Phonology and Morphology of the Germanic Languages

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Wolfgang Kehrein and Richard Wiese

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Heads or phrases? Particles in particular

1. Introduction

Complex verbs in languages like German can be formed with two kinds of preverbal elements (PEIs): (separable) particles and (inseparable) prefixes. Particles are generally described as phonologically and syntactically autonomous items - they show an independent stress pattern, can be separated from the verb stem by certain inflectional prefixes and are obligatorily stranded in a verb-second (V2) context. Prefixes, on the other hand, behave more like affixes - they form an inseparable unit with the verb stem and are part of the stress pattern of the verb. PEIs in German are given in (1):

(1) prefixes: be, ent-, er-, ge, miß-, vor-, zer-

prefixes or particles: durch- hinter- über- um- unter- wider-
through behind over around under against

only particles: ab- an- auf- ein- weg- etc.

down on up in away etc.

The following descriptive generalizations can be made about PEIs in German. First, particles consist of at least one heavy syllable and hence constitute possible prosodic words (assuming that words must be at least trisyllabic in German). Prefixes, on the other hand, can be formed by a single light syllable (most clear when the vowel is schwa), hence they are not necessarily possible prosodic words. Second, in prefix-verb combinations, the most prominent stress falls on the root, while particle-verb combinations exhibit compound stress (i.e., the most prominent stress falls on the particle). Third, all PEIs that are ambiguous between a prefix and a particle can also function as prepositions that assign accusative case to their objects. However, not all ACC assigning prepositions can function as particles and prefixes (e.g., auf 'upon' which can only function as a particle) and not all particles are

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propositions that assign ACC case. Fourth, prefixes (except the PEs that have two lives) are bound morphemes that cannot appear without their host. Particles, on the other hand, are independent lexical items - most particles also function as prepositions, however, not all prepositions can function as particles (e.g., neben "beside, next to").

The main aim of this paper is to investigate the status of prefixes and particles from a global point of view. Although PEs in German have received extensive attention in the literature, most approaches suffer from the fact that the issue is approached exclusively from a syntactic, semantic or morphophonological point of view, thus ignoring and relegating peculiarities of PEs to other components. I will give an overview of various aspects of the syntax, semantics and phonology of PEs, and show that a comparison of the main properties of PEs reveals certain patterns in the behavior of prefixes and particles that all seem to indicate that particles are phrasal complements of the verb, whereas prefixes are verbal elements on their own. Obviously, detailed analyses for all phenomena under consideration cannot be provided. In section 2.1, I will discuss the main syntactic difference between prefixes and particles, namely separability. In section 2.2, interpretive effects like focus and modification will be investigated. Section 2.3, gives an overview of the argument structure of complex PE-verbs. Finally section 3. investigates the prosodic structure of prefixes and particles.

2. Prefixes vs. particles - heads vs. phrases

2.1. Separability without exocorporation

The main syntactic difference - separability - is illustrated in (2) with the PE am- which can function as either a particle or a prefix:

(2) a. Frederik amfuhr das Verkehrsschild
Frederik around-drove the traffic sign
"Frederik drove around the traffic sign" prefix
b. Frederik fuhr das Verkehrsschild am
Frederik drove the traffic sign around
"Frederik drove around the traffic sign" prefix

Particles are left behind in a V2 context (2b); prefixes are pied-piped (2a). This contrast leads to two basic questions: what is the difference between prefixes and particles; and where and how is the difference represented? Assuming V2 is syntactic movement of the verb to the complementizer position, there are two basic ways to derive the contrast in (2):

(a) first (and as most authors assume), prefix-verbs and particle-verbs have the same syntactic

structure (i.e., both are represented as a complex V"s in syntax) and additional syntactic

and/or phonological constraints force exocorporation of the verb in a particle-verb combination but block exocorporation in a prefix-verb combination (Koopman 1995, Neelen 1994, Roberts 1991). Alternatively, one could assume that prefix-verbs and particle-verbs have different syntactic structures: prefixes form a complex V" with the verbal stem, but particles are not part of the V" node at the level where V2 applies (Booij 1990, Zeller 1997). I will argue in this section that the second approach is preferable since it does not have to invoke a notion of exocorporation and it allows us to derive various

syntactic differences between prefixes and particles in a less ad hoc way. Moreover, we will see that the structural difference I will propose for prefixes and particles correlates with other syntactic and semantic properties.

