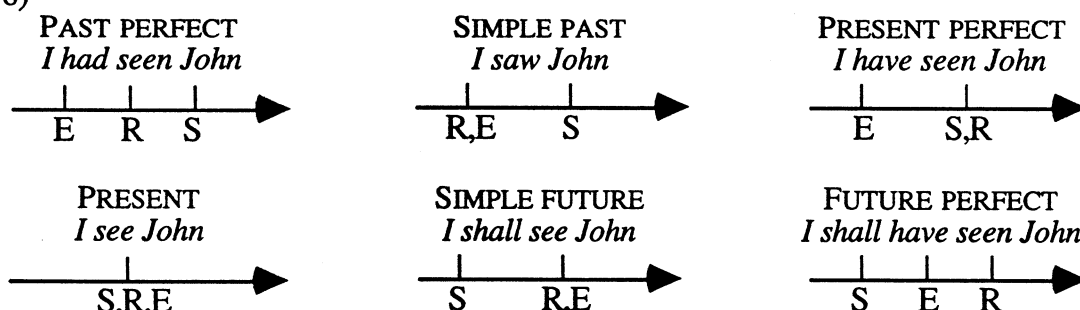
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[4] Examples from Wolfgang Klein (pc).

theoretical preconceptions, I have chosen a version of Reichenbach's (1947) account of tense and Klein's (1992, 1994) theory of tense and aspect, which are not committed to very specific formal and theoretical implementations. Let me start by sketching some basic assumptions of these approaches.

1.3. Tense and aspect

Reichenbach (1947) describes tenses as relations holding between three points of time - the time of utterance or speech time, the time of the situation or event time of the verb, and the reference time. The TIME OF UTTERANCE or SPEECH TIME (TU or S) of a clause is the time at which it is uttered. Its TIME OF THE SITUATION or EVENT TIME (TS or E) is the time at which the event or situation described in the clause takes place.[5] While the notions of speech time and event time are intuitively clear, the notion of REFERENCE TIME (R) is more abstract. It may be characterized as the temporal point of view on the event. On the basis of S, E, and R, Reichenbach defines the set of all possible times. The main idea of this approach is that S, E, and R can stand in all logically possible temporal order relations to each other, i.e. each pair of them can precede or follow each other, or coincide. The diagrams in (1-16) illustrate this for the simple and complex perfect tense constructions in English, where temporal coincidence is indicated by a comma.[6]

(1-16)

PAST PERFECT	SIMPLE PAST	PRESENT PERFECT
I had seen John	*I saw John*	*I have seen John*
E R S	R,E S	E S,R

PRESENT	SIMPLE FUTURE	FUTURE PERFECT
I see John	*I shall see John*	*I shall have seen John*
S,R,E	S R,E	S E R

Reichenbach's three point system has been criticized, exploited or improved in various versions by many linguists (e.g. Bäuerle (1977, 1979), Declerck (1991), Ehrich (1992), Fabricius-Hansen (1986), Hornstein (1990), Janssen (1988), Kratzer (1978), Nerbonne (1985), Vater (1983)).

It is important to note that in its original version, Reichenbach's account captures any particular tense construction as a combination of the ordering relations between all three points S, E, and R, regardless of whether the tense construction is simple or morphosyntactically complex. Especially the simple tenses however strongly suggest that the relation between S and E constitutes the core meaning of tenses. I.e. the present tense locates E at S, the past tense before S, and the future

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[5] The reason why I am introducing two terms and their abbreviations for each parameter is the following: when explaining Reichenbach's original ideas, it seems only appropriate to use the terms he introduced in his work. Nevertheless, Reichenbach's term "event time" seems a bit problematic, because "event" is a term that is still under discussion and used differently in the literature. For example, according to many terminologies, it is only applicable to achievements and accomplishments. Thus the term "situation" seems much less problematic and more general and hence, I will later switch to the term "time of the situation" rather than "event time". Since the abbreviation S or TS for "time of the situation" could then easily be confused with the abbreviation S for "speech time", I will also switch to the term "time of utterance".

[6] Cf. Binnick (1991:111ff).

tense after S. Intuitively, this seems plausible; thus, at first glance, one might think that the function of tense is to locate the event time E of the main predicate of an uttered clause relative to its speech time. For instance, the sentences in (1-17) seem to express that Stefan's calling me, Claudia's getting an appointment, and Uta's winning the marathon are located before the time at which these sentences are uttered.

(1-17) a. Stefan rief mich an.
            Stefan called me at
        b. Claudia bekam einen Termin.
            Claudia got an appointment
        c. Uta gewann den Marathon.
            Uta won the marathon

However, other sentences clearly show that this cannot be quite right. Thus, the marked expressions in the examples in (1-18) are certainly not meant to say that Barschel's being dead, Gunnar's not being a child anymore, and the being dry of the flowers are located in the past but not in the present.

(1-18) a. Sie fanden Barschel in der Badewanne. *Er war tot.*
            they found Barschel in the bathtub. he was dead
        b. Letztes Jahr traf ich Gunnar wieder. *Er war kein Kind mehr.*
            last year met I Gunnar again. he was no child anymore
        c. Ich warf die Blumen raus, weil *sie trocken waren.*
            I threw the flowers out because they dry were

Rather, the clauses are used to assert something about what was the case at a certain time in the past - the time when Barschel was found in the bathtub, the time when I met Gunnar again, and the time when I threw out the flowers, respectively. For instance, in (1-18a), the speaker asserts about the time when Barschel was found in the bathtub that Barschel was dead at that time. The time about which the assertions are made in each of the cases above is the reference time R. Exploiting a traditional term from information-structural theories, one may also say that the reference time R functions as a TOPIC in the examples above.

, On the basis of observations like this, Klein (1992, 1994) proposes that TENSE locates the time about which an utterance asserts something - the TOPIC TIME (TT) - with respect to the speech time or TIME OF UTTERANCE (TU). Specifically, in accordance with standard assumptions, the past tense locates the topic time before the time of utterance, the present tense around the time of utterance or, perhaps, in other languages like German, not before the time of utterance, and the future tense at a time after the time of utterance.7 Note that the notion of topic time in terms of assertion is based on a subjective, speaker-oriented view: the topic time of an utterance is the time the speaker has in mind as the time about which she wants to say what is, was, or will be, the case then.

The diagram below illustrates the effect of the past tense in the second sentence of (1-18a). While the first sentence suggests the time when Barschel was found in the bathtub as the topic time of the second sentence, the past tense in the second sentence tells us that this topic time is located before the time of utterance and asserts about this time that Barschel is dead.

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7 Let us assume that this holds at least for the canonical usage of the tenses. Later, we will have to say more about noncanonical usages and, perhaps, have to revise the view sketched here.

(1-19) Sie fanden Barschel in der Badewanne. *Er war tot.*
       they found Barschel in the bathtub. he was dead

................................[___]..............................TU......................

TU   time of utterance
[_]   topic time: the time when they found Barschel in the bathtub

Given this approach, why does tense seem somehow to locate the situation expressed by the main predicate with respect to the time of utterance? Here, the interaction of tense and aspect comes into play: ASPECT locates the SITUATION TIME (TS) of the main predicate with respect to the TOPIC TIME (TT). For reasons that need not concern us right now, let us assume that the aspect in our example locates the situation time of the being dead around the topic time. Hence, since it is a common assumption that the being dead of a person is a never ending state, we arrive at the picture in (1-20).

(1-20) Sie fanden Barschel in der Badewanne. *Er war tot.*
       they found Barschel in the bathtub. he was dead

............................{--[---]--------------TU----------------(})

TU   time of utterance
[_]   topic time: the time when they found Barschel in the bathtub
—   situation described: his being dead
{--}   situation time of his being dead ("(})" indicates that the right edge of the situation time is not 'real' because the state of a person's being dead does not end.)

Note that in this approach, every main predicate of a clause is subject to aspect. If it were not, then its situation time would not be located in time at all.

Of course, there are several other possibilities of how the topic time and the situation time may relate to each other. Morphosyntactically realized aspect can serve to distinguish these options; by choosing a particular aspect, one can express, for instance, that the situation time is located before the topic time or after the topic time. As an illustration, I add a survey of aspects and their realization in English, where TS- is the time before the situation time and TS+ is the time after the situation time.

