

EVENT STRUCTURE AND SYNTAX: GERMAN*

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Abstract

This paper deals with the role of the lexicon versus the syntax in event structure by examining particle verb formation in German. There are two types of particles in German: Delimiting particles, which derive accomplishments or activities from activity base verbs, and nondelimiting ones, which leave the aspectual class of the base verb (activity) unchanged.

A theory such as Ritter & Rosen (1998, to appear), which explicitly represents event structure in the syntax (e.g., through an FP-delimitation) is not able to account for the German facts, as it cannot explain the uniform morphosyntactic behavior of all particles.

An analysis which combines syntactic structure (VP-shells, following Hale & Keyser (1994), Chomsky (1995)) and lexical features is adapted. It treats particles as heads of an empty PP in the lower VP. Delimiting particles are distinguished from nondelimiting ones through a lexical feature [+delim]. This analysis is also successful in providing homogeneous case-marking for all internal arguments. It questions Ritter & Rosen's purely syntactic analysis of event structure, where delimitation is assumed to be a grammatical primitive.

1. Introduction

Exactly to what extent the syntax versus the lexicon is responsible for the meaning of a sentence is a long-standing question in linguistics. Traditionally, the lexicon has been seen as the major factor, not only storing word meaning, but also determining much of a sentence's basic meaning (and structure). This is especially so for the interpretation of arguments where the syntax, or at least syntactic operations, were thought to be semantically neutral. The "autonomy of syntax" with respect to argument interpretation is expressed in the Principles & Parameters framework as Theta Theory (Chomsky 1981) and, for example, as the "Uniformity of Theta Assignment Hypothesis" (Baker 1988).

More recently, there has been a growing body of literature in generative grammar pointing out that compositional—and hence syntactic—factors are often involved in determining the meaning of a sentence. For example, Tenny (1992) shows the role of the internal argument in determining whether a sentence refers to an open-ended event or to an event delimited in time:

- (1) a. Charles drank **a mug of beer** (??for an hour/in an hour).
b. Charles drank **beer** (for an hour/*in an hour). (Tenny 1992:7)

Describing these meaning differences in terms of lexical verb meaning alone is difficult: One would have to posit two homophonous (or one polysemous) verb(s) *drink*. Since in both cases the internal argument bears the theta role "theme", it is hard to see how the lexicon could "know" which meaning should occur with which kind of theme. Therefore, such compositionally created differences in event structure are better dealt with in the syntax than in the lexicon.

In fact, such observations about event structure are not new: They probably go back all the way to Aristotle, and have been described in this century, among others, by Vendler (1967) and Dowty (1979, 1991). However, attempts to formalize these observations in terms of Principles & Parameters Theory or Minimalism are fairly recent, e.g., Borer (1994), Ritter & Rosen (1998, to appear).

In this paper, I will attempt to provide a syntactic account of event structure. I will analyze data from German, in particular the alternations in event structure between simple and

particle verbs, and the role of these verbs' internal arguments. To my knowledge, a syntactic analysis of event structure has not yet been attempted for German. There are lexical analyses of German particle verbs (e.g., Wunderlich 1997, Stiebels & Wunderlich 1994), as well as (morpho-)syntactic analyses of Dutch particles (e.g., Hoekstra 1988, Neeleman & Weerman 1993), but none of these have explicitly addressed the effects of particles, let alone internal arguments, on event structure.

The paper is organized as follows: In section 2, I will give a detailed description of the event structure of some German verbs. In section 3, I will apply Ritter & Rosen's theory to the German data, and discuss the limitations of this theory. In section 4, I will examine whether the approach by Hale & Keyser (1991, 1994) can be modified to account for the German data, and in section 5, I will summarize the insights provided into German, and evaluate the two syntactic approaches to event structure.

2.0. The event structure of German verbs

In German, events expressed by simple verbs can be delimited in at least two ways which lend themselves to a syntactic analysis: (i) through an internal argument, and (ii) through a delimiting particle, which is separable from the verb.¹ Before describing the data, however, I will briefly introduce the classification of verbs into "aspectual classes" based on Vendler (1967) and Dowty (1979).

2.1. Aspectual classes

Vendler (1967) and Dowty (1979) divide (English) verbs into four aspectual classes, depending on "their restrictions on time adverbials, tenses, and logical entailments" (Dowty 1979:54). This classification has become the one most commonly used in syntactic and semantic theory, and so I will adopt it here. The four classes of verbs are as follows:

- (2) a. States: *know, be ignorant, own, desire*
- b. Activities: *walk, play, drive a car, discuss*
- c. Accomplishments: *kill, build a house, draw a circle, break*
- d. Achievements: *die, recognize a face, reach the summit, find*

States are not really events at all; they have no beginning and no endpoint. Activities have a beginning, but they are open-ended. They usually involve agency or volition by the one performing the activity, while states do not. Accomplishments have an initiation point as well as an endpoint. They take a certain (long or short) time to be completed, and are not completed before this time has elapsed. Achievements, finally, have only an endpoint, and they are only really "achieved" in that final instant (even though a related process/activity may have been going on in order to reach this end), usually without volition/agency.

Based on these characteristics, Vendler and Dowty have developed a set of criteria or tests to divide verbs into the four classes. The following is a list of those of their criteria that I have used in the classification of German verbs:

(3)

Activities (e.g., <i>run</i>)	States (e.g., <i>know</i>)
<ul style="list-style-type: none"> • <i>run for an hour</i> • <i>spend an hour</i> running • *<i>run in an hour</i> • *<i>take an hour to</i> run • 'X is running' entails 'X has run' • 'run for an hour' entails 'run at all times in the hour' • 'X <i>almost</i> ran': X never even started to run • *X <i>finished</i> running 	<ul style="list-style-type: none"> • no <i>progressive</i> : *X is knowing • bad with <i>deliberately/ carefully/ attentively</i> • no <i>imperative</i> : *Know! • *<i>know in an hour</i>
Accomplishments (e.g., <i>build a house</i>)	Achievements (e.g., <i>find the key</i>)
<ul style="list-style-type: none"> • <i>build a house in an hour</i> • <i>take an hour to</i> build a house • 'X is building a house' does not entail 'X has built a house' • 'X <i>almost</i> built a house': X never started building, or X started but did not finish • X <i>finished</i> building a house • 'X built a house in an hour' entails 'X was building a house during that hour' 	<ul style="list-style-type: none"> • bad with <i>deliberately/ carefully/attentively</i> • *<i>find the key for an hour</i> • *<i>spend an hour</i> finding the key • 'X <i>almost</i> found the key': X never did find the key • *X <i>finished</i> finding the key • 'X found the key in an hour' does not entail 'X was finding the key during that hour'

I will now proceed to show the effect of particles and internal arguments on the aspectual class of German verbs. Due to limited space, I will only show one aspectual class test for each verb.

