

## GERMAN PARTICIPLES II IN DISTRIBUTED MORPHOLOGY

### 1. INTRODUCTION

The semantic claim defended in this article is that the Participle II morphology is not linked to a uniform meaning. The meaning rather co-varies with the syntactic function of the participle. As *supines*, participles II either express the Eventive Perfect or the Eventive Passive. As *predicative adjectives*, participles II express the Resultative Perfect/Stative Passive. As predicative adjectives, participles II either express Passive + Eventive Perfect Passive or the Resultative Perfect.

- (1) a. Ede hat den Computer repariert. (Eventive Perfect)  
Ede has the computer repaired
- b. Der Computer wird repariert. (Eventive Passive)  
the computer is being repaired
- c. Der Computer ist repariert (Resultative Perfect)  
the computer is repaired
- d. der reparierte Computer (Eventive Perfect Passive/Resultative Perfect)  
the repaired computer

The different meanings will be reconstructed by the introduction of different functional heads with which temporal adverbs scopally interact. The participle morphology as such doesn't seem to have any meaning at all in isolation. This is the position of (Stechow and Sternefeld 1988), and it is assumed here, too.

It is important to treat the four constructions together if we want to have an overall picture of the architecture. If we are concerned with one particular construction only, say the verbal perfect, we easily forget that the participle II has different functions as well.

Concerning the syntax/semantics interface for the Perfect, virtually everyone agrees that adverbs of duration and temporal adverbs scopally interact with it. But people disagree on the question of where Perfect is located in the syntax. There are three possible positions. First, Perfect is located in the auxiliary. Second, Perfect is located in the participle morphology. Third,

Perfect is introduced by a syncategorematic rule. The first position seems to be the only compatible one with the syntax given in (Chomsky 1957) and (Radford 1997) (see section 8), but little has been done to elaborate a semantics for this kind of syntax. Recent proposals are (Rathert 1999) and (Stechow 1999). The second account is advocated by (Ballweg 1989; Zeller 1994; Musan 1998; Giorgi and Pianesi 1998 and many others) . The third position is found in just those proposals that are semantically elaborated, e.g. (Fabricius-Hansen 1986); (Mittwoch 1988), (Dowty 1979), (Kamp and Reyle 1993), (Hitzeman 1993). Syncategorematic rules are used when compositional rules fail. Here is a standard example:

(2) Mary has lived in Amsterdam for three years

The sentence is ambiguous. The Extended Now reading means that Mary lives in Amsterdam for a period that started at least three years in the past and includes the speech time (McCawley's (1971) Universal Perfect). The existential reading means that Mary lived in Amsterdam for three years at a time in the past that lasted at least three years. In order to derive the ambiguity, (Kamp and Reyle 1993, p. 598 f.) introduce a number of context-sensitive rules for the Perfect auxiliary *have*. The VP figuring in (2) has two different structures:

- (3) a. [<sub>VP</sub> have [<sub>VP</sub> lived in Amsterdam for three years]]      Existential Perfect  
       b. [<sub>VP</sub> have [<sub>VP</sub> lived in Amsterdam] for three years]      Universal Perfect

This looks like a scope solution, but it isn't. The first structure is interpreted by the rule CR.HAVE (p. 598), which roughly means "is after a VP-time". Hence *have* expresses posteriority. The second structure is interpreted by the rule CR.HAVE.Adv (p. 590), which roughly means "is in a VP time that started three years ago". Hence, *have* expresses an Extended Now in the sense of (McCoard 1978) in this configuration and there is no uniform meaning for the Perfect (= *have*). There are more Perfect rules in Kamp and Reyle's system. An similar proliferation of syncategorematic Perfect rules is found in (Mittwoch 1988), and the same is true for Fabricius-Hansen's (1986) tense rules. My reaction toward syncategorematic rules of this kind is the same as toward non-trivial meaning postulates: we use them if we haven't understood the construction yet.

The route I have been taking for a number of years is a syntactic one. The idea is that problems of compositionality such as exhibited by the old chestnut (2) arise with a syntax that is too surfacy. Modern syntax provides invisible functional heads and invisible operators that might

be used for scoping. For instance, (2) might be disambiguated by means of an invisible adverb of quantification  $\exists_{\underline{c}}$  meaning “at a subinterval” cf. (Bäuerle 1979):

- (4) a.  $[_{VP} \text{ have } [_{VP} [_{VP} \text{ lived in Amsterdam}] \text{ for three years}]]$  Universal Perfect  
b.  $[_{VP} \text{ have } \exists_{\underline{c}} [_{VP} [_{VP} \text{ lived in Amsterdam}] \text{ for three years}]]$  Existential Perfect

Suppose, *have* expresses an Extended Now. Then (4a) should be interpreted as: “The Extended Now is a living in Amsterdam for three years”, whereas (4a) should mean “The Extended Now contains a subinterval that is a living in Amsterdam for three years”. This interpretation is entirely compositional, but it hinges on the admission of the invisible  $\exists_{\underline{c}}$ , of course.<sup>1</sup> Similar remarks to abstract functional heads, which we will introduce in the sequel. Before rejecting the account as too abstract, one should compare its merits with traditional “surfacy” accounts. It’s the overall simplicity, here compositionality, that counts for the evaluation.

The framework used will be a sort of Distributed Morphology (cf. (Halle and Marantz 1993), (Marantz 1997)). An outline of the approach is given in section 3. This theory will enable us to give a rather satisfactory account of the predicative and the attributive Perfect construction.

We return to the initial question and ask where the Perfect information is located in the syntax. Since we don’t allow for syncategorematic rules, Perfect should either be associated with the auxiliary or with the participle. To be sure, the question is relevant only for the verbal construction, since the adjectival constructions, i.e., the predicative and the attributive participle behave rather differently from the verbal perfect. One would think that the question could easily be decided. We will see, however, that this is not so. For the time being, there are two possible theories, one with the semantic Perfect in the auxiliary, the other one with the Perfect in the participle morphology. I have found no good arguments for deciding the issue, provided the syntax has a certain degree of abstractness.

The organisation of the paper is as follows. Section 2 introduces the four different participle constructions and gives a first sketch of their semantics. In each construction, the participle has a different meaning, and in the attributive constructions we observe even two different meanings. There is no such thing as a core meaning of the participle II morphology. This speaks against an association of the Perfect meaning with the participle. Section 3 introduces the

version of Distributed Morphology used in this paper. Section 4 gives an analysis of the different kinds of verbal participles (supines) and shows how adverbs can interact with the semantics of abstract functional heads. Section 5 gives the syntax and semantics of predicative participles. We introduce a novel functor **RESBECOME** that operates directly on the lexical root and says that a time satisfies the property expressed by the root as a result of event that has generated that state. This semantics is an improvement over the existing proposals. Section 6 treats attributive participles. It is argued that they are derived from two different sources: either from what we have called predicative participles or from passivized supines in the perfect. These are the most complicated participle constructions of German. Section 7 deals with negation and its interaction with the perfect. Our principles of composition seem to force us to the view that the sentential negation is in the scope of Perfect, i.e. under the Perfect auxiliary or even the participle II, depending on what theory you have. Certain types of negation, for instance English *n't* must, however, be always be above the finite verb (Zanuttini 1991). I will introduce a theory of frame adverbs that is compatible with this assumption in many cases. There will be problematic residua, however.

## 2. PARTICIPLES AND ADVERBS: THE FOUR CONSTRUCTIONS

This section surveys the four different participle II phrases of German. They are so different both syntactically and semantically that it is very doubtful that there is a uniform meaning associated with the Participle II morphology. If one holds this view, one has to assume that the participle morphology has four different meanings, which are not related in a systematic way. It seems to be more natural that the source of the ambiguity lies somewhere else. A more natural assumption seems to be that the participle morphology has no meaning at all: there is no morphological ambiguity; we rather have different auxiliaries and different constructions.

### 2.1. *Verbal Perfect: Supines*

One of the semantics characteristics of the verbal present perfect is that it cannot be modified by

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<sup>1</sup> If I interpret the authors correctly, the analysis of the Perfect given in (Anagnostopoulou, Iatridou, and Izvorski 1997) is along these lines. Similar proposals are found in (Rathert 1999) and (Stechow 1999).

the temporal adverb *seit drei Tagen* “since three days”, whereas it is combinable with the adverb *vor drei Tagen* “three days before”. This adverb denotes a past time and must therefore be in the scope of a semantic Perfect.

*Seit drei Tagen* is a time measure adverbs that means that a state obtains for three days up to the local evaluation time.<sup>2</sup> The adverb should be combinable with the Perfect, and marginally this is the case. But the present is strongly preferred for the adverb. *Vor drei Tagen* is a sort of deictic frame adverbial and means that a state of affairs occurs at a time span which ends three days before the speech time.

- (5) a. Ede hat den Computer vor 3 Tagen repariert.  
 Ede has the computer before 3 days repaired  
 “Ede repaired the computer 3 days ago”  
 [---//---]← 3 days →s\* E-Perfect
- b. Ede hat den Computer schon seit 3 Tagen repariert.  
 Ede has the computer already since 3 days repaired  
 “Ede has been repairing the computer for 3 days”  
 ?[//////////s\*] U-Perfect  
 ← 3 days →
- c. Ede hat den Computer seit 3 Tagen repariert.  
 Ede has the Computer since 3 days repaired  
 ?“Ede had repaired the computer for 3 days”  
 ?[//////////[--]-----s\* Past Progressive  
 ← 3 days →
- d. Ede hat den Computer seit 3 Tagen repariert.  
 ?-----[//////////[-----]s\* Resultative  
 ← 3 days →

The diagrams are read according to the following conventions: s\* denotes the speech time, [---] is the perfect interval, i.e., the time introduced by the semantic Perfect. ///// is the event time. the reference time introduced by the Present is identified with s\*.

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<sup>2</sup> English *since* is not combinable with time measures for some reason not known to me.

In my German, the only straightforward construction is (5a). The term Existential (= E) Perfect originates with (McCawley 1971). It means that an instance of the events described by the VP occurs within the Perfect interval. The term Universal (= U) Perfect is used in (Anagnostopoulou, Iatridou, and Izvorski 1997). It describes Extended Now readings in the sense of (McCoard 1978). An Extended Now is an interval that extends to the reference time. In English, the reference time is included in that interval, in German the reference time seems to be excluded (cf. (Rathert 1999)). The notion of reference time is confusing here, because we have two reference times, one introduced by the Present and the other by the Perfect. We our remark about inclusion or exclusion concerns the reference time introduced by the deictic tense, i.e. Present or Perfect. In German, Extended Now readings typically require the particle *schon* (cf. (Schiporeit 1971)). The *seit*-adverbial requires a stative predicate. Therefore we have to progressivize the VP in order to obtain the Past reading (5c). In Standard German, the Progressive is not morphologically marked.<sup>3</sup> As to (5d), I don't easily accept the resultative reading for transitive accomplishments/achievements, but some people do.