(1-21)

aspect	characterization TT/TS	realization in English
IMPERFECTIVE	TS properly includes TT .....{--[---]--}......	*ing*-form
PERFECTIVE	A. TT properly includes TT .....[..{---}..]...... B. TT intersects with TS,TS+ .....{--[---}..]...... C. TT intersects with TS,TS- .....[..{---]--}......	simple form
PERFECT	TS+ properly includes TT .....{----}.[...].....	perfect
PROSPECTIVE	TS- properly includes TT .....[...].{----}......	*is going to*

Interestingly, according to criteria of morphological markedness, the perfective aspect is the default aspect.

It is important to keep the correspondences between Klein's terminology and Reichenbach's terminology in mind. Klein's topic time largely corresponds to Reichenbach's reference time in being a time relative to which the situation time of the verb is located. And the function of Klein's aspect corresponds to the relation between the reference time and the situation time in Reichenbach's terms.

. In the remainder of this paper, I discuss first the semantics of the components of the present perfect construction first separately and then how they may be combined. The idea behind this approach is to exploit for every component of the present perfect construction an analysis that is maximally uniform across different types of constructions in which the respective component can occur. For example, one would like to exploit an analysis of the present tense in present perfect constructions that is compatible with the semantics of the present tense in other environments. The same applies to the other components of the construction, of course, i.e. the verb, the past participle morphology, and the auxiliary. I will propose that semantically, the present perfect is composed as sketched in (1-22), as a whole denoting a poststate of a truth-interval of the VP at a time that is compatible with the topic time requirements of the tense of the clause.

(1-22) [[VP [PARTICIPLE MORPH. + AUX.]] PRES]

2. The morphosyntactic source of the anteriority component

We have seen above that the perfect is a relative temporal expression that expresses anteriority relative to a time depending on the tense of the clause and often relative to the time given by a positional temporal adverbial. Thus, it is clear that anteriority is a crucial semantic component of perfect constructions. But which of the morphosyntactic components is the source of this anteriority?

Opinions with regard to this point differ widely. Zeller (1994) and Grewendorf (1995) argue that the past participle morphology adds the anteriority, while Höhle (1992:116) and Bierwisch (1996) argue that the auxiliary must be the source of the anteriority. Kratzer (1994) adopts a third assumption, namely, that none of them is responsible for the anteriority; she assumes that a zero morpheme is responsible for anteriority effects (though only for adjectival past participles; her 1996 view seems to differ from this). Still another view in the literature is that the past participle and the auxiliary are a unit semantically and express anteriority only when taken together (e.g. Ballweg (1989), Ehrich (1992)).

Of these choices, the best guess seems to be that the past participle is the item that is responsible for the anteriority. This is strongly suggested by the behavior of past participles in environments other than perfect constructions (2-1) - i.e. in attributive constructions (2-2) or in stative passives (2-3).

(2-1) PERFECT CONSTRUCTIONS: sie gelaufen ist; sie ihn gesehen hat
                                     she run is/has; she him seen has

(2-2) NP-INTERNAL MODIFIER: das rasierte Schaf; das verwirklichte Vorhaben;
                                    the shaved sheep; the realized plan;
                                    das gekochte Ei; das von Straßen zerrissene Dorf;
                                    the boiled egg; the by roads destroyed village;
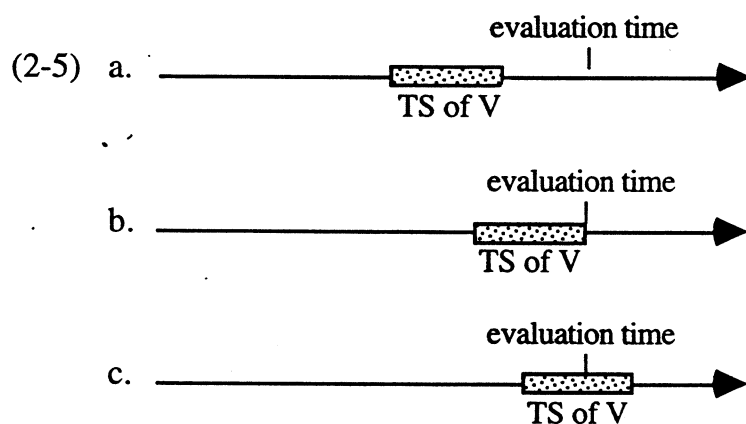   die von Bergen umgebene Stadt
                                    the by mountains surrounded town

(2-3) STATIVE PASSIVE: sie beobachtet sind
                          they observed are

The shaving of the sheep, the realization of the plan, and the boiling of the egg in (2-2) must have taken place before the evaluation time[8] of the expressions. The cases of the destruction of the village by roads and of the surrounding of the town by mountains mentioned in (2-2) are a bit more complicated. For some reason that must have to do with the particular semantics of past participles depending on the type of verb it is formed of, here it is required that the destroying and the surrounding are still the case at the evaluation time.[9] However, also with these examples, at least an interval of destroying and surrounding must be located before the evaluation time. Ignoring the implausiblity of mountains that are moving around, if the destroying and surrounding starts only at the evaluation time, then this must be expressed as in (2-4).

(2-4) das von Straßen zerrissen werdende Dorf;
        the by roads destroyed becoming village;
        die von Bergen umgeben werdende Stadt
        the by mountains surrounded becoming town

Finally, at least an interval of the observing in (2-3) must be located before the evaluation time of the clause.

Thus, in all the examples mentioned so far, the combination of verb plus past participle morphology can be truthfully uttered or be used as an appropriate description if and only if at least a time interval of V-ing took place before the time of utterance or before the evaluation time of the participle.[10] Hence, the evaluation time of a past participle and the situation time of the verb contained in the past participle can be temporally related to each other in various ways that are all compatible with this basic requirement. (2-5) illustrates the time relations that are possible in principle.

(2-5) a. [diagram: timeline with a dotted box labeled "TS of V" and a mark labeled "evaluation time" to the right of the box]

       b. [diagram: timeline with a dotted box labeled "TS of V" and "evaluation time" at the right edge of the box]

       c. [diagram: timeline with a dotted box labeled "TS of V" and "evaluation time" at the middle/top of the box]

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8 The evaluation time of an expression is often, but not always, the same as its time of utterance. The notion of evaluation time may be relevant, for instance, for certain noun phrase interpretations which I called "temporally independent" in Musan (1995).

9 Dealing with the details of such restrictions is beyond the scope of this work. For relevant proposals, see, for instance, Rapp (1995), Klein (1997).

10 Viewed this way, the fact that remains unexplained is that with some verbs, the situation time of the verb has to include the evaluation time of the expression.

d.

$$\text{evaluation time}$$

TS of V
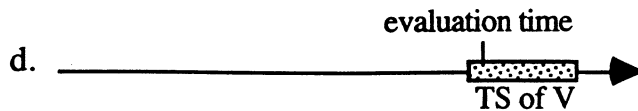
Thus, so far it seems that past participles express anteriority, regardless of their environment.

But what about eventive passive constructions as in (2-6)? In fact, passive constructions like (2-5) are the standard argument against the assumption that the past participle triggers the anteriority in perfect constructions: passives as in (2-6) contain past participles, too, but do not seem to express anteriority.

(2-6) EVENTIVE PASSIVE: sie gesehen werden
they seen become/are

However, it is theoretically possible to assign participles in passives an anteriority meaning, too. The resulting analysis is not too implausible. The idea is to exploit the ingressive meaning contained in the auxiliary *werden* in an appropriate way as sketched in (2-7) and below. Following Dowty (1979:141f) in his account of an operator 'BECOME', (2-7) may be taken to show the semantics of the verb *werden* ('become'); where *t* ranges over times and *P* ranges over predicates plus their other arguments.

(2-7) $[\![\text{werden}_V]\!]^c$ (P) (t) = 1 iff $\exists t^*$ containing the initial bound of t such that $[\![P]\!]^c$ (t*) = 0 and $\exists t^{**}$ containing the final bound of t such that $[\![P]\!]^c$ (t**) = 1.

However, this verb has to be distinguished from the homophonous auxiliary *werden*. For instance, note that the verb *werden* and the auxiliary *werden* exploit different past participle forms - namely *geworden* (for the verb) vs. *worden* (for the auxiliary). I take this as independent morphological evidence that, although they go back to the same origin ethymologically, the two words were subject to independent historical developments. This explains that they also differ semantically to some extent. For the auxiliary *werden*, one may suggest the following lexical entry, which is a reduced version of (2-7) insofar as the condition on the initial bound is eliminated.

(2-8) $[\![\text{werden}_{aux}]\!]^c$ (P)... (t) = 1 iff $\exists t^*$ containing the final bound of t such that $[\![P]\!]^c$ (t*) = 1.