2.2. The internal argument and event structure

As noted above, the internal argument is involved in delimiting events in many languages. This is also true for German. In particular, specific² internal arguments (most DPs with an overt article) serve to delimit an event, while non-specific internal arguments (bare mass nouns & bare plurals, thus bare NPs) do not:

- (4) a. Sie diskutierten (eine Stunde lang/*in einer Stunde).
They were discussing (for an hour/*in an hour).
- b. Sie diskutierten **das Problem** (eine Stunde lang/in einer Stunde).
They discussed **the problem** (for an hour/in an hour).
- c. Sie diskutierten (eine Stunde lang/*in einer Stunde) **Probleme**.
They were discussing **problems** (for an hour/*in an hour).
- (5) a. Karin las (eine Stunde lang/*in einer Stunde).
Karin read (for an hour/*in an hour).
- b. Karin las **den Roman** (eine Stunde lang/in einer Stunde).
Karin read **the novel** (for an hour/in an hour).
- c. Karin las (eine Stunde lang/*in einer Stunde) **Romane**.
Karin read **novels** (for an hour/*in an hour).

- (6) a. Sie wusch (eine Stunde lang/*in einer Stunde).
 She was washing (for an hour/*in an hour).
 b. Sie wusch ihr Auto (eine Stunde lang/in einer Stunde).
 She washed her car (for an hour/in an hour).
 c. Sie wusch (eine Stunde lang/*in einer Stunde) Autos/Besteck.
 She washed cars/cutlery (for an hour/*in an hour).

The verbs in (4)–(6) usually refer to activities. This can be seen in the (a) examples, where they occur without internal argument, and in the (c) examples, where they occur with a nonspecific direct object. In the (b) examples, they occur with a specific direct object, and as a consequence, the event can be interpreted either as an activity or as an accomplishment. (Which interpretation obtains depends on the wider context, i.e. on the discourse.)

It seems, then, that specific direct objects serve to delimit an event. Since the verbs they interact with in (4)–(6) are nondelimited, the (optional) delimiting effect must be caused by the direct object DPs.

Let us now turn to examples of verbs which are usually thought of as accomplishments, and examine the role of the internal argument. Interestingly, these are all transitive verbs:

- (7) a. *Er ermordete.
 (he murdered)
 b. Er ermordete den Nachbarn (??eine Stunde lang/in einer Stunde).
 He murdered the neighbor (??for an hour/in an hour).
 c. ?Er ermordete (eine Stunde lang/*in einer Stunde) Nachbarn.
 He murdered neighbors (for an hour/*in an hour).
 (8) a. *Sie leerte.
 (she emptied)
 b. Sie leerte eine Flasche (*eine Stunde lang/in einer Stunde).
 She emptied a bottle (*for an hour/in an hour).
 c. ?Sie leerte (eine Stunde lang/*in einer Stunde) Flaschen.
 She emptied bottles (for an hour/*in an hour).

Accomplishment verbs such as in (7) and (8) usually occur with a specific direct object. The (c) examples with a nonspecific object are somewhat marked (pragmatically); they refer to conceivable, but unusual situations: Someone engaged in the activity of emptying many bottles, or of murdering many neighbors. Since 'bottles' and 'neighbors' are bare plurals, i.e. nonspecific, no endpoint to the activity is expressed, and the event consists of an unbounded iteration of accomplishments.

- (9) 'empty bottles': an activity with internal structure
 • -- empty bottle1 -- empty bottle2 -- empty bottle3 --
 initiation point (no endpoint)

To sum up, the (c) examples serve to show that, once the object is not specific, the delimitation reading becomes embedded in an (iterative) activity reading. This indicates that nonspecific internal arguments cannot or must not indicate delimitation. Event delimitation seems to be possible with specific direct objects only. Finally, the delimitation effect of specific internal arguments interacts with the nondelimitation of activity verbs, resulting in ambiguous constructions, where the context is needed in order to decide which type of event structure obtains.

Interestingly, it is not easy to find simple accomplishment verbs in German. Most of the accomplishment (and obligatorily transitive) verbs are either particle or prefix verbs. This brings us to the second way of delimiting events in German, particle verb formation.

2.3. Delimiting particles

In addition to simple verbs, German has two very productive types of complex verbs: Particle verbs and prefix verbs. Prefix verbs consist of the base verb plus an inseparable prefix, which is homophonous with a preposition or historically derived from one. Particle verbs consist of the base verb plus a separable particle:

- (10) a. (daß) sie das Problem **ausdiskutieren**
(that) they the problem PT-discuss
'(that) they completely discuss ('out-discuss') the problem'
b. sie **diskutieren** das Problem **aus**
they discuss the problem PT
'they completely discuss the problem'
c. **aus** dem Fenster/Wald/Buch
out the-DAT window/fridge/book
'out of the window/fridge/book'

In (10), the base verb *diskutieren* 'discuss' is combined with the particle *aus* 'out'. While the particle usually is adjacent to the verb, it is "stranded" at the end of the sentence in finite matrix clauses where the verb raises to the typical V2 position. Particles can be derived from (and are homophonous with) a preposition (cf. (10c)), an adverb, or, less productively, an adjective, verb or noun. It would be beyond the scope of this paper to discuss all types of particles, so I will limit my discussion to those homophonous with prepositions.

It has sometimes been claimed that the "aspectual affixation" in German is "unsystematic" (e.g., François 1985), but upon careful analysis, I do not find this to be the case for particles. There seem to be two kinds of particles, those which delimit (cause an event to have an endpoint), and those which do not have any effect on event structure.

Let us first look at examples of delimiting particles. There are two aspectual classes of verbs which have no endpoint: activities and states. Activities and states therefore provide a good testing-ground for the effects of particles: If, through combination with a particle, these types of verbs become delimited, that particle must have a delimiting function.

2.3.1. Accomplishments

In many instances, a base verb denotes an activity (agency/initiation and no endpoint, (a) examples below), while the corresponding particle verb denotes an accomplishment (agency/initiation plus endpoint, (c) examples):

- (11) a. Sie diskutierten (eine Stunde lang/*in einer Stunde).
They were discussing (for an hour/*in an hour).
b. Sie diskutierten (eine Stunde lang/in einer Stunde) ein Problem.
They discussed (for an hour/in an hour) a problem.
c. Sie diskutierten ein Problem (?eine Stunde lang/in einer Stunde) **aus**.
They completely discussed ('out-discussed') a problem (?for an hour/in an hour).
(12) a. Sie las (eine Stunde lang/*in einer Stunde).
She was reading (for an hour/*in an hour).
b. Sie las den Roman (eine Stunde lang/in einer Stunde).
She read the novel (for an hour/in an hour).
c. Sie las den Roman (*eine Stunde lang/in einer Stunde) **aus**.³
She finished reading ('read out') the novel (*for an hour/in an hour).