Leaving open the question whether the Perfect (**Perf**) is expressed by the participle morphology or by the auxiliary, we certainly want to obtain these different readings as an outcome of scope interaction of **Perf** and the adverbs. In fact, the LFs our systems will interpret, will do exactly that. Details aside, the four readings will be represented as:

- |     |    |                      |                                 |
|-----|----|----------------------|---------------------------------|
| (6) | a. | E-Perfect:           | <b>Pres Perf FrameAdv VP</b>    |
|     | b. | U-Perfect:           | <b>Pres Perf DurAdv VP</b>      |
|     | c. | Past Progressive:    | <b>Pres Perf DurAdv Prog VP</b> |
|     | d. | Resultative Perfect: | <b>Pres DurAdv Perf VP</b>      |

The precise semantics of the semantemes involved will be given in the next section. For the time being, keep in mind that in this particular construction, the participle II has to be linked to the **Perf** interpretation.

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<sup>3</sup> There is a substandard progressive variant, viz. the *Rheinische Verlaufsform*. Using that form, sentence (5c) would have to be expressed as

Ede ist den Computer schon seit drei Tagen am reparieren gewesen.

*Ede is the computer already since three days at repair been*

## 2.2. *The Eventive Passive*

The following example is intended to remind you of the trivial fact that eventive passives with a present auxiliary are statements about the present. This is a crucial fact that should not be overlooked if one claims that the participle II morphology expresses the semantic Perfect. Passives provide clear counterexamples.

### (7) *Eventive Passive*

- a. \*Der Computer wird vor 3 Tagen repariert.<sup>4</sup>  
the computer becomes before three days repaired  
“The computer is repaired 3 days before”
- b. <sup>OK</sup>Der Computer wird seit 3 Tagen repariert.  
the computer becomes repaired since 3 days

In this particular construction, the participle II morphology is linked with the semantics of Passive. It is not linked to **Perf** or any sort of anteriority. To give an idea of why (7a) is odd, here is a sketch of the semantic representation our theory will provide:

- (8) s\* is 3 days before s\* & the computer is being repaired at s\*

The first conjunct is a plain contradiction, and the sentence is out.

## 2.3. *The Predicative Participle*

There are a number of names for this construction: Adjectival Passive, Stative Passive (German *Zustandspassiv*), *sein*-Perfect, Resultative Perfect and others. There seems to be general agreement that the participle is not verbal but rather adjectival. For a recent discussion, see (Rapp 1998). Researchers also agree on the interpretation: in this construction the participle expresses the result or outcome of an event. There is little agreement on what the syntax of the construction is and how the semantic intuition can be made precise in formal terms. Our semantics will closely (but not entirely) follow (Kratzer 1994). Here is the relevant pattern:

### (9) *Predicative Perfect*<sup>5</sup>

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<sup>4</sup> I am not considering the so-called Historical Present.

- a. \*Der Computer ist vor 3 Tagen repariert.  
the computer is repaired before 3 days
- b. Der Computer ist seit drei Tagen repariert.  
the computer is since 3 days repaired

The contrast shows that this stative passive is a present statement. It means that the computer is in the result state of a repairing. (9b) means that the computer has been repaired for three days, a state of affairs we can and must express by the present tense in German and by the perfect in English. As (9b) shows, frame adverbs have no access to the event time in this construction, i.e., the time of the repairing, though other manner adverbs and instrumental adverbs seem to be able to modify the event (cf. (Kratzer 1994) and (Rapp 1997)). The LF of the adjectival construction will be roughly this:

(10) **DurAdv RESBEC the computer intact**

The precise semantics of the functor **RESCBEC** “result of a becoming” will be given in section 5. The result operator will have a rather different semantics from the Perfect. The consequence is this: If the participle II morphology expressed the resultativity, i.e. **RESBEC**, then we would have to assume a third meaning for the participle morphology.

#### 2.4. *Attributive Participles*

The most puzzling construction of German is the attributive participle II construction. Already (Toman 1980) observed that this construction is very similar to a full sentence. The range of interpretations that are possible for this construction is, however, rather restricted. With a few

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<sup>5</sup> To my knowledge, the following contrast has first been observed in Glinz (1968), p. 369, where the following examples are given:

- a. <sup>OK</sup>Die Anlage ist vor einem Jahr zerstört worden (Event Passive)  
The complex is a year ago destroyed become
- b. \*Die Anlage ist seit einem Jahr zerstört worden  
The complex is since a year ago destroyed become
- c. <sup>OK</sup>Die Anlage ist seit einem Jahr zerstört (Adjectival Passive)  
The complex is since a year destroyed



exceptions it either has the meaning of the adjectival passive or it is a Perfect applied to a passivized participle or to an unaccusative participle. Hence, attributive participles hide two different constructions. A further, non-trivial problem, is the characterisation of the external argument of the participle phrase. This will be treated in section 6. Here are the relevant examples.

(11) *The attributive construction*

- a. der vor 3 Tagen (von Ede) reparierte Computer      (Perfect Passive)  
     the before 3 days (by Ede) repaired computer
- b. der vor zwei Stunden eingeschlafene Riese  
     the two hours ago slept-in giant      (unaccusative)
- c. der seit 3 Tagen (?von Ede) reparierte Computer      (Adjectival Passive)  
     the seit 3 days (by Ede) repaired computer

The oddity of the *von*-phrase is evidence that (11b) is not a passive construction. On the other hand, (11a) is a passivized Perfect. There might be very far-fetched Perfect Passive interpretations for (11c) in analogy to the examples (5c) and (5d), but these are very hard to get, if they exist at all. I will neglect them here.

The two interpretations are corroborated by an observation in (Kratzer 1994), which concerns the following examples:

(12) (Kratzer 1997), (Kratzer 1994)

- a. Das Kind wurde schlampig gekämmt      Eventive Passive : - reflexive  
     The child became carelessly combed
- b. Das Kind war schlampig gekämmt      Adjectival Passive: ±reflexive  
     The child was carelessly combed

The observation is that in the case of an Eventive Passive, the subject cannot have performed the action herself. This is expressed by the feature [- reflexive]. The Adjectival passive, however, leaves the agent completely open: either the child is the comber or someone else combed the child. Kratzer's explanation is in terms of the Binding Theory. The Eventive Passive contains a subject, call it  $pro_{arb}$  (Germ. "man"), and co-indexing of  $pro_{arb}$  and *das Kind* would certainly violate the Binding Theory. Perhaps, we would have the following crossover configuration:

(13) the child<sub>i</sub> [<sub>VP</sub> pro<sub>arb,i</sub> comb t<sub>i</sub>]

No violation of the Binding Theory arises with (12a), because the Adjectival Passive is not a raising construction.<sup>6</sup>

It is interesting to note that Kratzer's observation carries over to the attributive participle construction:

- (14) a. das seit 2 Stunden gekämmte Kind  
           the since 2 hours combed child           [± reflexive]  
       b. das vor zwei Stunden gekämmte Kind  
           the before two hours combed child    [- reflexive]

In both cases, the combing occurred two hours ago, but there is the difference that the child might have combed herself in the case of (14a), while this is excluded for the construction (14b). Our theory will provide the following LFs for the attributive participle phrases:

- (15) a.  $\lambda x \lambda t \lambda w [\text{AP since 2 hours}(t) \ \& \ \text{RESBEC}_{wt} \text{ combed}(x)]$   
       b.  $\lambda x \lambda t \lambda w \exists t' [\text{AP } t' | < t \ \& \ \text{2 hours ago}_s(t') \ \& \ \exists e [\text{VP } e \subseteq t \ \& \ \text{Agent}_{ew}(\text{pro}_{arb}) \ \& \ \text{BECOME}_{ew} \text{ combed}(x)]]$

If we think of the  $\lambda$ -binding of the subject variable  $x$  as operator movement, then co-indexing of  $\text{pro}_{arb}$  and  $x$  in (15b) would even be a violation of principle C.

I have to mention that some attributive constructions seem to have a present passive meaning and therefore do not fit the generalisation that passivized participles are always in the perfect. Here are examples:

- (16) a. ein oft gehörter Einwand  
           an often heard objection

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<sup>6</sup> There are arguments in the literature that the implicit passive subject cannot be a syntactic controller like *pro* or PRO (Roberts 1985, p. 132) gives examples such as:

- (i)       \*?Letters were e.c.<sub>i</sub> sent to themselves<sub>i</sub>  
 (ii)      \*The book was read e.c.<sub>i</sub> without PRO<sub>i</sub> putting it down.

I am not aware of a theory that constrains the syntactic activity of the implicit logical subject of a passive construction in the correct way and makes semantic sense at the same time. Obviously, I cannot discuss the complex issue here.

- b. ein gern gesehener Gast  
a with pleasure seen guest
- c. ein viel diskutiertes Problem  
a much discussed problem

Note, however, that all of these have a generic meaning. An episodic interpretation seems not possible:

- (17) a. \*der zur Zeit von mir geschriebene Aufsatz  
the at this time by me written paper
- b. \*der gerade von uns bestiegene Berg  
the at present by us climbed mountain

So there is something special going on with these examples, which I do not understand well. I will not treat these data.

Let us summarise the findings of this section. There is no doubt that the **Perfect-Passive**-information and the **RESBEC**-information has to be localised in the interior of the attributive participle phrase. If this information were linked to the participle II morphology, then the morphology should be able to carry the additional meaning **Perfect-Passive**.

### 3. THE THEORETICAL FRAMEWORK: DM + TLF

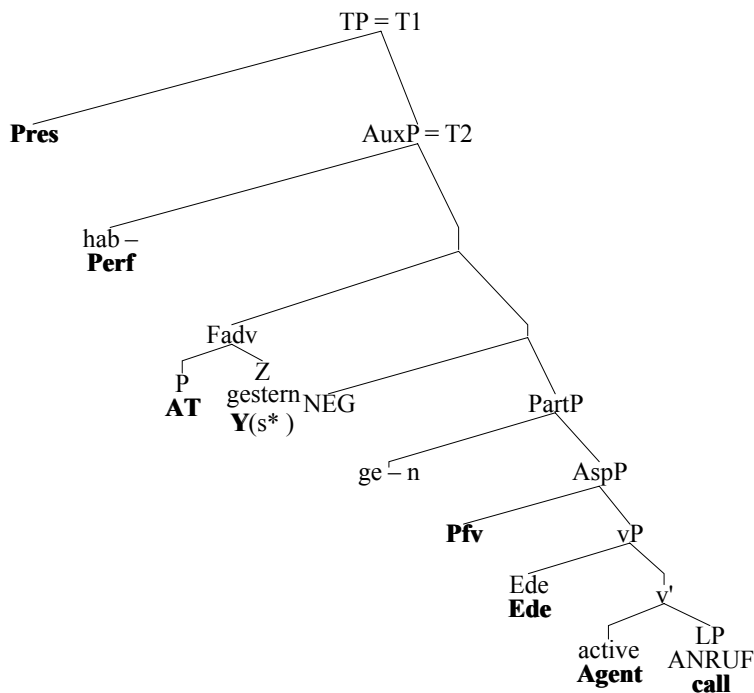
The generative framework I have been using over the last decade ((Stechow 1993), (Stechow 1996)) is a version of Distributed Morphology (= DM) ((Halle and Marantz 1993), (Marantz 1997), (Alexiadou 1997)) combined with what Irene Heim once baptised “Transparent Logical Form” (TLF). One of the leading ideas of DM is that “words” may be formed in the syntax. Words don’t always have “lexical” categories like N, A, V, P in the “lexicon”. In most cases, the “lexicon” contains roots without any categorisation. The lexical categories are, at least in many cases, introduced in the syntax by functional heads, which may have a meaning with which adverbs can scopally interact. For instance, the root of an intransitive achievement will typically be embedded under the light verb BECOME. A causative achievement will contain a further light verb **Agent** or **Causer**, which introduces the agent of the event. I have to add a *caveat* at this point. My use of the term *Distributed Morphology* does not imply that I commit myself to the

claim that morphology always applies post-syntactically. I could have used the term *Modular Morphology* used occasionally by Baker (Baker 1988a; Baker 1988b; Baker 1988c) or *Parallel Morphology* used by Borer (Borer 1991) as well. If there are differences that could distinguish these theories, they are immaterial for the descriptive aim of this article.