Moreover, let us assume the tentative minimal truth conditions in (2-9) for a VP including all arguments *x, y*... of the verb as well as a past participle morpheme. The truth conditions take into account that a past participle requires that there be a truth interval of the verb before the evaluation time.

(2-9) $[\![$ ge-V-t (x)... $]\!]^c$ (t) = 1 iff $\exists t^* < t$ such that $[\![$ V (x)... $]\!]^c$ (t*) = 1

The tentative semantics suggested so far still has to be improved somewhat. Note that according to Kratzer (1994), passives differ from actives in having an implicit external argument. It turns out that the implicit argument must be bound by a relatively far-outside existential quantifier which has wider scope than the auxiliary *werden*. Moreover, taking the role of topic times into account, we arrive at truth conditions as illustrated in (2-11) for the example *(weil) Hans gesehen wurde* ('(since) Hans seen was') when uttered about the topic time yesterday-at-12, as in (2-10).

(2-10) Gestern um 12 passierte es tatsächlich, daß *Hans gesehen wurde*.
       yesterday at 12 happened it indeed that Hans seen was

(2-11) *Hans gesehen wurde*, uttered about the TT yesterday-at-12:
     $[\![$ $[_{TT}$ yesterday at 12$]$ $\exists x$ (x Hans gesehen wurde)$]\!]^c$ $(t_u) = 1$ iff
         for t = yesterday at 12, where $t < t_u$,
         $\exists x$, $\exists t^*$ containing the final bound of t such that $\exists t' < t^*$
         such that $[\![$x see Hans$]\!]^c$ $(t') = 1$.[11]

there is an x s.t.
there is a t'<t* s.t.
x see Hans at t'
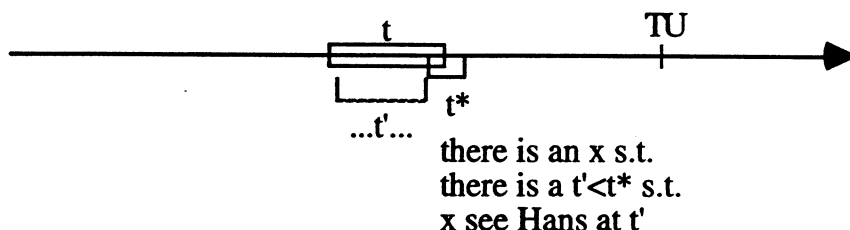
Thus, the semantics sketched above gives us adequate truth conditions for eventive passive clauses like *Hans gesehen wurde*. Given that *Hans gesehen wurde* is truthfully uttered about the topic time yesterday at 12, our semantics intuitively says that at the right edge of the time interval "yesterday at 12", i.e. t^*, it is the case that *Hans gesehen* is true. Since the semantics of the past participle requires there to be a truth interval of the verb before the evaluation time (which is the right edge of the time interval "yesterday at 12", i.e. t^*), this amounts to saying that it is the case that x *Hans sehen* is true before the right edge of the time interval "yesterday at 12". But since the assertion is made only about the topic time yesterday at 12, it is the case that x *Hans sehen* is true at a time before the right edge of the time interval "yesterday at 12", however at 12.

     Interestingly, passives indeed seem to have developed from an interpretation very much like this. Specifically, eventive passives go back to ingressive constructions as illustrated in (2-12a). Later they developed to imperfective constructions as in (2-12b).

(2-12)   Historical development of eventive passives (with *werden*)
      a.   ORIGINAL CONSTRUCTION: INGRESSIVE:
          er wird ein (von x) Erschlagener
          he becomes a (by x) slain (person)
      b.   LATER CONSTRUCTION: IMPERFECTIVE:
          er wird (von x) erschlagen
          he "becomes" (by x) slain = 'he is slain'

This does not mean that the anteriority of past participles in passives is still semantically real or active or plays a role intuitively, of course. Rather, passive constructions are highly grammaticalized. However, if these remarks are on the right track, then the intuitive non-anteriority of participles in this one construction is not a good argument against the anteriority of past participles in general. It is just a historical accident that eventive passives lost their anteriority component by

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[11] Interestingly, analogous conditions hold for the use of *werden* in future tense constructions: for *Maria wird Hans sehen*, we also do not want to claim that there is a change from a not-seeing to a seeing (of Hans by Maria) involved. However, the analogous application of TTs results in less desirable consequences with present perfect constructions like *Maria Hans gesehen hat* or future tense constructions like *Maria Hans sehen wird*.

grammaticalizing the combination of the past participle and the auxiliary *werden*. However, it remains plausible that in other environments, the past participle may have kept this anteriority component.

To summarize, the most plausible conclusion is that the past participle is the source of the anteriority component in present perfect constructions, not the auxiliary. However, this does not in principle preclude the possibility that the construction may be lexicalized or grammaticalized or historically reconstructed in one way or other. In the next section, we will address the question of whether and how precisely the anteriority related component of the present perfect construction is historically reconstructed.

3. Identifying the synchronic anteriority component: an optimality approach to semantic requirements and phonetic realization constraints on focus

As we will see in this section, effects of focus positioning on the present perfect construction provide crucial evidence about its semantic composition. The data to be discussed involve, among other things, verum (or: polarity) focus.[12] According to Höhle (1992), verum focus in German is often realized on the finite verb of a clause p and expresses something like "It is true that p" as opposed to the alternative "It is false that p", where p is typically known from the context. However, focus on a finite verb can also have other effects as illustrated in (3-1); here it can trigger either verum focus or anteriority focus, or content focus.

(3-1)   Hans LAS das Buch
        Hans READ the book
               verum focus: "It is *true* that Hans read the book, not false."
               anteriority focus: "Hans read the book in the *past*,..."[13]
               content focus: "Hans *read* the book, ..."

When the verb and the finiteness are separated by an auxiliary that carries tense and agreement - e.g. in a present perfect construction - the occurrence of the three effects verum focus, anteriority focus, and content focus varies, depending, first, on whether the focus accent is realized on the verb or on the auxiliary, and second, on whether the verb is rich in content or poor in content. The examples in (3-2) involve the verb *lügen* - a verb that is rich in content. In (3-2a) the focus accent is on the auxiliary, and verum focus and anteriority focus interpretations are available, while content focus is unavailable. In (3-2b), the focus accent is on the verb, and the content focus interpretation is the only option that is available.[14]

(3-2)   a.   Hans HAT gelogen
             Hans HAS lied
                verum focus: "It is *true* that Hans lied,..."
                anteriority focus: "Hans lied in the *past*,..."
                *content focus

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[12] The sentences and anteriority judgements are taken from Höhle (1992:115); the characterization and interpretation of the data is mine.

[13] Note that anteriority focus does not necessarily imply that the situation is over at TU.

[14] Neither verum focus nor anteriority focus depend on the position of the verb.

b. Hans hat geLOgen
   Hans has LIED
   > *verum focus
   > *anteriority focus
   > content focus: "Hans *lied...*"

What can we conclude from the data we have considered so far? - Taking into account the standard approach of alternative semantics to focus (cf. Rooth (1985)) and common assumptions on focus projection (cf. e.g. Schwarzschild (1997)), the examples suggest that in the present perfect constructions in (3-2) the verbal content component is encoded by the past participle verb. This is perfectly in accordance with our expectations. Moreover, the "verum component" and the anteriority component of the clause are encoded by the finite auxiliary. Note that the encoding of the anteriority component by the finite auxiliary is somewhat surprising, given that diachronically we identified the past participle morpheme as the source of the anteriority. Does this mean that the anteriority somehow switched from the past participle morpheme to the auxiliary at some point?

Looking at another set of data may help to draw the right conclusions in this respect. Interestingly, the generalizations arrived at in (3-2) turn out to fail in clauses where the verb is comparatively contentless. This is illustrated in (3-3). Here, focus on the auxiliary only allows for verum focus but not for anteriority focus (a, b). And focus on the past participle verb only allows for anteriority focus but not for verum focus or content focus (c, d).

(3-3) a. Er HAT Schnupfen gehabt
          he HAS cold had
          > verum focus: "It is *true* that he had a cold,..."
          > *anteriority focus
          > *content focus
       b. Er IST krank gewesen
          he IS/HAS sick been
          > verum focus: "It is *true* that he was sick,..."
          > *anteriority focus
          > *content focus
       c. Er hat Schnupfen geHABT
          he has cold HAD
          > *verum focus
          > anteriority focus: "He had a cold in the *past*,..."
          > *content focus
       d. Er ist krank geWEsen
          he is/has sick BEEN
          > *verum focus
          > anteriority focus: "He was sick in the *past*,..."
          > *content focus

Given the standard assumptions on focus semantics and focus projection, this suggests that in the present perfect constructions in (3-3), the "verum component" is again encoded by the finite auxiliary. However, the anteriority component of the clause is not. Rather, it is encoded by the participle verb. Moreover, note that the verbal content component is not encoded by the past participle verb; since this verb is extremely poor in content in this type of example, this is not surprising.