- (13) a. Sie wusch (eine Stunde lang/*in einer Stunde).
She was washing (for an hour/*in an hour).
b. Sie wusch ihr Auto (eine Stunde lang/in einer Stunde).
She washed her car (for an hour/in an hour).
c. Sie wusch ihr Auto (?eine Stunde lang/in einer Stunde) ab.
She washed her car down ('off') (?for an hour/in an hour).
- (14) a. Sie aßen (eine Stunde lang/*in einer Stunde).
They ate (for an hour/*in an hour).
b. Sie aßen die Kekse (?eine Stunde lang/in einer Stunde).
They ate the cookies (?for an hour/in an hour).
c. Sie aßen die Kekse (*eine Stunde lang/in einer Stunde) auf.
They finished eating the cookies (for an hour/in an hour).

The specific DP also has a delimiting function, thus the (b) examples can be either accomplishments or activities, as explained above. However, once the particle is introduced, the sentences clearly denote accomplishments.

This delimiting effect of the particle can be counteracted by the presence of a non-specific object, as seen earlier in the case of other delimiting verbs (cf. (7) & (8) above):

- (15) a. ?Sie diskutierten (eine Stunde lang/*in einer Stunde) Probleme aus.
They completely discussed problems (for an hour/*in an hour).
b. ?Sie las (eine Stunde lang/*in einer Stunde) Romane aus.
She finished reading novels (for an hour/*in an hour).
c. Sie wusch (eine Stunde lang/*in einer Stunde) Autos/Besteck ab.
She washed off cars/cutlery for an hour/*in an hour.
d. ??Sie aßen (eine Stunde lang/*in einer Stunde) Kekse auf.
They ate up cookies (for an hour/*in an hour).

The facts in (15) do not mean that particles do not delimit, they simply show that the effect of the nonspecific NPs overrides the effect of the particles. In fact, the particle verbs in (15) behave exactly like other accomplishment verbs: They have to be transitive (unless there is an implied object), and their occurrence with nonspecific NPs is somewhat marked, even approaching ungrammaticality in (14d). Therefore, it seems safe to conclude that the particles *aus*, *auf* and *ab* have a delimiting function.

2.3.2. Achievements

So far, we have only looked at particles creating accomplishment verbs from activity base verbs. However, if particles can delimit, we would also expect examples of them deriving achievements, ideally from states, which both do not have an initiation point. There are indeed examples of achievement particle verbs:

- (16) a. Das Haus brannte (eine Stunde lang/*in einer Stunde).
The house was burning (for an hour/*in an hour).
b. Das Haus brannte (?eine Stunde lang/in einer Stunde) ab.
The house burnt down ('off') (?for an hour/in an hour).
- (17) a. Er dachte (eine Stunde lang/*in einer Stunde), daß er den Schlüssel verloren habe.
He thought (for an hour/in an hour) that he had lost the key.
b. Er dachte (?eine Stunde lang/in einer Stunde) um.
He changed his mind ('thought around') (?for an hour/in an hour).

- (18) a. Sie schlief (eine Stunde lang/*in einer Stunde).
She slept (for an hour/*in an hour).
b. Sie schlief (??eine Stunde lang??in einer Stunde) aus.
She slept enough/finished sleeping ('slept out') (??for an hour??in an hour).
c. Sie hatte (?eine Stunde lang/in einer Stunde) ausgeschlafen.
She had slept enough/had finished sleeping ('slept out') (?for an hour/in an hour).

The (a) examples have no endpoint. Once the particle is added, the events do have an endpoint, which is reached at the end of a 'process' indicated by the base verb. So, one could say (in German) that the house was burning for an hour, and at the end of the hour it was *abgebrannt* (burnt down), or somebody was thinking/sleeping for an hour, and at the end of that hour they had *umgedacht* (changed their mind) or *ausgeschlafen* (slept enough). Therefore, these particle verbs are achievement verbs. (18) is a particularly clear example: the particle verb requires perfective aspect in its more idiomatic use. Perfect, of course, indicates completion/delimitation (cf. footnote 1).

The function of particles in accomplishments versus achievements seems to be completely parallel: All the particle does is add an endpoint. Accomplishments are derived from (agentive) activity verbs, which share initiation. Since states and achievements pattern together in not having initiation, we would predict that achievements are derived from states (by adding a delimiting particle).

However, the picture is not so clear. Tests clearly show that the verbs in the (a) examples are nonagentive: They cannot occur with adverbs implying intention/volition (such as *absichtlich* 'deliberately', *aufmerksam* 'attentively'), and they are bad/odd in the imperative. But their aspectual class is ambiguous. They may be nonagentive activities rather than states. One piece of evidence for this is that they can occur in "progressive" aspect, expressed by *gerade* :

- (19) a. Das Haus brennt gerade.
The house is burning (right now).
b. Er dachte gerade, daß er den Schlüssel verloren habe, als....
He was thinking that he had lost the key, when...
c. Sie schlief gerade, als ...
She was sleeping, when...'

In fact, while there are stative verbs in German (e.g., *wissen* 'know'), I find it impossible to find achievement verbs which are unambiguously derived from state base verbs. I conclude that the relevant distinction with respect to particle verb formation lies in agency: Agentive activities become accomplishments, nonagentive activities become achievements. In each case, the function of the particle is to provide an endpoint.

Incidentally, this distinction in terms of agency rather than stativeness is supported by Dowty (1979:180ff), who reclassifies accomplishments versus achievements into agentive versus nonagentive "definite changes of state". (For convenience, I will continue to refer to them as "accomplishments" and "achievements".)

The behavior of achievement verbs parallels that of accomplishments in another way: When the internal argument is non-specific, the delimitation is reduced or cancelled (cf. (15) above). Thus:

- (20) a. ??Häuser brannten (eine Stunde lang/*in einer Stunde) ab.
Houses were burning down (for an hour/*in an hour).
b. ??Politiker dachten (eine Stunde lang/*in einer Stunde) um.
Politicians changed their mind (for an hour/in an hour).
c. ??Studenten schliefen (eine Stunde lang/*in einer Stunde) aus.
Students slept enough/finished sleeping (for an hour/*in an hour).

These examples are quite marked, but to the extent that they are possible, there is no delimitation. There seems to be a stronger clash between the delimiting particle and the nondelimiting NP in achievements than in accomplishments, so that native speakers are uncertain as to how to interpret these sentences. Why should this be? It may have to do with the fact that subjects are topics, and bare plurals and mass nouns, being nonspecific, cannot be topics unless they are generic (cf. Cohen & Erteschik-Shir 1997). Since there is no context provided to suggest a generic interpretation (an existential⁴ interpretation is more accessible, but still difficult), the examples are almost ungrammatical. (Also see section 4.3. on topics.)

In summary, then, there are particles in German which clearly have a delimiting function. This is evident in their effect on agentive activity verbs, which become accomplishment verbs, and nonagentive activities, which become achievements.⁵ Stative verbs are not involved in particle verb formation. Delimiting particles in German seem to be *aus*, *um*, *ab*, *auf*, and probably *zu* and *durch*. While an examination of this claim in all occurrences of these particles is beyond the scope of this paper, such an analysis has been done for *um* by Benware (1993), who concludes that *um* is telic—delimiting—in all its uses.