A TLF is a tree that makes the semantic interpretation explicit. Every head is reconstructed to its base position, and the arguments are at the place where they are semantically interpreted, i.e., quantifier scope is spelled out explicitly in terms of c-command. Modulo context-dependency, TLFs determine the semantic interpretation unambiguously. Details aside, TLFs can be mapped directly into the explicit semantic representations provided by DRT (cf. (Kamp and Reyle 1993)).

(18b) is the TLF for the sentence (18a).

- (18) a. Ede hat gestern angerufen.  
b.



The tree abstracts from the fact that German is right-headed. The meanings of the terminal nodes are written in bold face letters. Functional heads are not necessarily phonetically visible, for instance, the nodes T1, the P-node **AT**, the Aspect node **Pfv** (“Perfective”) and the light verb

**Agent** have no phonetic pendant. As mentioned already, the “verbal” root has no lexical category at all. **Agent** is located in a functional head called voice in (Kratzer 1994).

The tree may be regarded as a D-structure. The surface structure (or spell-out) is generated by head movement and by moving the arguments to their case positions. The TLF ignores head movement and scopes quantifiers by means of QR (cf. (May 1977)).

The meanings are written in a formal typed language. I will assume the following logical types: *e* the type of individuals, *t* the type of truth values, *s* the type of events, *i* the type of times and *w* is the type of worlds. We abbreviate the type of time-dependent propositions  $\langle i, \langle w, t \rangle \rangle$  as *p*. For the time being, the principles of semantic composition are functional application and  $\lambda$ -abstraction. The TLF proper is therefore the following expression.

(19) **Pres Perf AT Y(s\*) Pfv Ede call**

The brackets of the expression are left out because they will be obvious from the logical types of the symbols involved. Here is what we need.

(20) *Tenses*

have the type  $\langle p, p \rangle$

a. **Pres** =  $\lambda PP$

b. **Past** =  $\lambda P \lambda r \lambda w \exists t [t < r \ \& \ P(t)(w)]$

c. **Perf** =  $\lambda P \lambda r \lambda w \exists t [t <| r \ \& \ P(t)(w)]$ , where  $<|$  means that *t* is before *r* or abuts *r* from the left.

d. **Fut** =  $\lambda P \lambda r \lambda w \exists t [t > r \ \& \ P(t)(w)]$ , where  $t > r$  means that *t* is after *r* or abuts *r* from the right.

The difference between **Perf** and **Past** is that the Perfect interval may abut the local evaluation time whereas **Past** gives us an interval that is strictly before the local evaluation time. **Past** and **Pres** are deictic tenses and are evaluated with respect to the speech time *s\**. We obtain the effect by starting the evaluation with the speech time *s\** and the actual world @, the convention used by (Montague 1973), (Ogihara 1989) and many others. The standard semantics for tenses, which follows (Reichenbach 1947), assumes that the time introduced by the Perfect is properly before the reference time/local evaluation time. Perfect simply is a relative **Past** (cf. e.g. (Klein 1994), who calls this relation an aspect). The standard semantics has problems with so-called Extended

Now readings, which are typical for the Perfect (cf. (Schiporeit 1971) and (McCoard 1978)). We will address this point below.

A conceptually different, and perhaps better approach to the meaning of the Perfect takes the Extended Now readings as a starting point for the analysis of the Perfect ((Dowty 1979), (Fabricius-Hansen 1986), (Abusch and Rooth 1990), (Anagnostopoulou, Iatridou, and Izvorski 1997), (Rathert 1999), (Stechow 1999)). (Abusch 1999) extends the Extended Now interpretation to the analysis of the English **Past** in general. In this paper, we take a more conventional line, which is a slight digression of the standard semantics only. The approach is found in recent work by Renate Musan (cf. (Musan 1999)) and covers the facts of German quite well.

The so-called Aspect node contains what (Kamp and Reyle 1993) call the location time. Non-stative events have a certain duration that need not coincide with the reference time. We follow (Klein 1994) in calling location times aspects, though genuine aspect are modal operators, a typical case being the Progressive, which means that an event is going on and will be completed in the normal course of events (cf. (Dowty 1979)). *Imperfective* is a cover term for Progressive and Habituality (cf. (Comrie 1976)).<sup>7</sup> *Perfective* means that an event is essentially complete, i.e., there is no possible world in which it can be extended (cf. (Paslawska and Stechow 1999)). For the time being, the following simple definitions will do:

(21) *Aspects*

Perfective:  $\mathbf{Pfv} = \lambda P \lambda t \lambda w \exists e [t(e) \subseteq t \ \& \ P(e)(w)]$  type  $\langle \text{swt}, p \rangle$

Imperfective:  $\mathbf{Ipfv} = \lambda P \lambda t \lambda w \exists e [t \subseteq t(e) \ \& \ P(e)(w)]$

$t(e)$  is the running time of the event  $e$ . Instead of  $t(e) \subseteq t$  we will simply write  $e \subseteq t$ . An aspect converts a property of events into a property of times. If statives are properties of times, they must therefore be aspectless. (Herweg 1990) and (Katz 1997) argue that statives are indeed properties of times. I think this is true in the general case, but there might be some exceptions, namely passivizable statives. These may involve a state variable. See section 4.3.4.

The next point concerns the lexical entries for verbs. In order to get the participles right, it is crucial to introduce lexical decomposition. This will be done in the following sections. For the

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<sup>7</sup> In Slavic languages, the Imperfective has additional, contextualized uses. For instance, negated modals require imperfective verbs in their scope. If we want to know specific details about a telic actions, the verb is expressed in the imperfective as well. For a recent discussion, see (Schoorlemmer 1995, chapter III).

time being we note that accomplishments, achievements and activities in the sense of the Vendler classification are properties of events. Statives are mostly properties of times.

Here is the entry for the VP of example (18)/(19).

- (22) **[Ede Agent call](e)(w) =  $\lambda e[e$  is a calling in  $w$  that is done by Ede in  $w$ ], where**  
**call =  $\lambda e[e$  is a calling in  $w$ ]**  
**Agent =  $\lambda P\lambda x\lambda e\lambda w[x$  is the agent of  $e$  in  $w$  &  $P(e)(w)$ ]**

Finally, we need the meaning of “yesterday”. For reasons that will become clear in section 7, the adverb will mean “at the entire yesterday”:

- (23) **AT Y(s\*) =  $\lambda P\lambda t\lambda w[t$  = the day that is before the day that contains the speech time  $s^*$  &  $P(t)(w)$ ]**

We can now evaluate the LF (19) by using functional application (= FA) as the only semantic operation.

**[Pres Perf AT Y(s\*) Pfv Ede call](s\*)(@)**  
iff **[Pres]([Perf AT Y(s\*) Pfv Ede call](s\*)(@))** FA  
iff **[Perf AT Y(s\*) Pfv Ede call](s\*)(@)** meaning of **Pres**  
iff **[Perf]([AT Y(s\*) Pfv Ede call](s\*)(@))** FA  
iff  $\exists t[t < s^* \text{ \& } [AT Y(s*) Pfv Ede call](t)(@)]$  meaning of **Perf**  
iff  $\exists t[t < s^* \text{ \& } t = \text{yesterday}(s^*) \text{ \& } [Pfv Ede call](t)(@)]$  meaning of **AT Y(s\*)**  
iff  $\exists t[t < s^* \text{ \& } = \text{yesterday}(s^*) \text{ \& } [Pfv]([Ede call](t)(@))]$  FA  
iff  $\exists t[t < s^* \text{ \& } = \text{yesterday}(s^*) \text{ \& } \exists e[e \subseteq t \text{ \& } [Ede call](t)(@)]]$  meaning of **Pfv**  
iff  $\exists t[t < s^* \text{ \& } = \text{yesterday}(s^*) \text{ \& } \exists e[e \subseteq t \text{ \& } e \text{ is a calling \& Ede is the agent of } e \text{ in } w]]$   
meaning of VP

This is a good approximation to the meaning of the sentence.

#### 4. THE STRUCTURE OF SUPINES

It is not my invention that the supine is the mere *verbum infinitum*. This view is due to Gunnar Bech and it is very impressive to see his motivation, which comes from his classification of the non-finite verb. This is Bech’s famous doctrine of the *status verbi*. Bech knows three statuses. I

will introduce a further one, which corresponds to the English *ing*-form, i.e. the Progressive morphology. It is a striking fact that Bech’s Supine morphology has no meaning, whereas the so called “Participle” morphology in the technical sense of Bech has meaning. In section 8 I will point out that Bech’s classification leads in a straightforward way to a syntax in the style of Chomsky’s *Syntactic Structures*.

#### 4.1. Bech’s Classification of the Non-finite Verb

It is convenient to have a precise descriptive terminology for participles. We will use the classification of (Bech 1955/57), which is standard in the German grammar tradition. Bech distinguishes between two kinds of participles: the *Supine* (verbal participle) and *Participle* (adjectival participle). The morphology distinguishes three statuses. This leads to the following classification of participles:

(24) Bech (1955/57)’s distinction between supines and participles

	<b>Supine</b>	<b>Participle</b>
<b>1. status</b>	reparieren “repair”	reparierender “repairing” (Adj)
<b>2. status</b>	zu reparieren “to repair”	zu reparierender “to repair” (Adj. pass.)
<b>3. status</b>	repariert “repaired”	reparierter “repaired” (Adj.)
<b>4. status</b>	am reparieren “repairing”	am reparierender “repairing” (Adj.)

Bech’s classification is interesting insofar as the forms of the 3. status belong to two different paradigms, and it is not clear at all that they should have the same meanings.

In fact, the contrary will be the case: the morphology of Bech’s participles has a more or less constant meaning for the different forms, for instance, the participle of 1. status is a present passive adjectival form, the participle of the 1. status is passivized necessity and therefore often carries a future meaning (cf. Engl. “tough to eat”), the participle of 3 status is either a Perfect Passive or a Stative Passive.

As to supines, according to Bech they are simply non-finite forms of the verb, and it is not obvious that they have any diathetic or temporal meaning. The discussion in the last section suggests that it is perhaps more cautious to assume that the supine morphology has no meaning at all. This is the position adopted in (Stechow and Sternefeld 1988) and we will adopt it here, too.

I should add that Bech did not consider the substandard Progressive form of German (“Rheinische Verlaufsform”), which corresponds to the English Progressive form:



(25) Ede ist den Computer am reparieren gewesen.

Ede is the Computer at repairing been

“Ede has been repairing the Computer”

Clearly, the form *am reparieren* is a supine and should therefore be classified as 4. status in Bech’s system. The last line in the above chart is my addition. It is not found in Bech’s original system. Similarly should the English *ing*-form be a supine of 4. status.