To summarize, the crucial observation is that anteriority focus can be realized either on the auxiliary or on the participle, depending on whether the verb is rich in

content or poor in content. Shall we conclude from this that anteriority is encoded by the auxiliary when the verb is rich in content, but encoded by the participle verb when the verb is poor in content? - Of course, a nonuniform account like this would be highly undesirable. Rather, we would give the encoding of anteriority in different verb constructions a uniform explanation and explain the nonuniform behavior in (3-2) versus (3-3) by independent principles.

Fortunately, considering focus semantics and general conditions on phonetic focus realization, focus positioning, and focus projection already takes us a big step forward in finding an explanation for the intricate data above. In the following, I will briefly explain these principles. As we will see, it seems that they interact in a manner that can be best captured in an optimality theoretical aproach (cf. Prince and Smolensky (1993)). Exploiting their interaction will enable us to explain the patterns of anteriority focusing without reference to a nonuniform account of anteriority encoding and moreover, without reference to a diachronic switch of the anteriority component from the past participle morpheme to the auxiliary. Rather, we only need to assume that the perfect construction was grammaticalized and reconstructed in such a way that the morphosyntactic units past participle morpheme and auxiliary stem came to form a complex encoding anteriority synchronically.

Note, first, that focus is realized on a component that is supposed to carry a focus feature semantically.[15] However, for phonetic reasons, focus cannot be realized everywhere. Thus, focus needs the nucleus of a syllable - a vowel, it seems - in order to be realized. But not every type of vowel is an appropriate phonetic focus carrier; schwa syllables are known to be inappropriate focus carriers (with the exception of contrastive echo focus). Moreover, focus strongly prefers to match with word accent.[16]

Another restriction on focus realization is that focus clash is to be avoided. I.e., ambiguities of focus interpretation are to be avoided. Of course, the basic principle behind this is quite a general principle in natural language - namely, the pragmatic principle to avoid ambiguity whenever possible - and languages have developed strategies in order to reach this goal. Thus, scrambling in German can be used to disambiguate scope ambiguities of quantificational noun phrases among each other, or among adverbials and other scope inducing items. And intonation patterns can be used to disambiguate scope ambiguities, too.

When a certain choice of focusing cannot be realized on a particular syllable, the focus accent is shifted to an adjacent syllable.[17] Interestingly, this focus shift does not have to respect the hierarchy of semantic composition. Rather, it happens either in accordance with the morphosyntactic structure or in accordance with the phonological hierarchy: if possible, focus shift happens within the word boundaries surrounding its basic position. As we will see shortly, the question whether the morphosyntactic or the phonological hierarchy is responsible for the realization of focus shift need not concern us here; this is so because the cases relevant for the behavior of focus in present perfect constructions concern only shifting within the

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[15] For a discussion of the semantics and pragmatics of the focus feature as well as of principles of focus projection, see, for instance, Schwarzschild (1997).

[16] The principle "Avoid focus carrying schwa syllables" seems to be independent of the principle "Match focus with word accent". For example, it is well-known that *es* ('it') in German (as well as *it* in English) can hardly be focused at all, even if it makes perfect sense semantically.

[17] Alternatively, one may assume in accordance with Büring (1995) and Schwarzschild (1997) that focus is generally in a maximally specific or informative position. I.e. even if a focus accent realized in a higher position is compatible with the intended focus interpretation, the realization in a lower position will be prefered when it is more informative - i.e. compatible with fewer focus interpretations.

word. Thus, for the present purpose, it is irrelevant whether the word boundaries are relevant as morphosyntactic boundaries or whether they are relevant phonologica! boundaries - simply because in most cases, and in all cases that are relevant presently. they constitute the phonological constituent of phonological words.

Interestingly, from the restrictions on focus realization in combination with the necessity to express certain foci, it follows that in cases where several realizations of a certain focusing are logically possible and all these possible realizations are problematic, some criteria or other have to decide which of the logically possible focus realizations is the best and which the worst among the choices.

Let us now see how these principles apply to the case of present perfect constructions. Obviously, the focus effects we observed above suggest that there are at least three semantic components encoded in present perfect constructions - content, anteriority, and what I would like to call a "verum feature". The assumption of a verum feature doubtlessly deserves further consideration; but since the motivation of such a feature is not crucial for the purpose of this paper, I will stipulate the feature here without further discussion. In any case, the question we have to address next is where in the construction these semantic components are encoded. Content is encoded by the verb or VP, of course. The verum feature is most likely encoded by the finiteness morphemes of the clause - i.e. by the tense/agreement morphology. Moreover, we will see that the distribution of focus accents in present perfect constructions can be best explained, if we assume the following: the anteriority, stemming from the past participle morphology, has undergone a form of historic reconstruction and is encoded synchronically by the complex consisting of the past participle morpheme and the auxiliary.

Having established these preliminaries, let us consider first the case of present perfect constructions with verbs that are rich in content. I will go through the realization of content focus, verum focus, and anteriority focus each step by step.

(3-4)   Content focus in present perfect constructions with content-rich verbs

MORPHOSYNT. SURFACE UNITS			
V lüg-	PART. MORPH ge...en	AUX hab-	PRES -t
	ANTERIORITY		
SEMANTIC UNITS			
F			

(3-5)   Verum focus in present perfect constructions with content-rich verbs

MORPHOSYNT. SURFACE UNITS			
V lüg-	PART. MORPH ge...en	AUX hab-	PRES -t
		ANTERIORITY	
SEMANTIC UNITS			
			*F because the affix cannot carry focus accent. Hence, shift within word.
		F	←

(3-6)   Anteriority focus in present perfect constructions with content-rich verbs[18]

MORPHOSYNT. SURFACE UNITS			
V lüg-	PART. MORPH ge...en	AUX hab-	PRES -t
		ANTERIORITY	
SEMANTIC UNITS			
*F because of clash with content focus.	OPTION I: *F because of 1. schwa nuclei, 2. no match with word accent. Hence, shift within word. ←		
		OPTION II: *F because of clash with verum focus. But (II) is better than the multiple violations of option I. Hence F.	

Thus, with the independently motivated principles of focus semantics and focus realization, we correctly predict the actual occurrence of focus effects in

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[18] The basic idea of this is due to Veronika Ehrich (pc). She has pointed out to me that the past participle morpheme itself most likely is not an appropriate carrier of accents in general. In fact, focus positionings as in (A) are plainly unacceptable.

(A)   a.   *Hans hat GElogen/geloGEN.
        b.   *Er hat Schnupfen GEhabt.
        c.   *Er ist krank GEwesen/geweSEN.

present perfect constructions with content-rich verbs. But how about constructions with content-poor verbs?

In functional verb constructions like *einen Schnupfen haben* ('have a cold'), the noun phrase and the verb are supposedly a relatively strong semantic unit in which the verb does not express much crucial content at all. Hence, focus on the verb is not a good candidate for expressing content focus. However, the noun phrase is, and consequently, focus on the noun phrase can express content focus very well as indicated in (3-7).

(3-7) Content focus in present perfect constructions with content-poor verbs

MORPHOSYNT. SURFACE UNITS				
NP **Schnupfen** |FUNCTIONAL V CONSTR.|	V **hab-**	PART. M. **ge...t**	AUX **hab-**	PRES **-t**
	ANTERIORITY			
SEMANTIC UNITS				
	OPTION I: *F because V is poor in content.			
OPTION II: **F**				

(3-8) Verum focus in present perfect constructions with content-poor verbs

MORPHOSYNT. SURFACE UNITS				
NP **Schnupfen** |FUNCTIONAL V CONSTR.|	V **hab-**	PART. M. **ge...t**	AUX **hab-**	PRES **-t**
	ANTERIORITY			
SEMANTIC UNITS				– –
			F	*F because the affix can- not carry focus accent. Hence, shift within word. ◄———

(3-9) Anteriority focus in present perfect constructions with content-poor verbs

MORPHOSYNT. SURFACE UNITS				
NP Schnupfen |FUNCTIONAL V CONSTR.|	V hab-	PART. M. ge...t |_____ANTERIORITY_____|	AUX hab-	PRES -t |___|
SEMANTIC UNITS				
	F (No clash with content focus!)	OPTION I: *F because of 1. schwa, 2. no match with word accent. Hence, shift within word. ◀———		
			OPTION II: *F because of clash with verum focus.	