2.4. Nondelimiting particles

In addition to delimiting particles, German has particles which never seem to affect a verb's aspectual class at all: *an*, *mit*, *über*, *nach*. Consider the following examples:

- (21) a. Sie lächelten (drei Stunden lang/*in drei Stunden). =
 Sie lächelten den Lehrer (drei Stunden lang/*in drei Stunden) an.
 'They smiled/smiled at the teacher (for three hours/*in three hours).'
- b. Sie rannten (drei Stunden lang/*in drei Stunden). =
 Sie rannten (drei Stunden lang/*in drei Stunden) mit.
 'They ran/ran along ('with') for three hours/*in three hours.'
- c. Das Wasser floß (drei Stunden lang/*in drei Stunden). =
 Das Wasser floß (drei Stunden lang/*in drei Stunden) über.
 'The water flowed/overflowed (for three hours/*in three hours).'
- d. Er schrie (drei Stunden lang/*in drei Stunden) =
 Er schrie (drei Stunden lang/*in drei Stunden) dem Pferd nach.
 'He yelled/yelled after the horse (for three hours/*in three hours).'
- e. Sie diskutierten (eine Stunde lang/*in einer Stunde). =
 Sie diskutierten das Problem (eine Stunde lang/*in einer Stunde) an.
 'They discussed/discussed the problem a bit (for an hour/*in an hour).'

Irrespective of whether there is a particle or not, these sentences refer to activities.⁶ However, other than the absence of the delimiting function, the particles in (19) exhibit the same morphosyntactic behavior as the delimiting particles (for example, same word order). This may pose a difficulty for a syntactic account of event structure, since one cannot simply assume different structural positions for the two types of particles.

Before we turn to the syntactic analyses of event structure in German, let's briefly summarize the facts discussed above:

- activity verbs serve as base verbs for particle verb formation, with a distinction in terms of agency
- some particles have a delimiting function, and are a major means of creating accomplishment or achievement verbs (from agentive versus nonagentive activity base verbs)
- some particles do not have a delimiting function
- accomplishment verbs are usually transitive
- specific internal arguments (DPs) serve to delimit an event, while nonspecific internal arguments (NPs/Ns) prevent delimitation

- the aspectual roles of the base verb, the particle and the internal argument interact with each other.

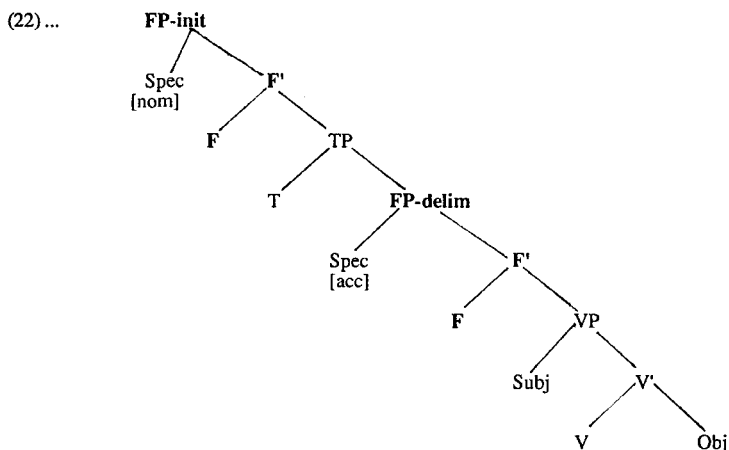
Any theory of event structure, whether lexical or syntactic, needs to account for these facts.

3.0. The syntax of event structure

Attempts at a formal syntactic account of event structure have been made by Borer (1994) and Ritter & Rosen (1998, to appear). In this section, I will evaluate the latter approach.

3.1. Ritter & Rosen's theory

Ritter & Rosen's basic idea is that event structure is compositionally (i.e., syntactically) determined by functional projections. They propose that the actual function of Agr-oP is to delimit events, and rename it FP-delimitation. Agr-sP is thought to be responsible for event initiation, and is called FP-initiation. They further propose that arguments identify initiation and/or delimitation by appearing in the specifier position of the respective FP:



Arguments in FP-delim receive structural accusative case, while arguments in FP-init receive structural nominative case.

Ritter & Rosen furthermore propose that there is parametric variation in how languages grammaticalize events. Some languages, called D-languages, grammaticalize the *terminal* bound of events, so that accomplishments and achievements are grouped together as events. Thus, in D-languages, it is the FP-delim which is responsible for an event reading: Accomplishments and achievements are identified through the presence of FP-delim. Once an FP-delim is present, an FP-init can also (but need not) be licensed. What is impossible in D-languages is the presence of an FP-init without an FP-delim. Since D-languages are based on FP-delim, they are predicted to be sensitive to semantic and syntactic properties of objects, or, more precisely, internal arguments, such as definiteness/specificity. This theory also predicts that structural accusative case may be restricted to delimiting objects in D-languages. Examples of D-languages are English, Finnish, and Chinese.

I-languages, on the other hand, rely on the initial bound for the grammaticalization of events, thus accomplishments are grouped with activities. Since the initial bound is encoded in FP-init, this projection is responsible for event readings in I-languages. FP-delim can only occur

if FP-init is present. As a consequence of this reliance on FP-init, I-languages are sensitive to semantic and syntactic properties of subjects (more precisely, external arguments), such as agentivity, animacy, and person of the subject. Icelandic, Irish, and Japanese are examples of I-languages.

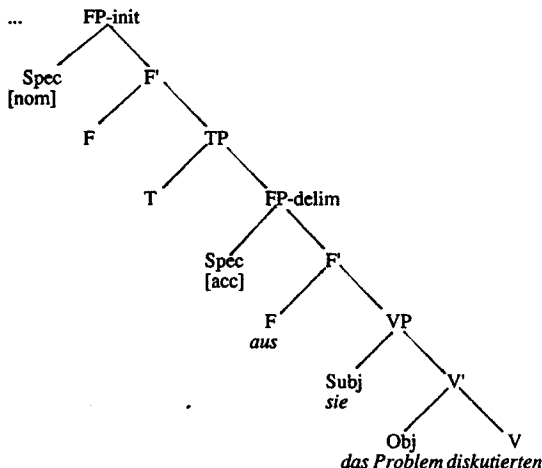
This theory captures the basic German facts observed above, but also has many problems. I will first show where the theory works well for German.

3.2. German as a D-language

Since event structure in German is sensitive to properties of the internal argument, and since particles delimit, but do not initiate events, German can be assumed to be a D-language, in which FP-delimitation is basic.

The delimitation effect of particles can then be explained as follows: Delimiting particles have a feature [+delim], and head FP-delimitation. As an example, consider the following structure for a particle verb denoting an accomplishment.

(23) Structure of *Sie diskutierten das Problem aus*, cf. (10c)



The FP-delim gives the sentence its accomplishment reading. The internal argument *das Problem* 'the problem' moves to the Spec of this phrase, where it receives the "delimiter" event role (Ritter & Rosen 1998), as well as accusative case.