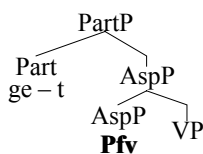
#### 4.2. PartP and AspP

The general characteristics of supines is that they embed a VP, which may be agentive (active or passive) or non-accusative (i.e. a BECOME-vP). The aspect node has to be under the Participle node, as Slavic languages that have a participle II clearly show. Here are two examples from Ukrainian:

- (26) a. Bona bula äytala knyĭku  
 she was read (participle II, imperfective, female) book  
 “She had been reading a book”
- b. Bona bula proäytala knyĭku  
 she was read (participle II, perfective, female) book  
 “She had read a book”

Examples from Bulgarian illustrating the same point are given in (Anagnostopoulou, Iatridou, and Izvorski 1997). We will therefore assume the following structure for supines:

(27)



In what follows, we represent the participle inflection by *ge-t* also in cases in which it has a different shape. For instance, *geg-ess-en* “eaten”, *auf-geg-gessen* “completely eaten” *reparier-t* “repaired” will be represented as *ge-t+ess-*, *ge-t+aufess-* and *ge-t+reparier-* respectively.

### 4.3. Eventive Supines

The general characteristic is that all these have an agent introduced by a voice phrase, which is embedded under the participle morphology.

#### 4.3.1. Activities

The VP (or vP) is formed by the light verb **Agent** which may have the feature *active* or *passive*. The latter feature checks the passive auxiliary *werden*. Active Supines of 3. status check the **Perf**-auxiliary *haben* “have”. Here are two examples:

- (28) Ede hat gearbeitet.  
“Ede has worked”]  
T1 [T2 hat [PartP ge-t [AsP Pfv [vP Ede **Agent** [LP arbeit-]]]]]  
**Pres Perf Ede Agent working**

The reader may convince himself that this is the correct meaning. And here is the passive construction:

- (29) Es ist gearbeitet worden  
it is worked been  
T1 [T2 ist [PartP ge-t [AsP Pfv [vP pro<sub>arb</sub> **Agent** [LP arbeit-]]]]]  
**Pres Perf pro<sub>arb</sub> Agent working**

**pro<sub>arb</sub>** is the impersonal pronoun “man”. Its semantics and its different uses have been described in (Kratzer 1995).

#### 4.3.2. Achievements

The light verb forming an intransitive achievement is BECOME. Supines of 3. status check the **Perf**-auxiliary *sein* “be”.

- (30) Der Riese ist eingeschlafen  
the giant is slept in  
“The giant has fallen asleep”

T1 [T2 ist [PartP ge-n [AsP Pfv [vP BECOME [LP der Riese einschlaf-]]]]]  
**Pres Perf Pfv BECOME asleep(the giant)**

If we evaluate the TLF with respect to the reference point  $s^*$  @, we obtain the truth condition:

$\exists t [t < s^* \ \& \ \exists e [e \subseteq t \ \& \ \text{the giant is not asleep at beg}(t) \ \& \ \text{the giant is asleep at end}(t)]]$

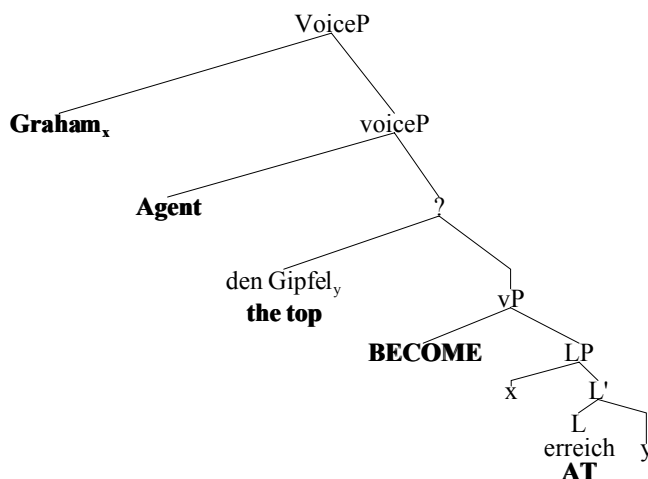
This reading does not entail that the giant is still asleep at the speech time  $s^*$ , the correct result.

Achievements are raising constructions in the sense that the subject is an argument of LP. This is not true for activities. There the subject is introduced by the voice **Agent**. Since **Agent** licenses the accusative, achievements are unaccusatives (Stechow 1996). Transitive achievements may or may not have an **Agent**-component:

- (31) a. Graham erreichte den Gipfel.  
 “Graham reached the top.”  
 b. Der Gipfel wurde von Graham erreicht.  
 “The top was reached by Graham.”

They are analysed as before, but the root has two arguments. If they have an agent, they must be control structures. For instance, the VP embedded under the PartP of (31a) must be something like this:

(32)



There are more unaccusatives, for instance, verbs of change of position. I will not analyse these here.

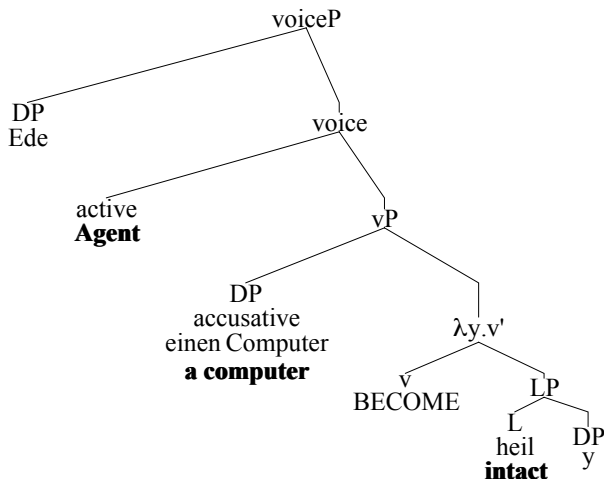
### 4.3.3. Accomplishments

Accomplishments are typically BECOME-verbs with an **Agent**. According to (Kratzer 1994), **Agent** licenses the structural accusative at the SpecvP-position. The voiceP embedded in the participle phrase of

- (33) Ede hat einen Computer repariert.  
 Ede has a computer repaired

therefore may be thought as having the following structure:

(34)



**Agent** [+active] checks the auxiliary *haben* “have”, while **Agent** [+passive] checks the auxiliary *werden* and requires an accusative  $pro_{arb}$  in its specifier position, i.e., a passive sentence has the following voiceP:

- (35) Ein Computer wurde repariert.  
 A computer was repaired  
 [<sub>voiceP</sub>  $pro_{arb,acc}$  **Agent** [<sub>vP</sub> BECOME [<sub>LP</sub> intact ein Computer]]]

The nominative object *ein Computer* raises to the nominative position SpecAgr. The Case theory certainly requires more comments, but the main idea is that the accusative is assigned to something phonetically invisible in the passive construction. In (Baker, Johnson, and Roberts

1989), it is assumed that this is INFL; we follow (Sternefeld 1995) in assuming that the accusative is assigned to the subject of the passive construction; see also (Stechow 1996).<sup>8</sup>

Note that our LFs are semantically fully transparent. For instance, the interpretation of (33) can be directly read from the TLF:

(36)  $\exists t [t \leq s^* \ \& \ \exists e [\mathbf{Agent}_{ew}(Ede) \ \& \ \exists x [\mathbf{Computer}_w(x) \ \& \ \mathbf{BECOME}_{ew}(\mathbf{intact}(x))]]]$

Double object constructions are more complicated. Basically, the LP embedded under **BECOME** is a two-place possessor predicate, where the possessor is in the dative. The dative is presumably checked at a position outside of VoiceP. Or it may be absorbed by the pro-subject of a passive construction, in which case we have a dative passive and voice+dative has to check the auxiliary *bekommen* or *kriegen*.

#### 4.3.4. Statives

Statives typically do not have an event argument and may be identified with properties of times. One-place statives are generally realised as adjectives, i.e., the A-head above the LP is semantically empty. There are very few cases in German in which one-place statives show up both as verbs and adjectives. It is not clear to me what the proper analysis of such verbs is. One could analyse the verb as a control construction, or one could analyse the root as an action, i.e. as a meaning not directly related to the adjective root. I indicate the two variants under (37b)

- (37) a. Gerhild ist wach gewesen.  
 Gerhild is awake been  
**Gerhild**  $\lambda x.$  **Pres Perf** [<sub>AP</sub> A [<sub>LP</sub> X **awake**]]
- b. Gerhild hat gewacht.  
 Gerhild has waked  
**Gerhild**  $\lambda x.$  **Pres Perf** [<sub>voicP</sub> X **Cause** [<sub>LP</sub> X **awake**]]

---

<sup>88</sup> The dative passive requires a  $pro_{arb}$  in the dative. In this case, **Agent** checks the auxiliary *bekommen* or *kriegen*. Here is an example:

Ich kriege einen Cognac geschenkt.  
 I receive a cognac donated  
 $pro_{arb,dat}$  **Agent**<sub>dat</sub> [<sub>VP</sub> a Cognac<sub>acc</sub> BECOME [<sub>LP</sub> I<sub>nom</sub> HAVE  $t_i$ ]]

The examples show that **Agent** should be thought as an agreement relation carrying a Case feature.

**Gerhild**  $\lambda x.$ **Pres Perf** [<sub>voiceP</sub> X **Agent** [<sub>LP</sub> **wake**]]

In any case, we have to make sure that the verbal variant allows for an impersonal passive in order to obtain sentences like:

- (38) Es ist viel gewacht worden.  
It is much waked been

Both analyses under (38b) are compatible with the passivization.

As to two-place statives, we follow (Rapp 1997), who distinguishes two classes. One class cannot be passivized. This class must have a semantically empty v-head above a two place LP. The other class has a passive and must have a subject external to LP, i.e., the root is intransitive. Rapp assumes that the external subject is introduced by the **Holder**-relation.

- (39) a. Diese Kiste hat einen Schatz enthalten.  
This container has a treasure contained.  
b. \*Der Schatz ist von einer Kiste enthalten worden.  
The treasure has by a container contained been

Thus, the participle phrase of this construction must be something like:

- (40) [<sub>VP</sub> V [<sub>LP</sub> X **contain** y]]

And here is the analysis of a **Holder**-verb.

- (41) a. Sie hat ihn geliebt.  
she has him loved  
**Pres Perf** [<sub>PsrtP</sub> -ed [<sub>voiceP</sub> **she Holder** [<sub>LP</sub> **love him**]]]  
b. Er ist von ihr geliebt worden  
he is by her loved been  
**by her**  $\lambda x.$  [<sub>PartP</sub> -ed [<sub>voiceP</sub> X **Holder** [<sub>LP</sub> **love he**]]]

(42b) is a control construction. The pro-subject of the voiceP is not an arbitrary pro in this case. It may be thought as an “operator”, i.e.  $\lambda y$ , that moves to the specifier of PartP and leaves a bound variable. The controller is the object of the **by**-phrase. Here is the semantics needed.

- (42) a. **Holder** =  $\lambda P \lambda x \lambda s \lambda w [x \text{ is the holder of } s \text{ in } w \ \& \ P(s)(w)]$

b. **love** =  $\lambda y \lambda s \lambda w [s \text{ is a loving of } y \text{ in } w]$

c. **by** =  $\lambda y \lambda P \lambda e \lambda w . P(y)(e)(w)$

The logical object of the **Holder**-relation is a state, here represented as *s*. A state may be thought as stage of an individual. “*x* is the holder of a state of loving him in *w* at *t*” means no more than “*x* loves him in *w* at *t*”. Thus, the talk about states is semantically superfluous and even obscure. If we need the **Holder**-relation then only for the fact that the syntax of the Passive construction requires a voiceP.