Note that the claim that option II in (3-9) is unacceptable because of the clash with verum focus is quite well motivated. It is supported by the fact that in the corresponding infinitival constructions, option II can realize anteriority focus.[19] Since verum focus and hence, clash of verum focus with anteriority focus, can only occur in finite verb constructions, our account predicts that option II in infinitival constructions should be able to express anteriority focus. This prediction is borne out as shown in (3-10).

(3-10) a. Er kann Schnupfen gehabt HAben
           he can cold had (to) HAVE
                 *verum focus
                 anteriority focus
                 *content focus

       b. Er kann Schnupfen geHABT haben
           he can cold HAD (to) have
                 *verum focus
                 anteriority focus
                 *content focus

Thus, the occurrence of focus effects can be explained in present perfect constructions with content-rich verbs as well as with content-poor verbs. Specifically, we arrive at the following picture, where the complex consisting of the past participle morpheme and the auxiliary is identified as a semantic component expressing anteriority.

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[19] Dieter Wunderlich (pc e-mail) suggested to me to try out the effects of focus positioning in infinitival constructions.

$$(3\text{-}11)\quad \text{V} + \left[_{\text{anteriority}}\ \text{PAST PART.} + \begin{bmatrix} \text{auxiliary } haben \\ \text{auxiliary } sein \end{bmatrix}\right] + \text{PRES}$$

The contrast between (3-2b) and (3-3) suggests that anteriority focus is realized on the participle only when it cannot get mixed up with content focus, i.e. when the verb is relatively contentless, like *haben* in (3-3a) or the copular verb in (3-3b). Thus, on some relevant semantic level, the past participle morpheme and the auxiliary must count as a unit expressing anteriority.[20]

This result amounts to the natural assumption that at some point during its development, the perfect construction must have been subject to a process of grammaticalization or reconstruction - an assumption that has to be accepted in any case, considering the development of the construction in more detail (see, for instance, Öhl (1996)).

As Karin Donhauser (pc) pointed out to me, the observations concerning focus realization are also compatible with the assumption of an even more complete grammaticalization or reconstruction process as indicated in (3-12).

$$(3\text{-}12)\quad \left[_{\text{anteriority of V}}\ \text{V} + \text{PAST PART.} + \begin{bmatrix} \text{auxiliary } haben \\ \text{auxiliary } sein \end{bmatrix}\right] + \text{PRES}$$

(3-12) amounts to an analysis according to which the original morphosyntactic components of the perfect construction (with the exception of the tense) are reconstructed to a completely noncompositional unit semantically. This analysis predicts that (disregarding the restrictions imposed by realization principles as introduced above), anteriority focus can in principle be put on three different components - namely, either on the auxiliary or on the past participle morpheme or on the verb stem. Hence, it could explain the positioning of anteriority focus accent in content-poor verb constructions like (3-3) by adding a third option to (3-9):

(3-9') Anteriority focus in present perfect constructions with content-poor verbs

	MORPHOSYNT. SURFACE UNITS			
NP Schnupfen	V hab-	PART. M. ge...t	AUX hab-	PRES -t
		ANTERIORITY		
	SEMANTIC UNITS			
	OPTION III: F (No clash with content focus!)			

The application of this third option to content-rich verb constructions would, of course, lead to a clash with content focus:

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[20] Perhaps the two items have the option of counting as a unit also syntactically, cf. *[Gelesen haben] wird Hans das Buch*, depending on how this sentence is to be analyzed.

(3-6') Anteriority focus in present perfect constructions with content-rich verbs

MORPHOSYNT. SURFACE UNITS			
V lüg-	PART. MORPH ge...en	AUX hab-	PRES -t
	ANTERIORITY		
SEMANTIC UNITS			
OPTION III: *F because of clash with content focus.			

However, for semantic reasons, it seems unlikely, that the analysis displayed in (3-12) is more adequate than the one in (3-11): if only the complex consisting of the verb and the past participle and the auxiliary taken together could express anteriority, then it would be surprising that we have semantic access to the content of the verb alone. That we do have this access cannot be ignored; the possibility to refer to the situation time of the verb and to specify it by positional adverbials could not be explained otherwise. Hence I conclude that the analysis in (3-12) is not tenable.

4. The role of the present tense in present perfect constructions

Let us now turn to the role of the present tense in present perfect constructions. It is well-known that the present tense can be used in different ways in German - e.g. for the description of present situations, of past situations (in historical present tense contexts like reports), and of future situations. It can also be exploited for generic or habitual assertions, which can probably be viewed as special cases of present situations.

(4-1) PRESENT TENSE FOR PRESENT SITUATIONS
  a. Maria studiert (jetzt) in Berlin.
     Maria studies (now) in Berlin
  b. Männer sind klüger als Frauen, und die Erde ist eine Scheibe.
     men are smarter than women, and the earth is flat
  c. Hans raucht.
     Hans smokes

(4-2) PRESENT TENSE FOR PAST SITUATIONS ('historical present tense')
  a. 1914 beginnt der erste Weltkrieg.
     1914 begins the first worldwar
  b: 1996 findet die erste Tagung der Gesellschaft für Semantik statt.
     1996 takes-place the first conference of the Gesellschaft für Semantik

(4-3) PRESENT TENSE FOR FUTURE SITUATIONS
  a. Im Juni hat Maria Ferien.
     in June has Maria vacation
  b. Maria kriegt Ferien.
     Maria gets vacation

There are some more subtle uses of the present tense in German[21], but for now I want to leave it at this and try to characterize the semantics of the present tense. Of course, it would be highly desirable to assume a maximally uniform account of all uses of the present tense. However, it is not clear how they can be given a uniform account. The following proposals can be found in the literature.

While Klein (1992, 1994) proposes that the present tense locates the topic time around the time of utterance, Fabricius-Hansen (1994), for instance, suggests that the present tense creates a direct association of the situation time of the verb with the time of utterance. According to Kratzer (1978), the present tense is a non-past tense and thus locates the situation time either in the present or in the future. However, in order to be able to account for uses like the historical present tense, Kratzer assumes that times other than the actual time of utterance can "count" as the time of utterance. Contrasting with the accounts mentioned so far, Vater (1983) pursues an aspectual account of the present tense; he argues that the present tense signals that the situation time is not yet completed at the time of utterance. Finally, some linguists, like Heidolph et al. (1981), Zeller (1994), and Grewendorf (1995) propose that the present tense is temporally neutral, i.e. does not locate anything - neither the situation time of the verb nor the topic time - relative to the time of utterance.

At this point, we cannot evaluate these proposals in detail. Rather, we will only use one of them and - without expecting this to be the most adequate solution - for the present purpose assume that the present tense locates the topic time in the present or in the future time, relative to the time of utterance. This amounts to an account in Klein's terms which is similar to Kratzer's account insofar as it generalizes over present time and future time uses of the tense. There is much more to be said about this issue, of course, but for now the account seems adequate enough.

Independently of particular accounts of the present tense in German, however, it is important to note that the present tense shows an interesting behavior with regard to the availability of future time readings: although the German present tense generally allows for future readings, activity and state predicates like *laufen* ('run') with a present tense allow for such a reading only when they occur with a future adverbial as in (4-4c), but not when they occur without an adverbial as in (4-4a). Contrasting with this, achievement and accomplishment predicates like *gewinnen* ('win') can always get a future time reading, regardless of whether they occur ,together ,with a future time adverbial as in (4-4c) or without on as in (4-4b) (cf. Ehrich (1992:69)).

(4-4) a. FUTURE READING NOT POSSIBLE: Hans läuft.
                                                      Hans runs
       b. FUTURE READING POSSIBLE: Hans gewinnt.
                                                      Hans wins
       c. FUTURE READING POSSIBLE: Hans läuft morgen mittag.
                                                      Hans runs tomorrow at-noon
       d. FUTURE READING POSSIBLE: Hans gewinnt morgen mittag.
                                                      Hans wins tomorrow at-noon

This interaction between *Aktionsarten* and the availability of interpretations of the present tense should be kept in mind; it will become important in the next section.

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[21] For more information on this, see, for instance, Fabricius-Hansen (1986) and Thieroff (1992:89ff).

5. TS-specification and R-specification by positional adverbials

In section 1 it was mentioned that positional adverbials can be used in perfect constructions in at least two different ways - as TS-specifiers or as R-specifiers. This is illustrated with the ambiguous German sentence (5-1), repeated from above.