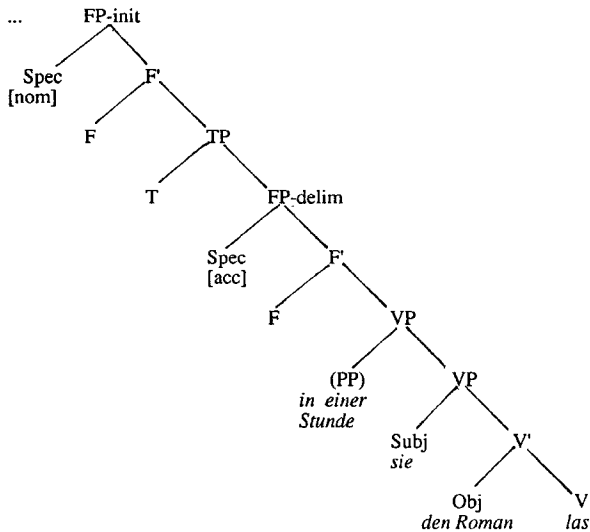
FP-delim licenses an FP-init. The external argument *sie* 'they' moves to Spec, FP-init, where it receives the "initiator" event role and nominative case. In a matrix clause, the verb *diskutierten* 'discussed' moves through TP to the head of CP, which results in the typical V2 word order. In an embedded clause, the verb remains *in situ*, and only its tense and agreement features move to T for checking.

This syntactic approach nicely captures the semantic effect of the particle (delimitation), while still allowing the particle to be separable from the verb. It also explains the fact that most, perhaps all, accomplishment verbs are transitive: Since in D-languages, FP-delim is basic, there can be no endpoint interpretation without a delimiter (an argument in Spec, FP-delim). In other words, a direct object is required in order to express delimitation.

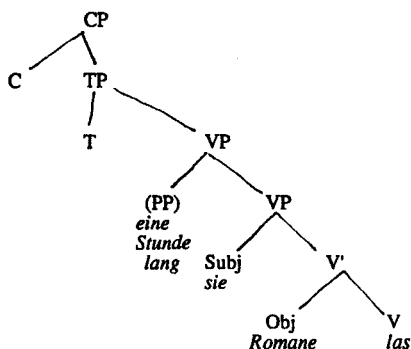
This, in turn, explains the transitivizing effect of particles on intransitive base verbs: The particle verb requires a delimiter (direct object). Likewise, the theory explains why particle verb formation is highly productive with activity verbs: These verbs do not have an FP-delim, so there is room in the syntactic structure for such a phrase. The particle is the means to add FP-delim.

Another fact which this theory captures well is the distinction between specific internal arguments, which delimit, and nonspecific ones, which do not delimit. These two types of constituents also differ in their position in the sentence: Nonspecific NPs occur closer to the VP, following time adverbials, while specific DPs usually occur further away from the VP and before time adverbials. These facts can be explained by assuming that the former move to Spec, FP-delim, while the latter do not:

(24) a. Structure of *Sie las den Roman in einer Stunde* , cf. (5b)



(24) b. Structure of *Sie las eine Stunde lang Romane*, cf. (5c)



Perhaps this difference between specific and non-specific objects has to do with their internal structure: Specific objects have an overt determiner (are DPs), whereas nonspecific objects do not. This difference could be captured by saying that nonspecific objects are not DPs, but NPs or even bare Ns. Then it could be assumed that DPs (not NPs/Ns) have a feature [+delimit], which can be checked in Spec, FP-delim. This causes DP objects to move and realize the delimitation meaning, while NP/N objects stay *in situ*, and no delimitation occurs.

To sum up: The present theory captures the delimiting function of particles and specific objects. It also explains the word order difference between specific and nonspecific objects.

Beyond these basic facts, Ritter & Rosen's approach runs into many problems in German. I will point out the most important ones in the next section.

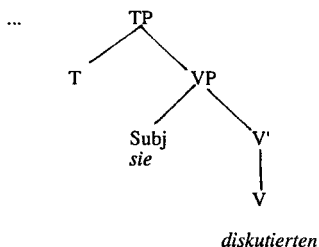
3.3. Problems

First of all, specific objects do not always cause a delimitation reading. We said above that sentences with specific objects plus an activity verb can be interpreted as accomplishments or as activities. So, one can felicitously say in German *Sie las den Roman eine Stunde lang* 'she was reading the novel for an hour', cf. (5b) above. Judging from the word order, this DP is in the same position, presumably Spec, FP-delim, as shown in (24a). We cannot explain why, even though the position is the same, no delimitation reading occurs. Moreover, it was found in section 2 that the context (discourse) is needed to disambiguate the event structure of sentences with an activity verb plus a specific object. As with most syntactic theories, the present approach is not able to capture the role of discourse effects.

Second, the fact that nondelimiting particles display the same morphosyntactic behavior as delimiting ones is difficult for Ritter & Rosen's approach. Only delimiting particles can head FP-delim, whether they are base-generated there, or move there from some other position. Therefore, some word order differences between delimiting and non-delimiting particles would be expected, but such differences do not exist. The other possibility, namely to allow nondelimiting particles into FP-delim, is unattractive because it defeats the very point of this approach: That there is a structural difference between delimitation and non-delimitation.

The third problem lies in case assignment: How do arguments in sentences without FP-delim/FP-init get accusative/nominative case? For example, consider the base verb of (11a) above, which refers to a nondelimited activity:

(25) Structure of *Sie diskutierten*, cf. (11a)



Since there is no FP-delim, there cannot be an FP-init either. However, by assumption, structural nominative case is assigned in FP-init only. This wrongly predicts that *sie* 'she' is not nominative. One solution is to assume that the subject receives nominative case in TP, which is event-neutral. This assumption must be extended to subjects of all nondelimited events. It is not very attractive, since we basically have to claim the existence of two separate nominative cases, one assigned by FP-delim, and one by TP. This amounts to saying that there are two different kinds of subjects; however, there is absolutely no independent evidence for such a claim.

A similar problem is created by the fact that objects of activity verbs are assigned structural accusative case. For example:

- (26) a. *Sie bewunderten das/*dem Gemälde (eine Stunde lang/*in einer Stunde).*
 'They admired **the-ACC/*the-DAT** painting (for an hour/*in an hour).'
 b. *Das Gemälde wurde von ihnen (eine Stunde lang/*in einer Stunde) bewundert.*
 the-NOM painting was being admired by them (for an hour/*in an hour).

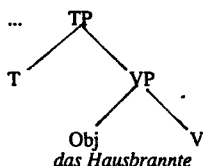
(26a) shows that *das Gemälde* is indeed assigned accusative case, and (26b) shows that it can undergo passivization, an operation which is restricted to structural objects. Since these sentences do not contain an FP-delim, no accusative case should be assigned. Ritter & Rosen (to appear) propose that these objects receive partitive rather than accusative case⁷. However, this analysis cannot be extended to German. There is simply no difference in case assignment between delimited and nondelimited objects. Even nonspecific objects, which have been shown never to delimit, can be passivized, and thus behave like objects with structural accusative case:

- (27) a. *(Eine Stunde lang/*in einer Stunde) wurden (von ihr) Romane ausgelesen.*
 (For an hour/*in an hour) novels were 'read out' (by her).