## 5. THE STRUCTURE OF THE PREDICATIVE PARTICIPLES

Recall that the adjectival participle is not a supine. Our analysis closely follows Kratzer (1994)’s proposal, but not entirely. Kratzer has an operator that only describes the result of an action. We have an operator that describes both the action and its result. We will show that Kratzer’s operator is not detailed enough.

Kratzer’s analysis of a resultative verb like *reparieren* “repair” is the following one:

(43) **repair** =  $\lambda x \lambda e \lambda w . \mathbf{intact}_w(x)(f_{\text{target}}(e))$

$f_{\text{target}}(e)$  is the target state of an event. The idea is, of course, that the target state of an event that is the repairing of a computer is a state in which the computer is repaired. If we conceive of states as a spatial-temporal locations, which Kratzer doesn’t, then the analysis certainly has the merit that the verb qualitatively describes the target state (which certainly improves Parson’s idea of consequent state CS, where no such lexical qualification is given; cf. Parsons (1990)).

For adjectival participles, Kratzer assumes that the participle morphology is linked with a perfectivizer PERF, which has the following semantics:

(44) **PERF**<sub>Kratzer</sub> =  $\lambda P \lambda s \lambda w \exists e [P(e)(w) \ \& \ s = f_{\text{target}}(e)]$ , P a property of events

The adjectival participle *repariert* therefore roughly has the structure:

(45)  $\lambda x [_{\text{AP}} A [_{\text{PartP}} \mathbf{PERF}_{\text{Kratzer}} [_{\text{LP}} \mathbf{repair}(x)]]]$   
 =  $\lambda x \lambda s \lambda w \exists e [\mathbf{intact}_w(x)(f_{\text{target}}(e)) \ \& \ s = f_{\text{target}}(e)]$

The adjectivizer A is semantically empty or it carries Kratzer’s perfectivizer, it really doesn’t

matter. If we identify states and times, we can correctly represent example (46a) as (46b)

- (46) a. Der Computer ist repariert.  
 b. **Pres** [<sub>AP</sub> A [<sub>PartP</sub> **PERF**<sub>Kratzer</sub> [<sub>LP</sub> **repair(the computer)**]]]

In (Stechow 1996), I suggested that this analysis cannot be quite correct, because it doesn't allow to capture the restitutive/repetitive ambiguity, which we observe for accomplishments with the adverb *wieder* "again". The sentence

- (47) Der Computer ist wieder repariert.  
 the computer is again repaired

has two interpretations: the repetitive one presupposes that the computer had been repaired before. The restitutive interpretation merely presupposes that the computer had been broken before. It may have been broken for the first time. We obtain the repetitive reading when we stress the adverb *wieder*. With nuclear stress on the participle we have the restitutive reading.

We are assuming the following semantics for *wieder again*, which is entirely standard (cf. (Dowty 1979) or (Stechow 1996)):

- (48) **again** is of type <p,p>.  
**again** =  $\lambda P \lambda s \lambda w [P(s)(w) / \& \exists s' [s' < s \ \& \ P(s')]]$ , where *s* is a time, if *P* is a property of times and *s* is an event, if *P* is a property of events.

This is short for two different meaning rules: **again** may modify a property of times or a property of events. The part following /& is the presupposition. A very similar notation is used in (Beaver 1992). The important point is that a presupposition may contain a bound variable (cf. also (Fabricius-Hansen 1983)).

Kratzer's analysis provides two adjunction sites for **again**, namely the LP and the PartP:

- (49) a. **Pres** [<sub>AP</sub> A [<sub>PartP</sub> **PERF**<sub>Kratzer</sub> **again** [<sub>LP</sub> **repair(the computer)**]]]  
 b. **Pres** [<sub>AP</sub> A **again** [<sub>PartP</sub> **PERF**<sub>Kratzer</sub> [<sub>LP</sub> **repair(the computer)**]]]

Neither of these yields the restitutive reading. (49a) says that the computer is in the target state of a repairing, which is after a previous repairing. (49b) means the computer is in the target state of a repairing, and there was a previous target state of a repairing. Both readings come to the same and are repetitive. The restitutive reading cannot be obtained, though it is even the unmarked



one.<sup>9</sup>

The conclusion drawn in (Stechow 1996) was that Kratzer’s analysis of accomplishments is not powerful enough. We have to turn to the more traditional decomposition analysis in terms of BECOME. In the sequel I will not use the term “perfectivizer” for the operator that expresses the target state. I will rather speak of a result operator **RESBEC** “result of a becoming”. The semantics of **RESBEC** is not entirely trivial, because the operator has to express two things. First, it has to say that the telic event described by the verb just occurred and secondly, it has to express the idea that the subject has the property that the verb lexically determines for the result state or target state. Consider our verb *reparieren*, which has the lexical structure **BECOME**(**intact**(x)). The sentence “The computer is repaired” should mean:

(50) **the computer**  $\lambda x \exists e [e \succ s^* \ \& \ \mathbf{BECOME}(\mathbf{intact}(x))(e)(w) \ \& \ \mathbf{intact}(x)(s^*)(w)]$

But how can the operator **RESBEC** create this complex predicate from the information **BECOME**(**intact**(x))? The operator must have access to the embedded information **intact**(x), which is compositionally impossible. In the original talk given at the Bergamo conference, I solved the problem by means a structured meaning approach. The operator was applied to a pair consisting of **BECOME** + **intact**(x). Though feasible, the approach was a bit complex, and I will not repeat it here. In a DM framework, there is a more direct way to formulating the semantics: we give up the idea that adjectival participles have a verbal root. **RESBEC** rather directly operates on the lexical root “x INTACT” and creates the complex participle meaning we see in (50). Here is the operator.

(51) *The result operator*

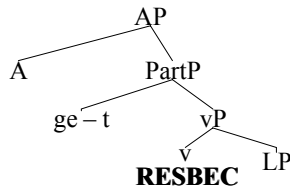
**RESBEC** =  $\lambda P \lambda t \lambda w \exists e [e \succ t \ \& \ \mathbf{BECOME}(p)(e)(w) \ \& \ p(t)(w)]$ , p a stative proposition

The structure of adjectival passive participle is therefore something like this.

(52)

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<sup>9</sup> If I remember correctly, I owe this insight Cathrine Fabricius-Hansen, who criticised an analysis in Kratzer’s style along these lines.



We have to say that the light verb **RESBEC** checks the empty A-head. It is not even clear that **RESBEC** is a light verb. It could very well be of the category Part. We can see now that the two readings arising with *wieder* **again** are correctly represented. If we attach **again** to the LP, we obtain the restitutive reading. If we attach it to the vP created by **RESBEC**, we get the repetitive reading:

- (53) a. **Pres the computer**  $\lambda_{X[AP A [_{PartP} \text{RESBEC again } [_{LP} \text{intact}(x)]]]}$  (restitutive)  
 b. **Pres the computer**  $\lambda_{X[AP A \text{ again } [_{PartP} \text{RESBEC } [_{LP} \text{intact}(x)]]]}$  (repetitive)

(53a) means that the computer is intact at the speech time as a result of an abutting repairing and the computer had been intact once before the repairing. (53b) means that the computer is intact as a result of an abutting repairing and it had been intact as a result of a repairing before. I think this analysis gives a satisfactory analysis of the problem mentioned, and I am not aware of a similar analysis from the literature.

It should be obvious how Glinz's contrast (9) can be explained:

- (54) a. <sup>OK</sup>Der Computer ist seit 3 Tagen repariert.  
 the computer is repaired since 3 days  
**Pres the computer**  $[_{AP} \lambda_{X} [_{PartP} \text{since}_{TM} \text{ 3 days } [_{PartP} \text{RESBEC } [_{LP} \text{intact}(x)]]]]]$   
 iff  $\exists t[|t| = 3 \text{ days} \ \& \ \text{end}(t) = \text{end}(s^*) \ \& \ \exists e[e \succ t \ \& \ \text{BEC}_{ew} \text{ intact}(\text{the computer}) \ \& \ \text{intact}(\text{the computer})(w)(t)]]]$
- b. \*Der Computer ist vor 3 Tagen repariert.  
 the computer is before 3 days repaired  
**Pres the computer**  $[_{AP} \lambda_{X} [_{PartP} \text{ 3 days ago } [_{PartP} \text{RESBEC } [_{LP} \text{intact}(x)]]]]]$   
 iff  $\exists t[t = s^* \ \& \ t \text{ is 3 days before } s^* \ \& \ \exists e[e \succ t \ \& \ \text{BECOME}_{ew} \text{ intact}(\text{the computer}) \ \& \ \text{intact}(\text{the computer})(w)(s^*)]]]$

The meaning of the time measure adverb **since<sub>TM</sub> 3 days** can be read off directly from the truth condition for (54a) and will not be given here. Note that this adverb introduces an Extended Now,

i.e. an abutting interval. In a way, this adverb corresponds to the English perfect. The sentence can be true at a very short speech time  $s^*$  in view of the fact that the non-finite lexical content “the computer repaired” is true of the Extended Now. Therefore, it is not necessary to extend the denotation of the German **Present** to a time before  $s^*$ .

*Vor drei Tagen* **3 days ago** is a deictic adverb; it says of the reference time that its end is three days before the speech time. If we evaluate the adverb at the speech time itself, we obtain a plain contradiction. Hence the ungrammaticality of the statement. The point could have been made with an adverb like *gestern* **Y(s\*)** as well.

The reader may convince himself that we have explained Kratzer’s contrast (12) as well. The non-reflexivity of the sentence (12a) follows from the fact that the passive construction has deep subject, which cannot be co-referential with the deep object (= surface subject). The adjectival passive has no deep object. The agent of the action is left open.

Participles II of non-causative achievement combine both with time measure adverbs and deictic frame adverbs. Klein (1997) gives the following example.

- (55) a. Der Riese ist seit 5 Minuten eingeschlafen  
           The giant is since 5 minutes slept in  
       b. Der Riese ist vor 5 Minuten eingeschlafen  
           The giant is 5 minutes ago slept in

The construction (55a) is an adjectival passive and is analysed exactly like (54a), i.e., the reference time is the Present. The participle in (55b), on the other hand, is a supine, and we have a **Perfect** construction. The deictic frame adverb *vor 5 Minuten* **5 minutes ago** has narrow scope with respect to the **Perf**-operator, and no contradiction arises. Here are the two TLFs:

- (56) a. **Pres** [<sub>AP</sub> **since 5 minutes** [<sub>AP</sub> A [<sub>PartP</sub> **RESBEC** [<sub>LP</sub> **asleep(the giant)**]]]]]  
       b. **Pres Perf** [<sub>VP</sub> **5 minutes ago** [<sub>VP</sub> **BECOME** [<sub>LP</sub> **asleep(the giant)**]]]]

In other words, for achievements the *sein*-Perfect is ambiguous between the adjectival and the supine construction. In contrast to Klein (1997) I hold the view that no unified analysis for the two constructions is possible.