The analysis in this paper is based on the following assumptions about the internal architecture of the verbal projection(s): external (agent) arguments are generated outside the VP in the specifier of a light verb projection VP (cf. Chomsky 1995, Kayne 1994, Marantz 1993), and the VP consists of one or more VP-layers (cf. Larson 1988) that host the internal arguments of the verb (see section 2.3 for some discussion of how arguments are thematically licensed):

(3)

\[ VP \]

\[ SUBJ \]

\[ ARG2 \]

\[ V_1 \]

\[ V_1^{'} \]

\[ ARG2 \]

\[ VP \]

\[ V_1 \]

\[ V_1^{'} \]

\[ PP \]

\[ V_1^{'} \]

The idea that I will pursue here is that prefixes (PREFIXs) and particles (PARTs) enter into different relations with the verb: particles are arguments of the verb - i.e., generated as a sister to the verb (cf. Zeller 1997); whereas prefixes are heads that combine with a VP-complement (cf. (4a) vs. (4b)). More specifically, I propose that prefixes are the overt instantiation of the V_1\(^{'}\) head in the structure in (3).\footnote{One might object that some of the prefixes are (homophones with) prepositions and therefore should not appear as the head of verbal projections. However, the preposition-like character of certain 'verbal' elements is not only found with prefixes. Consider for instance the infinitival marker zu to that is homophonic with a preposition in a number of languages but nevertheless is considered as some kind of inflectional element. Furthermore, as we will see below, prefixes behave like verbs since they license an argument position.}

Following standard assumptions about verb-movement (Travis 1984, Takber 1988), the verb raises to its designated host in a successive cyclic fashion; i.e., it attaches to every
interposing head and picks up the relevant features on the way to INFL or COMP. Under these assumptions, an account for the separability of particles vs. the inseparability of prefixes is straightforward. In a structure like (4a), verb-raising - i.e., movement of V* to V₁ - leaves behind the particle since the particle is not part of the verbal head V₁. That undoes head-movement. In a structure like (4b), the verbal head that raises is also V₁ (cf. (5)). However, incorporation of the verb into V₁, where the prefix is located combines the prefix with the verb, and the newly formed V* - i.e., the prefix + the verb - raises further to I* and C*. Prefixes are thus carried along with the verb just as other inflectional elements are.

(4) a. \[\text{Particle} \quad \begin{array}{c}
\text{VP}_1 \\
\text{ARG}_1 \\
V_1^* \\
\text{PART} \\
\text{VP}_2 \\
\end{array}\]

b. \[\text{Prefix} \quad \begin{array}{c}
\text{VP}_1 \\
\text{ARG}_1 \\
V_1^* \\
\text{am} \\
\text{VP}_2 \\
\end{array}\]

(5) \[\text{PREFIX-VERB} \quad \begin{array}{c}
\text{VP}_1 \\
\text{ARG}_1 \\
V_1^* \\
\text{am} \\
\text{am} \\
\text{VP}_2 \\
\end{array}\]

As can be seen in (4a vs. (5), 'particle-verbs' and 'prefix-verbs' have very different structures: the combination of a particle and a verb yields a phrasal category (cf. (4b)); the combination of a prefix and a verb yields a head (cf. (5)).²

² I assume here for convenience that overt V*-to-I* raising (i.e., to a head-final I*) does take place in embedded clauses in German, this assumption is by no means obvious and quite controversial. However, it does not bear on the analysis proposed here.

³ Throughout this paper, I will assume for convenience that the direct object in a particle-verb construction is the object of the verbal head rather than the subject of a small-clause headed by the particle. The question whether particles involve a small-clause structure or are simple complements of the verb has been a longstanding issue (proponents of a small-clause approach include den Dikken 1995, Hockstra 1988, Kayne 1985; proponents of a simple complement approach include Bootz 1990, Neuleman 1994, Steibels & Wunderlich 1994). It seems that there are arguments for both positions; I will therefore leave the issue as an unresolved question here (see Wernbrand in prep. for a comparison of the two approaches).

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Summarizing, the advantage of the approach taken here is that it is possible to elaborate the structure of particles does not require a special treatment and no additional principles or constraints are necessary beyond the restriction that head-movement applies only to heads.⁴ The structures in (4) allow us to get rid of the unattactive and powerful notion of 'excorporation' and to reduce the difference in separability between prefixes and particles to a structural difference that - as I will show in the next sections - is independently motivated.