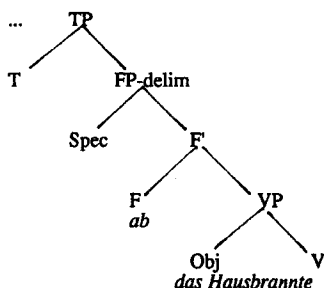
The uniformity of accusative and nominative case assignment in German, irrespective of event structure, is thus a serious problem for the present approach.

The final problem I would like to mention has to do with the role of FP-init. So far, I have only considered instances where agentive activities turn into accomplishments. However, particles also serve to delimit nonagentive activities, turning them into achievements. We assume the following structures:

(28) a. Structure of *Das Haus brannte*, cf. (16a)



b. Structure of *Das Haus brannte ab*, cf. (16b)



Brennen 'burn' has as its single argument a theme, so I assume it is an unaccusative verb. In (28a), the verb's internal argument *das Haus* raises to TP (and then CP), presumably to get case and to check the strong D-feature of T (i.e., to satisfy the EPP). Since there is no FP-delim, there is no FP-init either. In (28b), the delimiting particle *ab* requires the presence of FP-delim, which it heads. Therefore, the event now has an endpoint: It is an achievement.

What is unclear (besides the question why *das Haus* does not receive accusative case in Spec, FP-delim) is why no FP-init is present. So far, we have assumed that FP-delim licenses FP-init. But this cannot be the case in achievement structures. The question, then, is which element or which mechanism determines the appearance of FP-init. There must be some factor other than FP-delim, or all delimited events would have to be accomplishments.⁸ The deeper issue here seems to be that German is not only sensitive to delimitation and object properties, but also to agency: It divides activity verbs into an agentive and a nonagentive class for particle verb formation. Thus, German shows a property of an I-language in addition to some D-language properties. It does not fall neatly into one or the other category, and the theoretical apparatus is inadequate for capturing this.

To summarize, the approach which proposes projections whose main function is event delimitation/initiation, is problematic because it cannot account for (i) the uniform morphosyntactic behavior of delimiting and nondelimiting particles in German, and (ii) subtle interactions of specific objects with activity verbs, where the discourse is involved in disambiguating event structure. A third major problem of this approach is the correlation of FP-delim/FP-init with case assignment, since case assignment in German seems to be insensitive to event structure/specificity of an argument. Finally, since German is sensitive to agency, it shows I-language as well as D-language properties.

The first problem, the existence of delimiting as well as nondelimiting particles in German, suggests that particles cannot be base-generated in FP-delim. The problem with case assignment suggests that Agr-oP and Agr-sP should be used instead of FP-delim/FP-init, in order to achieve uniform case assignment of all subjects and direct objects, respectively. And German's sensitivity to agency should be structurally encoded.

The next section is a first attempt at developing a theory which takes up these suggestions.

4.0. VP shells

In the literature, there exists another approach which may be able to account for event structure effects: VP shell analyses. Interestingly, they have been used to distinguish agentive (unergative) from nonagentive (unaccusative) verbs (e.g., Hale & Keyser 1991, 1994, Pesetsky 1995, Chomsky 1995). Agents occur in the higher VP, and themes are the "subjects" of the lower VP. Such a structure would be able to capture German's sensitivity to agency. Complements (PP/AP) can occur in the lower VP, and they usually serve to delimit an event. Thus, event delimitation could also be accounted for. It seems, then, that a VP shell analysis may be used to explain event structure. I will follow the theory developed by Hale & Keyser in recent years (e.g., Hale & Keyser 1991, 1994).

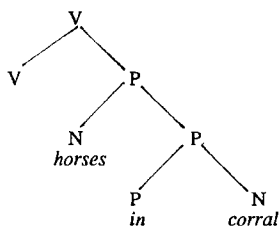
4.1. Hale & Keyser's theory

Hale and Keyser observe that there is a highly limited number of possible argument structures of verbs, and they try to account for this constrained nature of argument structure. They assume that constraints on argument structure derive from the simplicity of the lexical elements involved in syntactic projections, and from the highly limited number of possible syntactic combinations. The lexical elements involved in argument structure are V, N, P, A, and they are assumed to have the following properties:

- (29) a. verbs: require a complement, but do not have a subject
- b. nouns: have neither a subject nor a complement
- c. adjectives: have a subject, but no complement
- d. prepositions: require a complement and a subject

Since Hale & Keyser assume that these constraints are at work in the *lexical* formation of verbs, there are no modifiers. Also, verbs only take subjects post-lexically in the "sentential syntax", where verbs' predicating capacity may be activated by "an appropriate syntactic environment" such as TP, which provides temporal reference (Hale & Keyser 1994). However, it is syntactic principles which further limit the possible combinations of these elements: The Projection Principle limits projections to binary branching ones, and the Empty Category Principle/Head Movement Constraint limits movement of the elements. Following is an example of how this theory works:

- (30) She corralled her horses.



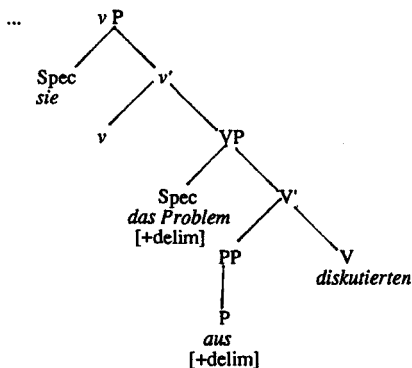
The verb *corral* is derived through incorporation of the noun *corral* into the preposition *in*, then this complex incorporates into the phonetically empty V, which may mean something like 'get/become'. If there is a higher V, it has causative/agentive meaning ('cause').

Following Chomsky (1995), I will adapt this VP shell analysis, and will assume that the argument structure is derived in the *syntax*, rather than the lexicon. Since in "sentential syntax" T is present, verbs can have subjects. The higher V is called *v*. I will also assume that PPs do not require a subject in sentential syntax. Let us now see how this theory works.

4.2. Particles

This VP shell analysis can derive both kinds of particle verbs, those with delimiting and those with nondelimiting particles. All particles are base-generated as complements of the lower V. We will consider verbs with delimiting particles first:

(31) Structure of *Sie diskutierten das Problem aus*, cf. (11c)



The initial bound of the event is provided by *v P*, which is projected because of the presence of the specifier *sie*. The final bound is created as follows: The particle *aus* heads a *PP*, which may have no complement at all as in (31), or may have a phonetically null complement.⁹ It has an interpretable feature *[+delim]*. The particle's feature by itself is not sufficient to provide the final bound of the event. In order for the delimitation reading to obtain unambiguously, there must be a specific DP in *Spec, VP*. One could propose that specific arguments, i.e., DPs, also have a feature *[+delim]*, which may be uninterpretable. The particle's feature moves to *V* and, from there, checks the DP's feature. Only in this case (and if there is a *Spec* in *v*), does the accomplishment reading occur unambiguously. (The verb and the arguments move to higher positions (Agr-oP, Agr-sP, *v P*, TP, CP) in finite matrix clauses.)