## 6. ATTRIBUTIVE PARTICIPLES

Attributive participles have the following properties.

1. They have adjectival inflection.
2. They are unaccusatives with respect to their external argument.
3. They are either adjectival passives or supine passives, or achievements.
4. With a few exceptions, the supine construction carries the Perfect.

We start with the adjectival passives. The only thing we have to add is the adjectival inflection.

The participle in

- (57) a. der seit drei Tagen reparierte Computer  
 b.  $\lambda x$  [<sub>AGR</sub> **since**<sub>TM</sub> **3 days** [<sub>AGR</sub> nom. sg. m. [<sub>AP</sub> A [<sub>PsrtP</sub> **RESBEC** [<sub>LP</sub> **intact(x)**]]]]]]

The account entails that the nominal

- (58) \*der seit drei Tagen von Ede reparierte Computer  
 the since three days by Ede repaired computer

is not a good one. The passive adjunct von Ede “by Ede” controls the agent, and there is none in the participle. The example

- (59) der vor drei Tagen von Ede reparierte Computer  
 the 3 days ago repaired computer

is fine but has a different structure. We know that the modified participle must express the following information, but it is less clear how the information is linked with the morpho-syntactic structure. Here is a tentative analysis.

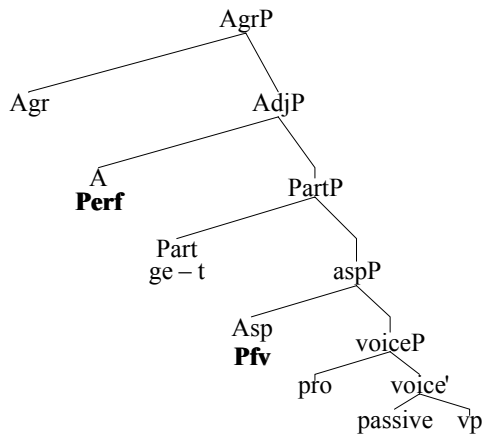
- (60)  $\lambda x \lambda t \lambda w$  [<sub>AGR</sub> [<sub>AP</sub>  $\exists t' t' < t$  & [<sub>PartP</sub>  $t'$  is 3 days before  $s^*$  & [<sub>PartP</sub>  $ge-t$  [<sub>AspP</sub>  $\exists e e \subseteq t'$  & [<sub>voiceP</sub> **Agent**<sub>ew</sub>(**pro**<sub>acc</sub>) & [<sub>vP</sub> **BECOME**<sub>ew</sub>(**intact(x)**)].....]

Normally, the passive information **Agent**<sub>ew</sub>(**pro**<sub>acc</sub>) checks the presence of the passive auxiliary *werden*, which is missing in the construction. Furthermore, there is no obvious carrier for the Perfect information “ $\exists t' t' < t$ ”, which is introduced by the **Perf**-semanteme. The tentative solution is that **Perf** is located in the A-head. An A with **Perf** has to check an adjectival agreement, because the Perfect Passive supine is not possible in predicative position:

- (61) \*Der Computer ist vor drei Tagen repariert  
 the computer is 3 days ago repaired

In any case, it seems necessary to assume a construction specific syntax here. Since the architecture is somewhat messy, I indicate the structure of the supine attribute by means of a tree:

- (62) *Eventive Attributive Participles*



We have to say that a passive head is licensed in a structure that contains the nodes **Pfv**, **Perf**, **Agr**. One could localise the **Perf**-information in the participle head **Part** as well, of course. We would have to do that for supines in auxiliary constructions, too. The consequence would be that frame adverbs like *gestern* “yesterday” would always have to be under the Participle node, given the present system of modification. This would not be a plausible solution, and the participle node certainly is not always linked with **Perf**, as we know from simple supine passives.

Finally we have to account for non-agentive unaccusatives, i.e. intransitive **BECOME**-participles.

- (63) a. der vor zwei Stunden eingeschlafene Riese  
 the 2 hours ago slept in giant  
 b.  $\lambda x$  [Agr [AP **Perf** [PartP 2 hours ago [PartP ge-t [AspP **Pfv** [ vp **BECOME**<sub>ew</sub>(asleep(x))]]]]]]]

(63b) gives the analysis of the participle. It is alike to the passivized participle with the difference that the voice-projection is missing.

As it stands, the analysis still overgenerates insofar as it doesn't capture yet the unaccusativity of the external argument of the attributive participle. Among other things, we have to account for the following contrast:

- (64) a. <sup>OK</sup>der eingeschlafene Riese  
           the slept-in giant  
       b. \*der geschafene Riese  
           the slept giant  
       c. <sup>OK</sup>der vor drei Tagen reparierte Computer  
           the 3 days ago repaired computer

(64a) is not problematic because there is only one argument that the  $\lambda$ -abstractor can bind, viz, the argument of the LP embedded under **BECOME**. The same is the case for Adjectival Passives. In other words, for these participles, the theory automatically yields the correct results. In order to exclude (64b), we have to prevent the subject of a passivised vP from being externalised via abstraction. Note, that there is no semantic reason for the restriction, because the following eventive participle makes sense:

- (65)  $\lambda x[\text{Perf Pfv Agent}(\text{sleep})(x)]$

It applies to a subject  $x$  at time  $t$  iff  $t$  is after a sleeping of  $x$ . Hence, the restriction that bars this interpretation must be syntactic in nature. The tentative principle accounting for the correct externalisation is this:

- (66) *External Argument of Supines and Adjectival Passives*

Externalise that argument by means of  $\lambda$ -abstraction that cannot check its structural case.

The principle correctly blocks the impersonal passive (64b), because the passive subject *pro* has structural accusative case by definition. On the other hand, (64c) is possible, because the nominative of the logical object, i.e. the argument of LP, cannot be checked in the participle phrase. (66) should be a corollary of Case Theory of course, and much more could and should be said about that topic, but this is beyond the scope of this paper.

It should be clear by now how the contrast noted in (14) is explained. (14a) is an Adjectival Passive and leaves the Agent open. Hence the action may have been performed by the

external argument of the participle, i.e. the child. (14b) is a passive construction and we know from the preceding discussion that a reflexive interpretation would violate the Binding Theory.

## 7. NEGATION AND FRAME ADVERBS

### 7.1. Partee's Problem and the Perfect

The analysis proposed faces an obvious problem with negation, which is a version of Partee's celebrated sentence

(67) I didn't turn off the stove (Partee 1973)

Partee observes that this can't mean that there is no time in the past, such that I turned off the stove at that time, nor can it mean that there is a time at which I didn't turn off the stove. The first reading is too strong, the second is too weak. In other words, neither of the following two representations is correct, if we interpret **Past** as an existential quantifier.

- (68) a. **Neg Past I turn off the stove**  
 b. **Past Neg I turn off the stove**

I am assuming a conventional semantics for negation. It expresses complementation:

(69) **Neg** :=  $\lambda P \lambda t \lambda w. \neg P(w)(t)$

I cannot see that the introduction of a dynamic framework in the style of (Heim 1982) could be of any help for the problem to be discussed in this section.

Partee's reaction is that **Past** is more like a pronoun, it refers to a particular time in the past. But then it doesn't matter whether **Neg** has wide or narrow scope with respect to **Past**, because names are scopeless. In other words, we replace the indefinite analysis of tense by a definite one. As Partee herself noticed, things are actually more complicated. Turning off the stove is an accomplishment or achievement and denotes an action that takes an extremely short time. It is virtually impossible that the speaker refers to this moment. Therefore, we still need an existential quantification over the definite time stretch denoted by **Past**. In terms of events, a proper analysis in Partee's style would therefore be something like this:

(70)  $\neg \exists e [e \subseteq t_{\text{past}} \ \& \ e \text{ is a turning off the stove done by myself}]$

We can obtain this compositionally if the VP **I turn off the stove** denotes the property  $\lambda t \exists e [e \subseteq t_{\text{past}} \ \& \ e \text{ is a turning off the stove done by myself}]$  and  $t_{\text{past}}$  is an argument of the VP. Details aside, this is precisely the approach proposed by Abusch in this volume (Abusch 1999). The difference is that **Past** is not a free variable for Abusch but an Extended Now with respect to the subjective now.

I think, Abusch’s approach to the verb is an oversimplification, for it does not allow to integrate a compositional semantic for restitutive *again*, because her approach leaves no room for decomposition. But the account yields the correct result with respect to negation. Note that in our proposal the existential quantification over events resides in the Aspect operator. So it would be easy to combine this approach with a definite interpretation of tenses, and in a number of papers I have done this (cf. (Stechow 1996), (Stechow and Rapp 1999), (Stechow 1999)). But it is questionable whether the definite approach is always correct. There are many examples where we speak of past events without knowing when they occurred.

(71) I have been to Rome, but I can’t remember when.<sup>10</sup>

In order to get these correct we have to trivialise the approach and to assume that **Past** denotes the entire past and when asks for a particular time thereof.

Most linguists assume an indefinite semantics for the Perfect, and the Partee Problem arises there as well, of course. The sentence

(72) Ede hat nicht angerufen.

Ede hasn’t called

has no natural interpretation meaning: “There is no time before or abutting the speech time such that Ede called at that time”. And, of course, the reading: “There is a time before or abutting the speech time such that Ede called at that time” is too weak. But we can restrict the quantifier by a frame adverb like **yesterday** and obtain the correct reading.

(73) a. Ede hat gestern nicht angerufen.

Ede has yesterday not called

b. **Pres Neg Perf yesterday AspP**

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<sup>10</sup> If I remember correctly, an example of this kind is given in (Ogihara 1995).



The standard semantics of **yesterday** is  $\lambda P \lambda t \lambda w [t \subseteq Y(s^*) \ \& \ P(t)(w)]$ , and the TLF therefore means that there is no time before (or abutting) the speech time that is a part of yesterday and contains a calling event. We could attach **Neg** at the matrix tense and still obtain the correct reading, because **Pres** has no meaning. In fact, (Zanuttini 1991) argues that English *n't* selects TP and is therefore attached to T1, whereas German *not* is presumably under T. Note that we would obtain the wrong interpretation if **Neg** had narrow scope with respect to **Perf**:

(74) **Pres Perf Neg yesterday AspP**

Ede hat nicht GESTERN angerufen

“It’s not yesterday that Ede called”

This reading means that there is a time before or abutting the speech that is not in yesterday but contains a calling event. In German, we would express this reading by means of contrasting negation as indicated by the paraphrase under (74).

It is interesting to notice that *gestern* has narrow scope with respect **Neg** in the TLF (74b) but it precedes the negation *nicht* at S-structure. We are assuming that the sentential negation does not move at LF. But the misfit is only apparent, for *gestern* is a definite term and scrambles out of the classical VP at LF, and we know from (Diesing 1990) that the negation marks the border between the VP and the outer domain. The classical VP must be identified with the AuxP in our system. VP topicalisation actually shows that this assumption is correct:

(75) [<sub>PartP</sub> Gestern angerufen] hat Ede nicht

yesterday called has Ede not

With neutral stress on the participle, the sentence is synonymous with the sentential negation (73a), but not with the contrastive negation (74). This shows that the base position of the frame adverb is under the negation, not above it. The observation that temporal adverbs scramble has been made in (Musan 1997, p. 44 ff.).

So far, the analysis works quite well, but we have a problem with the following sentence:

(76) Ede hat gestern wieder nicht angerufen.