(5-1)   Er war *um zehn* weggegangen.
        he was/had at ten left
        TS-SPECIFICATION: = The leaving took place at 10.
        R-SPECIFICATION: = He was gone at ten.

In this section, we will take a closer look at the ways in which present perfect constructions can interact with positional temporal adverbials. We will see that the interactions are elucidating with respect to the semantics of the present perfect. Specifically, the interactions will show that the present tense contained in present perfect constructions is a real, standard, present tense, that present perfect constructions are of a stative nature, and that certain accounts of the present perfect - accounts that assign the present perfect a past tense denotation or a past tense reading among others - are not tenable.

Since the present perfect and the past perfect are constructed analogously, one would expect that positional temporal adverbials are ambiguous between a TS-specifier reading and an R-specifier reading in present perfect constructions, too. Quite surprisingly, however, their appropriateness as TS-specifiers or R-specifiers depends on whether they are past, present, or future adverbials.

The observation that there are some such restrictions on the use of temporal adverbials with the present perfect is not new, yet, the specific nature of the restrictions has been described quite inconsistently in the literature. Moreover, there does not seem to be any obvious explanation for the restrictions. Ehrich (1992:145) says that a present perfect sentence with a past adverbial - *Hans hat den Rasen vorhin/gestern gemäht* ('Hans has mown the lawn a while ago/yesterday') - only allows for TS-specification but not for R-specification. But in combination with future adverbials - as in *Hans hat den Rasen gleich gemäht* ('Hans has mown the lawn in a bit') - there is an ambiguity between TS- and R-specification, Ehrich claims. Fabricius-Hansen (1986) makes the opposite claim. According to her, a future adverbial blocks TS-specification (p112f), while constructions with past adverbials are ambiguous (p115). However, it seems to me (and to the informants I asked) that neither of these statements is completely right. Rather, the judgements about the availablity and unavailability of readings are the ones displayed in (5-2).[22]
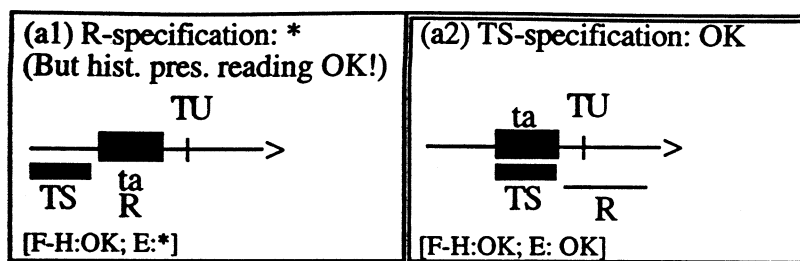
(5-2) a. PAST ADVERBIAL: Hans ist *gestern um zehn* weggegangen.
                             Hans is/has yesterday at 10 left
           1. R-SPECIFICATION: ≠ Yesterday at 10, Hans had already left.
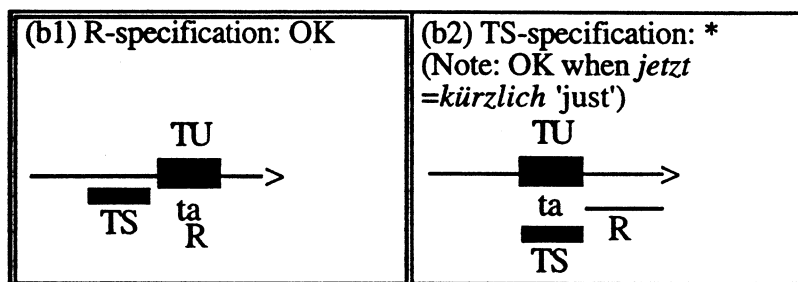   2. TS-SPECIFICATION: = Yesterday at 10, his leaving took place.

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[22] The judgements exploited here in part correpond to the ones sketched in Herweg (1990:199ff); he finds R-specification with future adverbials and TS-specification with past adverbials acceptable. However, for present adverbials, he finds TS-specification more acceptable than R-specification. - In the pictures, "ta" represents the time of the temporal adverbial.

(a1) R-specification: * (But hist. pres. reading OK!)	(a2) TS-specification: OK
TU TS ta R [F-H:OK; E:*]	ta TU TS R [F-H:OK; E: OK]

b. PRESENT ADVERBIAL: Hans ist *jetzt* weggegangen.
   Hans is/has now left
   1. R-SPECIFICATION: = At this moment, Hans is already gone.
   2. TS-SPECIFICATION: ≠ At this moment, his leaving takes place.

(b1) R-specification: OK	(b2) TS-specification: * (Note: OK when *jetzt* =*kürzlich* 'just')
TU TS ta R	TU ta R TS

c. FUTURE ADVERBIAL: Hans ist *morgen um zehn* weggegangen.
   Hans is/has tomorrow at 10 left
   1. R-SPECIFICATION: = Tomorrow at 10, Hans will have left already.
   2. TS-SPECIFICATION: ≠ Tomorrow at 10, his leaving will take place.

(c1) R-specification: OK	(c2) TS-specification: *
TU TS ta R [F-H:OK; E: OK]	TU ta TS R [F-H:*; E: OK]
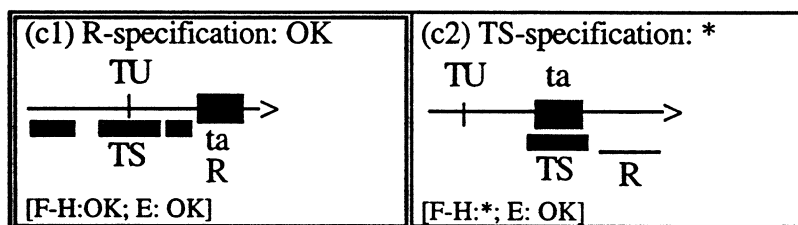
Note that it is unexpected that the three readings (a1), (b2), and (c2) are unavailable for the following reason: from (a2), we know that temporal adverbials can be TS-specifiers in present perfect constructions; from (b1), we know that they can be R-specifiers; and from (c1), we know that the situation time of the verb in present perfect constructions can be located in the future. Hence, we expect that all six readings be available. Why do they not behave as one would expect?

It turns out that there is a quite natural explanation for the unavailability of the readings. Recall from the preceding section that activity and state predicates in the present tense need a future temporal adverbial in order to have future interpretations. I will show that the distribution of possible readings for present perfect clauses follows from this standard behavior of the present tense, if we assume that present perfect constructions are stative.

The assumption that present perfect constructions are stative is well-motivated and by no means a new discovery (see Parsons (1990) and Vlach (1993)). Thus, the application of standard tests provides evidence for the stative nature of the construction. For instance, one can ask *how-long*-questions about the duration of states or activities, but not about achievements or accomplishments. Note that consequently, (5-3a) is not acceptable: it is a question about the duration of an

achievement in the past tense. When the past tense is changed into a present perfect, however, focus triggers a difference in acceptability. When focus is on the auxiliary, then the resulting sentence is fine. When the focus is somewhere else, then the sentence is unacceptable. Note that focus on the auxiliary tends to relate temporal adverbials to the present perfect as a whole (R-specification), while focus that is not on the auxiliary relates the temporal adverbial to the verb and its situation time only (TS-specification). If that is so, then (b) and (c) show that the verb does not denote a state whereas the present perfect construction does.

(5-3) a. ?*Wie lange entdeckte Hans den Fehler?
           how long discovered Hans the mistake
       b. ?*Wie lange hat Hans den Fehler entdeckt?
           how long has Hans the mistake discovered
       c. Wie lange HAT Hans den Fehler entdeckt?
           how long HAS Hans the mistake discovered

The same conclusion can be reached by other tests, too. Thus, (5-4) shows a kind of pseudo-cleft construction. The idea behind this test is that the *what-Hans-did-* construction is unacceptable with states because states are not done. But it is acceptable with all other *Aktionsarten*. Note that when we have a perfect infinitive, the construction is not permitted and thus behaves like a state. However, the same infinitive without the perfect is good, i.e. it does not behave like a state.

(5-4) a. ?*Was Hans tat, war, den Fehler entdeckt zu haben.
           what Hans did was the mistake discovered to have
       b. Was Hans tat, war, den Fehler zu entdecken.
           what Hans did was the mistake to discover

To summarize, there is strong evidence that perfect constructions denote states. But what is the nature of this state?