If only one *[+delim]* feature is present (only the particle or only a specific internal argument), delimitation is possible, but not obligatory, and the context is needed to clarify the interpretation. However, it is still unclear how to account for this role of the discourse. Another open question is what happens if a *[+delim]* feature can't be checked. Why does the derivation not crash in this case?

However, this theory does capture the subtle interactions between the different elements involved in event delimitation. It also allows us to say that some particles always have a delimiting effect, even though this effect may be obscured by other factors.

Nondelimiting particles are simply accounted for by saying that they do not have an inherent feature *[+delim]*. Thus, no such feature can check a DP's *[+delim]* feature, and no delimitation reading occurs. The sentence refers to an activity.

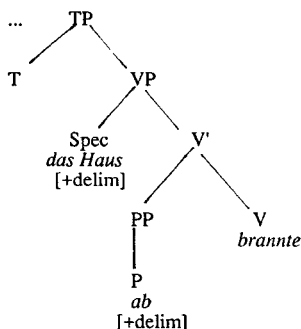
Since the only difference between delimiting and nondelimiting particles lies in the presence or absence of a feature, both types of particles are predicted to behave identically in terms of word order and morphosyntax. This is the desired outcome.

It should be noted that using a feature to distinguish between the two types of particles amounts to locating the difference between them in the lexicon. This makes sense, however, because the presence or absence of the delimiting function seems to be related to the particle's meaning. The delimiting particles mean something which implies an endpoint, e.g., *ab* 'off', while the meaning of nondelimiting particles does not imply an endpoint, e.g., *mit* 'with'.

So, the theory combines lexical information (features) and syntactic mechanisms (checking, movement). It is not a purely syntactic analysis of event structure, but this way it may actually come closer to the German facts.

Before discussing internal arguments in more detail, I would like to comment on achievements. Recall that delimiting particles can also serve to derive achievements from nonagentive activities, and that the agency-based distinction between achievements and accomplishments was not very clear in Ritter & Rosen's theory. In the VP shell analysis, *v* P distinguishes between these two aspectual classes. *v* P is present in the structure of accomplishments, but not in achievements. For example:

(32) Structure of *Das Haus brannte ab*, cf. (16b)



Since *brennen* has a theme argument, the subject *das Haus* originates as the internal argument (Spec, VP). It cannot originate in Spec, *v* P because this would imply some causation/agency, which is absent. Since no *v* P is required for this sentence, by economy and Full Interpretation, it is not projected either. Thus, the absence of *v* P correlates with nonagency (here, of activities).

Das Haus is specific and thus has a feature [+delim] which is checked by the particle's [+delim] feature (which raised to V). Thus, the event has a final bound, but no initial/agentive bound, and the outcome is an achievement, as desired. (Again, *das Haus* and the verb raise to CP in finite matrix clauses.)

In sum, the VP shell analysis relies heavily on lexical information (features), but is quite successful in accounting for the role of particles in event structure. It also provides a simple distinction between delimiting and non-delimiting particles, and between agentive accomplishments and nonagentive achievements.

A remaining open question is how states would be expressed in this theory. Would they pattern with nonagentive activities? VP shell theories are not directly sensitive to event structure, but their constructs can be used to express some aspects of event structure (e.g., delimitation). This raises the question of whether event structure is a grammatical primitive, as assumed by

Ritter & Rosen, or whether it is derived from the primitives used in VP shell theories. If event structure/aspectual classes are not grammatical primitives, perhaps "state" is not an independent category, and so accounting for states is not an issue.

I will now consider the analysis of internal arguments in more detail.

4.3. Internal arguments

There are three facts about internal arguments that need to be accounted for: (i) all internal arguments receive structural accusative case, (ii) nonspecific objects prevent delimitation, and (iii) nonspecific objects occur in a lower position in the sentence than specific ones.

The explanation of (i) is straightforward. All internal arguments receive accusative case in Agr-oP. Accusative case is not tied to event delimitation (neither is nominative case tied to event initiation), which is a clear advantage of this theory regarding German.

Second, nonspecific objects (NPs/Ns rather than DPs) are assumed not to have a feature [+delim]. Therefore, no feature checking can take place with a delimiting particle's feature, and no delimitation interpretation can occur. The presence of the particle's feature by itself may have something to do with the iterative sense of such sentences (an unspecified number of accomplishments/achievements, cf. (9)), but I have no clear idea how this might work.

Finally, the word order facts (see section 3.2., particularly (24)) cannot be directly derived from delimitation in the VP shell analysis, since there are no special positions for delimiting arguments. I propose that the word order differences have to do with the nature of specificity. Enç (1991:21) says that the hallmark of specificity is "linking NP denotations to previous discourse".¹⁰ This means that only specific objects are topics, while nonspecific objects are not unless they are generic, which requires a certain context. It is probably this topicality which allows DPs to move higher up in the tree than nontopical NPs, which seem to be inert. The higher position may be some discourse-related functional projection (perhaps TopP or FocP). Some evidence for this comes from subtle meaning differences such as the following:

- (33) a. Sie las den Roman in einer Stunde aus.
She finished reading the novel in an hour.
- b. Sie las in einer Stunde den Roman aus.
In one hour she finished reading the novel.

(33a) represents the canonical word order and meaning. The order in (33b) suggests special emphasis on *in einer Stunde*. The time adverbial seems to occupy a discourse-related preverbal FP, while the DP has stayed down (perhaps in Spec, Agr-oP), forming an informational unit with the verb.¹¹ In (33a), it is the direct object *den Roman* which receives focus and moves up, probably by default.

To sum up, all three characteristics of internal arguments can be explained in the VP shell analysis. Most importantly, case marking of all subjects and objects is uniform and insensitive to event structure.

Furthermore, the VP shell analysis accounts for German's sensitivity to agency. It also provides a uniform account of the morphosyntactic class of particles, while still capturing the differences between delimiting and non-delimiting particles, and the interaction between verb, particle and internal argument in event structure.

5.0. Conclusion

In this paper, I have attempted a syntactic approach to event structure in German. A careful analysis of German data revealed the following facts, which need to be captured by the approach:

- (34) a. activity verbs serve as base verbs for particle verb formation, with a distinction in terms of agency
- b. some particles have a delimiting function, and are a major means of creating accomplishment or achievement verbs (from agentive versus nonagentive activity base verbs)
- c. some particles do not have a delimiting function

- d. accomplishment verbs are usually transitive
- e. specific internal arguments (DPs) serve to delimit an event, while nonspecific internal arguments (NPs/Ns) prevent delimitation
- f. the aspectual roles of the base verb, the particle and the internal argument interact with each other.

The first step was to apply Ritter & Rosen's theory, which attempts to formalize event structure explicitly through the functional projections FP-delim and FP-init. This theory provided the insight that German is a language in which delimitation seems to be grammaticalized in delimiting particles and in properties of the internal argument. However, the existence of nondelimiting particles, as well as the uniform case-marking of all subjects/objects, irrespective of event structure, presented major problems. The theory also could not account for distinctions in terms of agency in German.