Ede has yesterday again not called

The German sentence means that Ede did not call yesterday, and it presupposes that there is a

time before yesterday at which he did not call either. Obviously, the negation is in the scope of *wieder* **again** in the example. And from example (73) we know that **Neg** must be above **Perf** and **yesterday** must be in the scope of **Perf**. Therefore the TLF of the sentence seems to be the following one:

(77) **Pres again Neg Perf yesterday AspP**

If we evaluate this according to our meaning rules, we see that something has gone wrong, because the TLF has a trivial meaning. It means that Ede did not call yesterday, and it presupposes that there is a time before the speech time such that Ede did not call yesterday. The presupposition is vacuous and the LF certainly doesn't capture the intuitive meaning (76). It may be helpful to compare the wrong truth condition with the truth condition wanted:

(78) a. Intuitively correct truth condition of (76):

$$\exists t[t < s^* \ \& \ t = Y(s^*) \ \& \ \neg \text{AspP}_{@}(t) \ / \& \ \exists t'[t' < t \ \& \ \neg \text{AspP}_{@}(t')]]$$

b. Truth condition of (77):

$$\neg \exists t[t < s^* \ \& \ t \subseteq Y(s^*) \ \& \ \text{AspP}_{@}(t) \ / \& \ \exists t'[t' < s^* \ \& \ \neg \exists t''[t'' < t' \ \& \ t'' \subseteq Y(s^*) \ \& \ \text{AspP}_{@}(t'')]]]$$

I see no obvious way to obtain the correct reading in the system outlined here under the assumption that **Neg** has wide scope with respect to the perfect auxiliary. For the time being, I conclude that **Neg** must be able to have a position under the perfect auxiliary. If we localised **Perf** in the participle morphology, we had to localise **Neg** even under the participle morphology *ge-t*, which would be even more problematic. Note that the rather low position of negation is in agreement with semantically motivated treatment of negation in (Kamp and Reyle 1993), section 5.2.5, or (Rathert 1999). (Mittwoch 1988) is one of the few places where there is a detailed discussion of the scope interaction between negation and the perfect. Yet the article contains no commitment to the precise place of **Neg** and **Perf** in the syntax, and it treats the interaction between Perfect and adverbs in wildly syncategorematic manner.

## 7.2. *The Restriction of Tenses by Frame Setters*

This section contains the details of an account that simulates Partee's definite strategy while keeping the tenses indefinite. The idea is that frame adverbs give us the definite stretch of time,

while the quantification over the definite stretches is done by the aspectual operator. The effect is that in many cases the indefinite impact of tenses is overruled by the frame setters, which might be even invisible, i.e. anaphoric. We analyse **yesterday** as a name and the frame setting functional word as an invisible preposition AT:

- (79) *Frame adverbs* (official version)
- a. **yesterday** =  $Y(s^*)$  type i
- b.  $AT = \lambda t \lambda P \lambda t' \lambda w [t' = t \ \& \ P(t')(w)]$  Typ <i, <p, p>>

The TLF for example (76) is therefore:

(80) **Pres Perf [AT yesterday] NEG Pfv voiceP**

This TLF expresses the truth condition (78a). While this is correct, we have a problem with adverbs that impose further restrictions on the temporal frame:

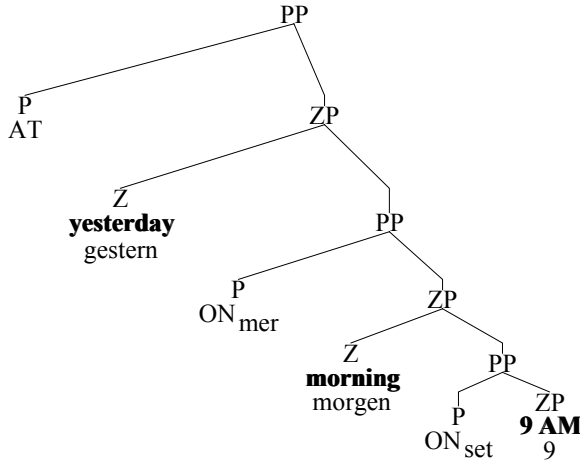
- (81) [<sub>FrameAdv</sub> Gestern morgen um 9] hat Ede angerufen.  
yesterday morning at 9 has Ede called

Note first that the preposed adverbial is one constituent, because the German Top-position is the host of one constituent only. Therefore we must have a method to combine several temporal adverbs into one. The second observation concerns the fact that the new semantics for temporal adverbs is not compatible with the standard intersective interpretation:

- (82) a.  $\exists t [t <| s^* \ \& \ t \subseteq Y(s^*) \ \& \ \mathbf{morning}(t) \ \& \ \mathbf{9AM}(t) \ \& \ \mathbf{AspP}_@(t)]$  standard  
b.  $*\exists t [t <| s^* \ \& \ t = Y(s^*) \ \& \ \mathbf{morning}(t) \ \& \ \mathbf{9AM}(t) \ \& \ \mathbf{AspP}_@(t)]$  new

One particular time cannot be an entire day and the morning of the same day. Therefore, (82b) is a contradiction. To redeem the approach, we have to take recourse to mereological intersection. The temporal properties **morning** and **9 AM** determine that stretch of yesterday that is a morning time and a 9 AM time. Note that yesterday is name of type i, while morning and 9 AM are temporal properties, i.e., they have the type <iw,t>. We must not confuse the two different kinds of temporal entities (cf. (Kamp and Schiehlen 1998)). The structure of the complex temporal adverb is the following:

(83)



And this is the semantics of the two types of restricting abstract prepositions:

- (84) a.  $ON_{mer}$  type  $\langle i, i \rangle$   
 $ON_{mer} = \lambda t \lambda w \lambda P. \max t' [t' \subseteq t \ \& \ P(t')(w)]$
- b.  $ON_{int}$  Typ  $\langle p, \langle p, p \rangle \rangle$   
 $ON_{int} = \lambda P \lambda Q \lambda t \lambda w [P(t)(w) \ \& \ Q(t)(w)]$

This semantics is a bit unusual. For convenience I therefore give a calculation of the truth condition of the TLF (80):

- (85) **Perf AT [yesterday  $ON_{mer}$  morning  $ON_{int}$  9AM] Pfv voiceP**

**[Perf AT [yesterday  $ON_{mer}$  morning  $ON_{int}$  9AM] AspP](s\*)(@)**

iff  $\exists t [t < | s^* \ \& \ [AT [yesterday  $ON_{mer}$  morning  $ON_{int}$  9AM] AspP](t)(@)]$

meaning of **Perf**

iff  $\exists t [t < | s^* \ \& \ t = [yesterday  $ON_{mer}$  morning  $ON_{int}$  9AM] \ \& \ [AspP](t)(@)]$

meaning of **AT**

iff  $\exists t [t < | s^* \ \& \ t = [ON_{mer} \ \text{morning} \ ON_{int} \ 9AM](yesterday) \ \& \ [AspP](t)(@)]$  FA

iff  $\exists t [t < | s^* \ \& \ t = ON_{mer}(yesterday)(\text{morning} \ ON_{int} \ 9AM) \ \& \ [AspP](t)(@)]$  FA

iff  $\exists t [t < | s^* \ \& \ t = \max t' [t' \subseteq Y(s^*) \ \& \ [\text{morning} \ ON_{int} \ 9AM](t')(@)] \ \& \ [AspP](t)(@)]$

meaning of  $ON_{mer}$

iff  $\exists t [t < | s^* \ \& \ t = \max t' [t' \subseteq Y(s^*) \ \& \ [ON_{int}](9AM)(\text{morning})(t')(@)] \ \& \ [AspP](t)(@)]$

FA 2x

iff  $\exists t [t < s^* \ \& \ t = \max t' [t' \subseteq Y(s^*) \ \& \ \mathbf{9AM}(t') \ \& \ \mathbf{morning}(t')] \ \& \ [\mathbf{AspP}](t)(@)]$

meaning of  $\text{ON}_{\text{rest}}$

Frame setters may be completely invisible. In this case, the abstract preposition AT contains a temporal variable.

Here is a formalisation of Partee’s example:

(86) **Neg Past AT t AspP**

The restriction of tenses by means of invisible frames is an old idea. The first proposal along these line know to me is found in (Kratzer 1978), where the invisible frame adverb **da\*** serves the purpose of restriction.<sup>11</sup> The use of anaphoric variables as the center of frame adverbs has the advantage that it is obvious how a theory of temporal anaphor could work. The antecedent is a time that may be given by a previous time name or by referring to the time of a previous event.

### 7.3. *Problems with Negation*

I conclude the section with some examples from other European language. Some of these show that the theory might be too simple as it stands. In some languages sentential negation is simply

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<sup>11</sup> The method used here is by and large equivalent with the method that restricts the time variable of tenses by a property variable. In recent work, R. Musan represents *Lola rannte* “Lola ran” as

i.  $\exists t [t < s^* \ \& \ C(t) \ \& \ VP(t)],$

where C is of type  $\langle i, t \rangle$ , and serves the purpose of restriction. Temporal a temporal adverb must then quantified in via  $\lambda$ -abstraction over C. Consider the example *Lola rannte in zwei Monaten an jedem Sonntag* “Lola ran in two months on each Sunday”.

ii. two months  $\lambda x$  every Sunday<sub>t</sub>  $\lambda y$  [AT x ON y]  $\lambda C \exists t [t < s^* \ \& \ C(t) \ \& \ VP(t)]$

I presuppose the complex temporal adverb [AT x ON y] is formed along the lines indicated in the section. If we want stacking, we have to make sure that the lower temporal adverb contains a free variable C that serves for further restriction of the higher adverb.

The approach faces the problem that we have to bind the implicit temporal variable of *Sunday*, because not every Sunday is in the past, i.e., Sunday cannot be an absolute property (cf. (Ogihara 1995)). I cannot see how this can be done without some complicated stipulation. My account has no difficulties here, for I can have the following TLF:

iii.  $\exists t [t < s^* \ \& \ \text{two months } \lambda x \text{ every Sunday}_t \lambda y [t \text{ AT x ON y}] \ \& \ VP(t)]$

In my approach, the frame adverb is in the scope of Past and need not to be semantically reconstructed. It can therefore serve as the attachment site for QR-ing the two quantifiers.

too high in order to be compatible with the indefinite theory of tenses even if supplied with the device of invisible frame setters. We try to find Perfect examples that are the equivalent of sentence (76), i.e. we want to have **again** + **not** in the scope of the Perfect.

Let us start with French.

(87) French<sup>12</sup>

a. A 5 heures, il n'avait de nouveau pas téléphoné.

At 5 o'clock, he not had again not called

b. **Past Perf AT 5 again Neg AspP**

Following (Pollock 1989), the standard assumption about French syntax is that **Neg** is situated at the position of *pas*. Interestingly, *de nouveau* “again” occurs above *pas* if we want to have the reading of (76), here repeated as

(87b). The temporal adverb *à 5 heures* “at 5 o'clock” in TOP-position is reconstructed at a position under **Perf**. Under these assumptions, we obtain the correct TLF.