Parsons' characterization of the "perfect-state" as a RESULTANT-STATE as opposed to a target-state seems most suitable. The difference between these two kinds of states is nicely explained in Parsons' book (1990:235):

> "It is important not to identify the Resultant-state with its 'target'-state. If I throw a ball on the roof, the target state of this event is the ball's being on the roof, a state that may or may not last for a long time. What I am calling Resultant-state is different, it is the state of my having thrown the ball on the roof, and it is a state that cannot cease holding at some later time."

Thus, the resultant-state may be described as a post-state of the crucial situation, which according to what we said above, may be just one truth-interval out of the whole situation time.

Note that our result that present perfect constructions are stative is not compatible with accounts of the present perfect that assume a general denotation or one reading of the present perfect where it is not stative; this is because if there was a non-stative reading of the construction available, then the availability of this reading would be enough to save the construction in (5-4a) from unacceptability. Perhaps one might consider the logical possibility that such a non-stative reading is unavailable only in certain environments - for example in the environment of (5-

4a).[23] *But at present I do not see a plausible motivation for this assumption at all.* Thus, I conclude that present perfect constructions are stative in general. Next I will show that the availability of the readings displayed in (5-2) follows from the stative nature of the construction.

Quite importantly, in combination with the restriction on the availability of future readings with present tenses in stative or activity clauses (which was illustrated in the preceding section), we expect that the present tense component in the present perfect construction needs future adverbials in order to get a future interpretation, simply because the present perfect is of a stative nature. How does the availability of readings follow from this? Let's apply our previous results to the unavailable readings in (5-2).

First, note that the oddness of (a1) corresponds to what we would expect if we consider the behavior of the present tense. In order to get the reading (a1), the reference time R has to be located in the past. Given that R is associated with the present tense auxiliary, the location of R in the past is a special case of an historical present tense. Hence, we expect that its location in the past feels like the historical present tense and is subject to the same restrictions. This prediction corresponds exactly to the intuitions about the reading.[24]

Second, we have just seen that the present perfect construction as a whole is stative. Thus we predict that it needs a future adverbial in order to obtain a future meaning with present tense. In order to get reading (c2), the present perfect construction must have a future meaning. Thus, the future adverbial that occurs in the clause has to function as an R-specifying adverbial. But if the adverbial functions as an R-specifying adverbial, then it cannot function simultaneously as a TS-specifying adverbial. Hence, we correctly predict that the reading in (c2) is unavailable.

Finally, in order to get the reading in (b2), the time of the present perfect construction must be located in the future, too. If it is not, then the situation time of the verb cannot be located around the time of utterance. Again, since it is stative, it needs a future adverbial in order to be interpretable in this way. The clause, however, does not provide a future adverbial. Hence, similarly to reading (c2), reading (b2) is not available, either.

To summarize, we have seen that in some important respects, the present tense ‚contained in present perfect constructions behaves just like a canonical present tense. In particular, its ability to exploit future readings is exactly like the one of a canonical present tense. Moreover, we have seen that the present perfect construction is of a stative nature, and that this is so always and obligatorily. We have identified the state as the resultant-state or post-state of the situation denoted by the verb or VP.

6. Conclusion

At this point, one may ask whether in an account as sketched above, the reference time R still plays an independent role. Since the semantics of the perfect construction itself provides us with two time intervals - the one of the situation time of the verb and the one of its resultant-state - one may argue that reference to R has become unnecessary. However, since I want to pursue the basic idea of Klein's (1992, 1994) analysis of aspect, I will keep a reference time R as a component of temporal
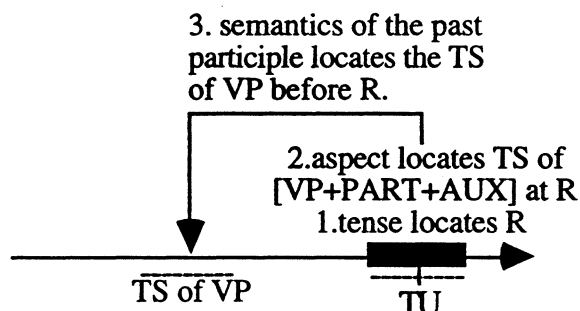
[23] Chris Piñón hinted at this possibility (pc); however, so far I do not see any evidence in favor of this.

[24] Note that this accounts for Fabricius-Hansen's judgement that this reading is available.

interpretation. Hence, until we find evidence to the contrary, let us assume that in the canonical case, tense locates a reference time R in relation to the time of utterance TU, and aspect locates the situation time TS relative to the reference time R.[25] Note, however, that this notion of reference time differs from Reichenbach's notion of reference time.
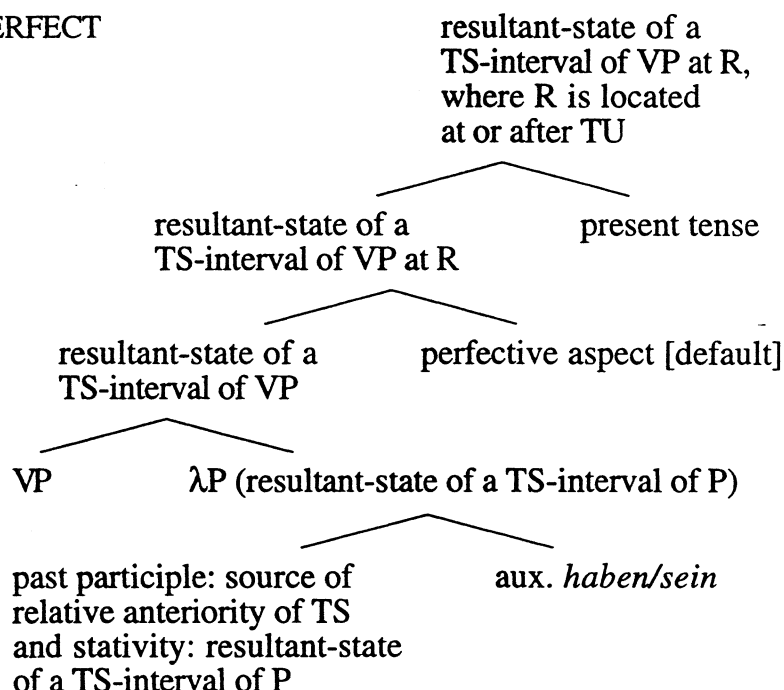
Moreover, it is important to stress which situation time is located by aspect in perfect constructions: it does not locate the situation time of the verb itself; rather, it locates the situation time of the complex consisting of the VP, the past participle morpheme, and the auxiliary - hence, the situation time of the resultant state of VP. The picture in (6-1) illustrates how this works.

(6-1)

3. semantics of the past
participle locates the TS
of VP before R.

2.aspect locates TS of
[VP+PART+AUX] at R
1.tense locates R

TS of VP   TU

To summarize, in the course of this paper, we have arrived roughly at the following picture of the semantics of the present perfect in German.
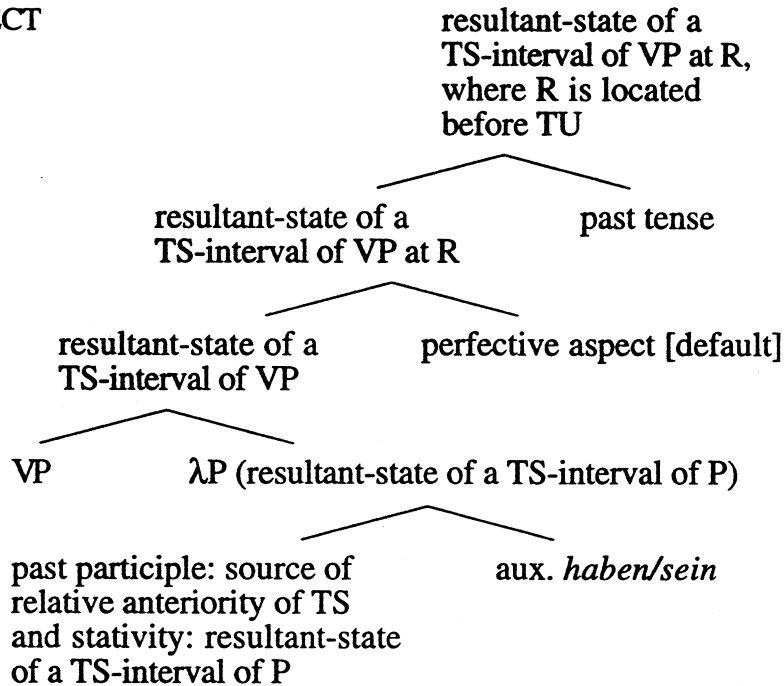
(6-2)   PRESENT PERFECT   resultant-state of a
                                          TS-interval of VP at R,
                                          where R is located
                                          at or after TU

            resultant-state of a   present tense
            TS-interval of VP at R

        resultant-state of a   perfective aspect [default]
        TS-interval of VP

    VP   λP (resultant-state of a TS-interval of P)

    past participle: source of   aux. *haben/sein*
    relative anteriority of TS
    and stativity: resultant-state
    of a TS-interval of P