In order to overcome these problems, I attempted a VP shell analysis, following Hale & Keyser's proposals. In the VP shell analysis, the higher verb, *v*, represents agency. If it is not present, there is no agency. Event initiation is not directly represented, and indeed this is unnecessary in German. Event delimitation is encoded in the lower VP. I have assumed that particles head a PP, which is the complement of V. Only a lexical feature [delim] was used to distinguish delimitation. This is not a purely structural analysis of event structure, since there is no structural difference between delimited and nondelimited events. However, this kind of analysis is required by the German data, where all particles occur in the same positions, and all arguments are case-marked in the same way.

In light of these considerations, it becomes questionable whether German really is a D-language, and how valid the distinction into I-languages and D-languages is. In fact, the VP shell analysis suggests that event structure and aspectual classes are not grammatical primitives, but can be derived from notions such as agency and from characteristics of lexical categories (e.g., delimiting prepositions).

I conclude that event structure is not a primitive of grammar. In German, it is determined partially in the syntax (*v* Ps for agency), and partially by lexical information (features). Discourse probably also plays a role, as Eng's discourse-based distinction between specific and nonspecific arguments has been so pervasive in this analysis of German. Further research may reveal that specificity, and thus discourse factors, are grammaticalized in arguments in German (DP versus NP/N, word order). This would not be surprising, given that word order in German is relatively free. As Krifka (1998:108) states, such a language is "free to exploit word order differences to express properties like the discourse-pragmatic status of constituents (givenness, focus, etc.)". It is therefore crucial that the role which internal arguments and specificity/discourse play in event structure and in general be explored more fully.

While this paper has not provided a definitive answer to the question of whether event structure is syntactically encoded in German, it has presented a number of facts (cf. (34) above) which any theory of event structure, and indeed any theory of German, needs to take into account.

6.0. Notes

* This paper grew out of a graduate syntax course taught by Dr. Elizabeth Ritter and Dr. Nomi Erteschik-Shir at the University of Calgary, and it would not have been possible without their suggestions and feedback. I am also grateful to Joachim Kunzmann, Volker Kunzmann, and Markus Wilhelm for patiently checking my examples. All remaining errors are of course my own.

The only abbreviation used which may be unfamiliar is 'PT' for 'particle'. Also note that in most examples, an asterisk does not strictly indicate ungrammaticality, but rather semantic or pragmatic abnormality.

1 Another way to delimit events is by using perfective aspect. A discussion of aspectual morphology is beyond the scope of this paper.

- 2 My use of the term 'specific' is based on Enç (1991), where definite "NPs" are specific, and bare NPs aren't. DPs with an indefinite article can be either specific or non-specific, depending on discourse. For the purposes of this paper, I will ignore the latter distinction and call all DPs with an overt article "specific", including all DPs with an overt indefinite article.
- 3 Stiebels & Wunderlich (1994) might classify this and a few other examples as resultatives. Following Neeleman & Weerman (1993), they distinguish between particle verbs and resultatives: "True" particles are considered a zero-level lexical category, while resultative elements (often homophonous to particles) are considered maximal projections. Since they are maximal projections, they can contain other elements, and they can move, e.g.:

- (i) Sie hat den Roman [ganz aus-]gelesen.
'She finished the novel completely.'
- (ii) [Ganz aus] hat sie den Roman nicht *t* gelesen.
'Completely finish the novel, she didn't.'

However, these tests are not very convincing, since in (i) *ganz* 'completely' could also be analyzed as referring to the particle verb as a whole, and since other movement tests work less well or suggest heads can move, too:

- (iii) ?Aus hat sie den Roman nicht *t* gelesen.
'Finish the novel, she didn't.'
- (iv) ?Aus hat sie den Roman nicht [ganz *t*] gelesen.
'Finish the novel, she didn't completely.'

Thus, it is far from clear that (*ganz*) *aus* really is a maximal projection.

While I could easily accommodate maximal projections (cf. section 4), I will not make the questionable distinction between particle verbs and resultatives, but will treat all particles as "true" particles.

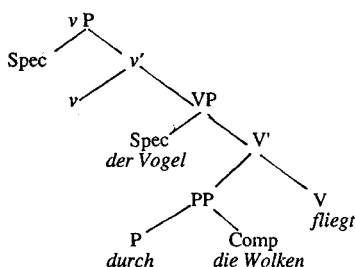
- 4 As such they can only survive if they are foci, and the pragmatic context to provide a good existential/focus reading is also missing.
- 5 With some verbs, the delimiting effect of the particle is less clear: Without a particle they are activity verbs, but with a particle they are either activities or accomplishments, e.g., *reiten* 'ride' and *zureiten* 'break (a horse)', *arbeiten* 'work' and *durcharbeiten* 'work through', *graben* 'dig' and *umgraben* 'dig over/around'. I believe that the particles still have a delimiting function in these verbs, since without them the verbs can only refer to activities. However, there are other factors (verb meaning, internal argument) which easily override the particles' delimiting effect.

I think an analysis in terms of the features [delim(itation)] and [init(iation)] could account for these subtle differences. For example, *reiten* may be [+init, -delim]. If combined with *zu*, which is [+delim], the [delim] features cancel each other out, and the particle verb *zureiten* only has the feature [+init], which can refer to either an activity or an accomplishment. However, conducting a full feature analysis is beyond the scope of this paper.

- 6 While I have the intuition that *an* in the sense of 'partially completed activity' may involve the notion of accomplishment as well as activity, I have not been able to confirm this intuition with other native speakers. In their judgements, *anlesen* and similar verbs fail all accomplishment tests. Therefore, I will assume for now that verbs with *an* are activity verbs.
- 7 Another suggestion would be that the verbs assign inherent accusative case to these objects, but the problems are the same as with the partitive case analysis.
- 8 More generally, there is also the question of how FP-init "knows" whether FP-delim, its licensor, is present.

- 9 In prefix verbs, the P has an overt complement:

(i) (daß) *der Vogel die Wolken durchfliegt* ' (that) the bird flies through the clouds '



P has to incorporate into its governing head, V, since it is inseparable from the verb. This gives us the desired word order as well.

The distinction between particle verbs and prefix verbs in terms of the internal structure of PP is supported by the fact that prefix verbs like *die Wolken durchfliegen* have a PP V counterpart *durch die Wolken fliegen*, while particle verbs (e.g., *das Problem ausdiskutieren*) have no such counterpart (**aus das/dem Problem diskutieren*). Prefix verbs thus involve true preposition incorporation, while particle verbs do not.

- 10 This correlates with the presence of a (definite) determiner.
 11 Based on intonation and scope facts, Krifka (1998) argues for the existence of an "integrated preverbal predicate" and focus assignment to the constituent immediately preceding it. In (33b), [*den Roman auslas*] probably forms such a unit (later, the verb *las* moves), and the preceding phrase *in einer Stunde* receives focus.

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