Italian seems to behave similarly:

(88) Italian<sup>13</sup>

a. Ieri di nuovo non ha (mica) telefonato.

yesterday again not has (neg) called

b. WANTED: **Past Perf AT Y(s\*) again Neg AspP**

I am assuming that both *ieri* “yesterday” and *di nuovo* “again” stand in a TOP-position. Therefore, the reconstruct in that relative order under **Perf**, i.e., the auxiliary *avere*. Still, the negation is too high. Recall, however, that Italian optionally has a wrapping negation *mica*, which behaves exactly like French *pas*. If we assume that *Neg* may be located there, even if this element is not realised phonetically, we have no problem. We can reconstruct the adverbs to a position between Perf and *mica* at LF and have the correct LF.

Ukrainian belongs to the Slavic languages that have a Pluperfect, whereas the Present Perfect is expressed by the simple verb form (cf. (Paslawska and Stechow 1999)). Let us build a Pluperfect example with **again+not** in the scope of **Perf**.

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<sup>12</sup> Stylistically, this sentence is a bit awkward, but it is understandable. Thanks to Caroline Féry for informing me.

<sup>13</sup> Thanks to F. Arosio for checking the example.

- (89) a. Vona znovu bula ne podzvonyla.  
 she again was neg call-participle-II-fem  
 b. WANTED: **Past Perf again Neg AspP**<sup>14</sup>

If we assume that there is a TOP-position in front of the finite verb *bula* “was”, we can reconstruct *znovu* “again” under **Perf** and obtain the result wanted. Actually, the syntax of Ukrainian is more complicated, as the following example shows:

- (90) Vona ne xotila bula niãoho hovoryty.  
 she neg wanted-participle II-fem.sg was neg-something say  
 “She didn’t want to say anything”

It is tempting to believe that the negated participle *xotila* “wanted” is moved to Focus(?)-position in front of the finite Perfect auxiliary *bula* “was”. Thus the syntax might be something like this:

- (91) [<sub>FinP</sub> bula [<sub>NegP</sub> ne [<sub>VP</sub> xotila niãoho hovoryty]]]

This, however, is speculation and the question deserves careful investigation. The data seem, however, compatible with the assumption that there is lower position for negation in Ukrainian.

The English Present Perfect doesn’t combine with *yesterday*, Klein’s Present Perfect Puzzle ((Klein 1992)). Therefore, we cannot have an equivalent to our German sentence (76). But we have a problem with negated sentences in the simple past already:

- (92) a. He didn’t call again yesterday<sup>15</sup>  
 b. WE HAVE:  
     **AT Y(s\*) again Neg Past AspP**  
     or  
     **Neg Past AT Y(s\*) again AspP**  
 c. WE WANT: **Past AT Y(s\*) Neg AspP**

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<sup>14</sup> Actually, I don’t believe that Ukrainian and Russian have a **Past** like English and German. A more appropriate representation of the TLF would be **Perf Perf again Neg AspP**, but I cannot justify this here; vide (Paslawska and Stechow 1999).

<sup>15</sup> Thanks to G. Katz and Th. Ernst.

(Zanuttini 1991) gives convincing arguments that *n't* selects TP. Therefore, **Past** should be in the scope of **Neg** at LF. Now, English speakers agree that the sentence may have the reading (92c), which is even salient. As the reader may calculate for himself, the readings under (92) simply give us the wrong truth conditions. Note that the problem is not that **again** is in the scope of **yesterday**: I am assuming that adverbs can adjoin at the right side of a phrase in English and that they have scope over the phrase they are adjoined to (cf. (Ernst 1998)). If we represent scoping in TLF in left to right order, we easily obtain the first representation in (92b). This TLF correctly represents the relative scope of the three adverbs **yesterday + again + not**. But **Past** cannot be in the scope of **again**, because then **again** would be represented with respect to the speech time, the outer evaluation time. The second representation under (92b) isn't correct either. In some sense, both *yesterday* and *again* must be in the scope of **Past**. The present indefinite theory of tenses has a problem here. One could think that a definite analysis of tenses could solve the problem: if tenses were names of times, they wouldn't carry scope. But then **again** should have a temporal argument that could be identified in some sense with **Past**, and it is not clear, how this could work exactly. Even if this could be made work, we still would have a problem with the perfect, because there the same problem arises.

To make the point, consider Modern Greek, which patterns with English in the relevant respect. Here is construction involving the Pluperfect.

(93) Modern Greek<sup>16</sup>

- a. Pali den ihe telefonisi mehri tis 5.  
again neg had called until the 5
- b. WE HAVE: **again Neg Past Perf until 5 AspP**
- c. WE WANT: **Past Perf until 5 again Neg AspP**

Assuming that adverbs can adjoin to the right and having scope over the adjunction site, the temporal adverb *mehri tis 5* “until 5” can have narrow scope with respect to the Perfect auxiliary *eh-* “have”. *Pali* “again” is in the TOP-position and can reconstruct to a base position under the temporal adverb. But the negation is much too high, and there is no obvious way to lower it to the position where it is interpreted.

The conclusion of this section is that the theory developed in this paper works rather well

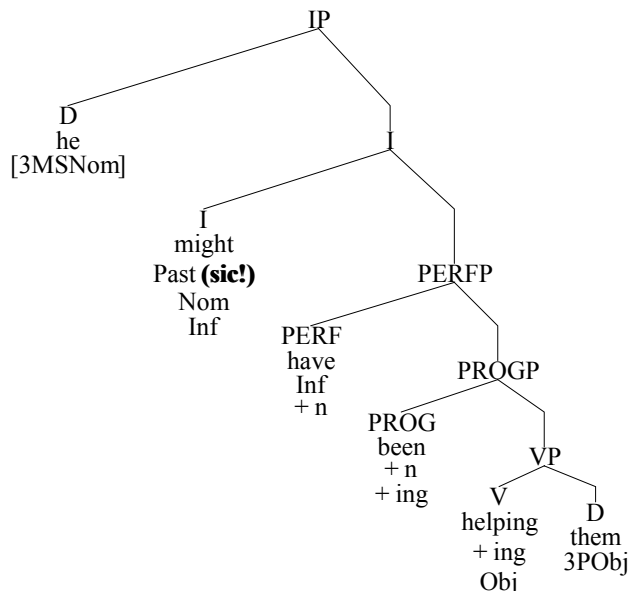


for a number of languages, but it raises questions for languages of English/Greek types. I have no solution to offer in this paper.

## 8. CONCLUSION

While I believe that the semantics associated with the different participles II is by and large correct, I am not so sure about the precise localisation of the Perfect information. I still favour a picture that is very similar to the analysis proposed in the first days of generative grammar, viz. that given in (Chomsky 1957). Here is a Chomskyan tree, which has been somewhat modernised by Radford.

(94) Radford (1997), p. 180 :



Details aside (*might* should be associated with Present), this is exactly the sort of tree I have been working with in this article. This tree localises Perfect in the auxiliary node. In a more abstract syntax, Perfect could be localised in the Participle morphology as well. One would think that it is very easy to decide the question which localisation is the correct one. Temporal adverbs take scope with respect to Perfect, so a frame adverb like “yesterday” should be between PERF and V. Unfortunately, these adverbs don’t occur in a preverbal position. They occur postverbally, and we

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<sup>16</sup> Thanks to A. Alexiadou for information.

don't see at which projection they attach. As to German, we cannot decide the issue because heads are final. Furthermore, temporal adverbs scramble. Thus, no direct syntactic evidence for the superiority of one approach with respect to another seems available at the moment.

We may question the abstractness of the approach altogether. Is the complicated analysis in terms of DM really justified or would a more surfacy analysis be possible? I think it is possible, but we have to pay a price. Look at the attributive participle, and suppose we don't like decomposition. What would be the analyses of the following attributive participles in a surfacy way?

- (95)
- a. der seit zwei Stunden reparierte Computer
  - b. der vor zwei Stunden reparierte Computer
  - c. der WIEder reparierte Computer (repetitive)
  - d. der wieder reparIERte Computer (restitutive)
  - e. der seit zwei Stunden wieder reparierte Computer
  - f. der vor zwei Stunden von Ede reparierte Computer

In order to obtain the correct interpretations, we would have to define 6 different participles, namely the following ones:

- (96)
- a. **repariert**<sub>stative</sub> :=  $\lambda x[\text{RESBEC intact}(x)]$
  - b. **repariert**<sub>Fadv</sub> :=  $\lambda y_{\text{Fadv}}\lambda x[\text{Perf } y (\text{Pfv Agent}(\text{intact}(x))(\text{pro}))]$
  - c. **repariert**<sub>repetitive</sub> :=  $\lambda y_{\text{iter}}\lambda x[\text{Perf Pfv } y (\text{Agent}(\text{intact}(x))(\text{pro}))]$
  - d. **repariert**<sub>stative,iterative</sub> :=  $\lambda y_{\text{Adviter}}\lambda x[\text{RESBEC } y(\text{intact}(x))]$
  - e. **repariert**<sub>stative,durative</sub> :=  $\lambda y_{\text{Advdur}}\lambda x[\text{RESBEC } y(\text{intact}(x))]$
  - f. **repariert**<sub>controlled passive</sub> := **repariert**<sub>repetitive</sub> :=  $\lambda y\lambda x[\text{Perf Pfv } y (\text{Agent}(\text{intact}(x))(y))]$

The subscript refer to the type of the adverbs. I am assuming that a durative adverb directly combines with a stative participle. Note that the paradigm is certainly not complete. If we take into account another functional adverb like **almost** that doesn't have exactly the same distribution as **again** we need more entries (cf. (Rapp and Stechow 1999)). We could apply these to the respective adverbs and we would obtain the correct result. Here is an example:

- (97) [[vor zwei Stunden]<sub>Fadv</sub> **repariert**<sub>Fadv</sub>]  
 =  $\lambda y_{Fadv} \lambda x [\text{Perf } y (\text{Pfv Agent}(\text{intact}(x))(\text{pro}))](\text{two hours ago})$   
 =  $\lambda x [\text{Perf two hours ago } (\text{Pfv Agent}(\text{intact}(x))(\text{pro}))]$

So this method works, but one has the clear impression that the essential part of the analysis is hidden in the definiens, not in the definiendum. And the differences in the definiens are basically syntactic in nature. Actually, Dowty has discussed this method in (Dowty 1979) and he rejected it. He tried to overcome the difficulty by meaning postulates. I have doubted the feasibility of his alternative in (Stechow 1995) and (Stechow 1996). Zimmermann has criticised Dowty's postulates on principled grounds ((Zimmermann 1993),). I conclude that the DM-method based on decomposition is to be preferred for its overall simplicity and there is no escape from abstract syntax, at least not for the time being.

While I think that the analysis of the Participle II is basically correct, I am less certain about the analysis of tenses. An indefinite analysis of tenses faces the problem of how double access interpretations are analysed (*Bill said that Mary is pregnant*). The only successful analysis I know is Abusch's *de re* analysis (cf. (Abusch 1997)). The approach crucially assumes that tenses are arguments, not propositional functors. Qua arguments they can be moved to a *de re* position, i.e., an argument position of the matrix verb. In the present analysis, we would have to move an invisible frame setter NOW to the argument position. The TLF would then roughly be: "Bill said of NOW  $\lambda t$ . Mary be pregnant AT  $t$ ", and NOW would have to be an Extended Now.

Finally, there are open questions concerning the interaction of sentential negation, tense and adverb, especially functional adverbs. I have not been able to offer a general theory. Complicated as it is, the present approach is presumably still too simple.

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