---

[25] Given that aspect is not in general morphosyntactically realized in German, one may rather pursue an account in which aspect does not occur as a functional element. If one chooses this latter theoretical option, then one has to change the assumptions about the semantics of tense, of course. Specifically, one may assume that tense locates a (relevant) truth-interval of its clause with respect to the time of utterance.
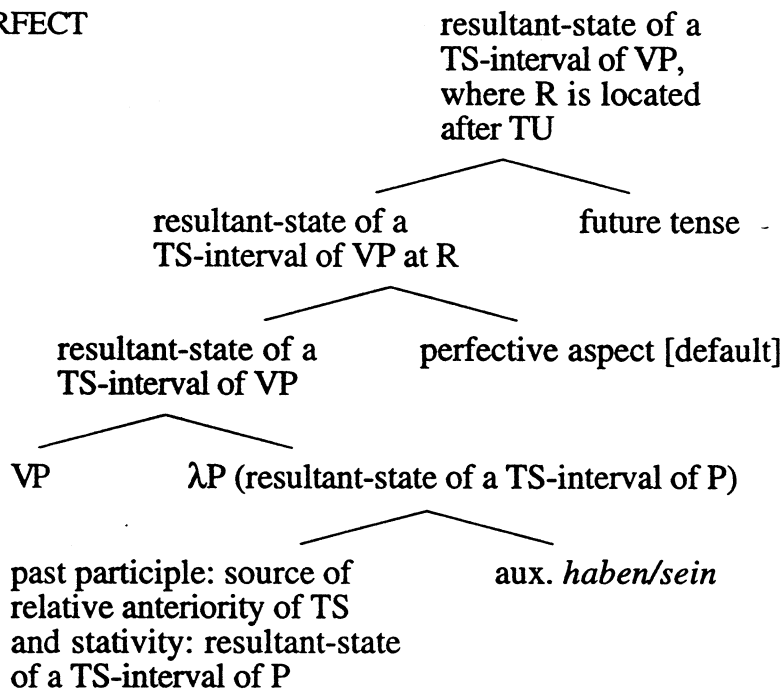
These results were established by exploiting the historical development of the construction, its behavior when combined with focus and focus projection, and interactions of the present perfect with temporal adverbials.

Unless we find counterevidence, we may assume that the semantics of the past perfect and of the future perfect is constructed analogously as shown in (6-3) and (6-4), respectively.

(6-3)   PAST PERFECT

resultant-state of a
TS-interval of VP at R,
where R is located
before TU

resultant-state of a   past tense
TS-interval of VP at R

resultant-state of a   perfective aspect [default]
TS-interval of VP

VP   λP (resultant-state of a TS-interval of P)

past participle: source of   aux. *haben/sein*
relative anteriority of TS
and stativity: resultant-state
of a TS-interval of P

(6-4)   FUTURE PERFECT

resultant-state of a
TS-interval of VP,
where R is located
after TU

resultant-state of a   future tense
TS-interval of VP at R

resultant-state of a   perfective aspect [default]
TS-interval of VP

VP   λP (resultant-state of a TS-interval of P)

past participle: source of   aux. *haben/sein*
relative anteriority of TS
and stativity: resultant-state
of a TS-interval of P

Recall that we began this paper with a brief summary of the accounts of Reichenbach (1947) and Klein (1992, 1994). As should be clear by now, the two accounts treat the present perfect in quite different ways than the present account. Reichenbach treats the present perfect (in English) as consisting of a single semantic component tense that temporally locates the three times speech time S, event time E,

and reference time R in a specific constellation to each other. Klein splits up the present perfect (again, in English) semantically into two components: the tense, which locates the topic time TT with respect to the time of utterance TU, and the aspect, which locates the situation time TS with respect to the topic time TT. The present account, however, splits up the present perfect semantically into three components: the tense, which locates the reference time R with respect to the time of utterance TU, the aspect, which locates the situation time TS with respect to the reference time R, and the denotation of the past participle morpheme in combination with the auxiliary. The table in (6-5) shows a survey of how the three accounts work.
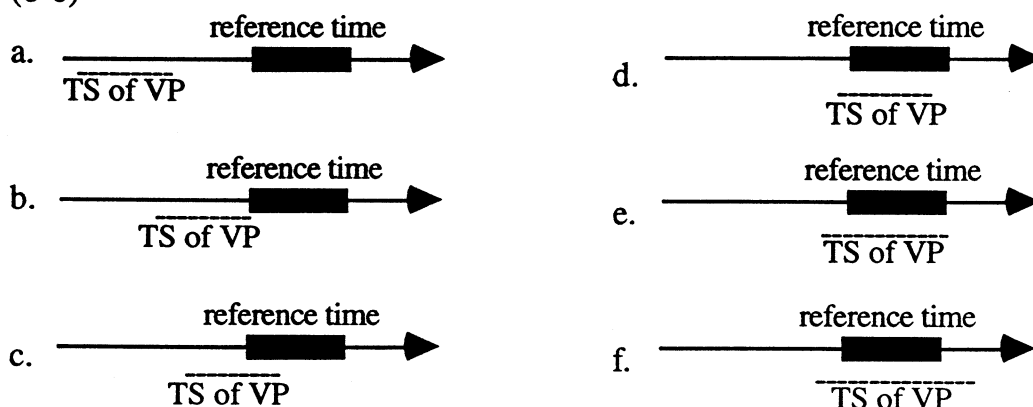
(6-5)

REICHENBACH (1947)	KLEIN (1992, 1994)	THIS ACCOUNT
present perfect: 1 semantic component	2 semantic components	3 semantic components

tense "present perfect"
 	
E   R
⊢———⊢——————▶
          S
	1.tense
	
	1.tense locates TT
	———■■■———▶
	        TU
	
	2. aspect
	
	2.aspect
	locates
	TS of VP 1.tense
	before TT locates TT
	———————■■■——▶
	            TU
		1.tense
		
		1.tense locates R
		———■■■———▶
		        TU
		
		2. aspect
		
		2.aspect locates TS of
		[VP+PART+AUX] at R
		1.tense locates R
		———■■■———▶
		        TU
		
		3. denotation of [PART + AUX]
		
		3. the semantics of
		the past participle
		locates the TS of VP
		before R.
		
		2.aspect locates TS of
		[VP+PART+AUX] at R
		1.tense locates R
		———————■■■——▶
		TS of VP TU

Note that while tense and aspect are generally treated as functional categories, the status of the past participle morpheme in combination with the auxiliary may be a quite different one in the grammatical system. Specifically, it seems likely that the past participle morpheme is a derivational affix, while tense and aspect are inflectional. This is in accordance with the widespread assumption that past participles are adjectival rather than verbal - i.e., according to this view, the past participle morpheme triggers a change of the syntactic category, which is typical for derivational processes.

Finally, recall the various options concerning the possible time relations between the evaluation time of a past participle and the situation time of the verb contained in the past participle; they were displayed in (2-5) above. Let us briefly consider what these options amount to with regard to the occurrence of past participles in perfect constructions. As argued above, the semantics of the past participle locates the situation time of the verb before the reference time. Thus, one may say that the reference time plays the role of the evaluation time of the past participle in perfect constructions. As in other constructions containing past participles, only an interval of the verb's situation time must be located before the evaluation time. Hence, all the temporal relations illustrated in (6-6) are in principle acceptable for the reference time and the situation time of the verb.

(6-6)

a.　reference time / TS of VP   d.　reference time / TS of VP

b.　reference time / TS of VP   e.　reference time / TS of VP

c.　reference time / TS of VP   f.　reference time / TS of VP

The analysis we have established provides a basis for further investigation of problems concerning the present perfect - for instance, of the question of how the different readings of the present perfect come about. The semantics that I proposed in this paper is arguably subject to some independently motivated principles of temporal semantics as well as to well-established pragmatic principles. These principles can be exploited in order to analyze the temporal and aspectual flavors that occur with present perfect constructions. This analysis, however, has to be dealt with in another paper (Musan (in progress)).

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