2.2. Some semantic aspects of prefixes and particles

Building on the structure for particles in (4a), I would like to propose that particles do not form a complex head with the verb at any level of representation. This is different from most syntactic approaches that involve some sort of overt or covert incorporation of the particle into the verb (cf. Koopman 1995 and Zeller 1997). The main reason for the assumption that particles undergo some form of covert incorporation is that particle-verbs can receive a (semi-)idiomatic interpretation that cannot be determined by the meanings of their parts. To account for the idiomatic character of certain particle-verbs, many authors assume that the particle and the verb have to get together at LF and form a complex head to which the special meaning can be assigned. Similarly, it has been argued that the (semi-)idiomatic character of particle-verbs provides evidence for the lexical status of particle-verbs (cf. Steibels and Wunderlich 1994, Zeller 1997).

In contrast to both, the lexical approach as well as the LF-incorporation approach, I argue here following Marantz (1997) that the availability of idiomatic readings does not imply that the particle and the verb have to form a complex head. Note that particle-verbs do not differ from other verb-complement constructions w.r.t. the possibility of (semi-)idiomatic interpretations. The verb-phrases in (6) all have some kind of (semi-)idiomatic reading that cannot be determined compositionally without additional assumptions (cf. Marantz 1984, 1997):

(5) a. take a break, take a nap, take advantage of, take five, take two aspirins, take many notes, take revenge, take the 5 o'clock bus, take offense etc.

It is uncontroversial that phrasal idioms of this sort receive a 'special' interpretation that has to be assigned or listed somewhere. However, it is hardly arguable that phrasal idioms are actually formed in the lexicon and inserted as heads in the syntax (which is exactly what is proposed for particle-verbs). Phrasal idioms show that the semantic component of grammar has to include a mechanism that assigns idiomatic interpretations to certain verb-complement constructions (see also Travis forth, for the assumption that there is an overlap between syntactic and lexical structure). It therefore seems unnecessary to postulate additional lexical rules for the interpretation of particle-verbs (especially since - as I claim here - particle-verbs and verb-complement configurations have the same syntactic structure).

⁴ I concentrate here on verb-movement of the form V-to-I-to-C; verb-raising in modal or restructuring contexts is ignored (see Wernbrand in prep.)
Rather, I assume that (semi)-idiomatic interpretations are assigned to particle-verbs in whatever way they are assigned to phrasal idioms - i.e., neither phrasal idioms nor verb-particle constructions are formed in the lexicon and they do not involve LF-incorporation. The assumption that particles appear in complement position to the verb makes the predictions i) that they should share properties with arguments of the verb (or "arguments" within phrasal idioms as in (6)i and ii) that we should find some evidence for an independent phrasal status of particles. Prefixes, on the other hand, which are verbal heads, should share properties with inflectional affixes and should not exhibit independent phrasal properties. Let us start with the phrasal status of prefixes and particles: the argument structure of PS-verbs will be discussed in section 2.3.

A common test for phrasality in German is topicalization; i.e., only maximal projections can move to SpecCP. As expected, prefixes cannot be topicalized without the verb (cf. (7)).

(7) a. "Ver hat Peter den Brief (ge)schickt"
   PREFIX has Peter the letter sent
   "Peter mailed the letter"

b. "UM hat Hans das Verkehrsschild (ge)fahren"
   around has Hans the traffic-sign driven
   "John drove around the traffic sign"

With particles, the situation is more complex: unfocused particles cannot be topicalized ((8)a). If, however, the particle is contrastively focused ((8)b) or modified ((8)c), topicalization becomes possible (no such difference is found for prefixes).²

(8) a. "Auf hat Peter die Tür gemacht"
   open has Peter the door made
   "Peter has opened the door"

b. "AUF hat Peter die Tür gemacht (nicht zu)"
   open has Peter the door made (not closed)
   "Peter has opened the door"

c. Ganz weit auf hat Peter die Tür gemacht
   completely wide open has Peter the door made
   "Peter opened the door completely"

A similar phenomenon is found with degree particles and negation. Simple degree particles or negation cannot undergo topicalization (9a,c). But as with particles, topicalization is fine when the degree word or negation is modified (9b,d):

² A similar contrast seems to hold for phrasal idioms in English; i.e., topicalization tends to be imposed as phrasal idioms are enriched. Though interesting for a more general approach to complex predicates, I cannot discuss phrasal idioms here.

(9) a. *Sehr hat Hans seine Frau verehrt
   very has John his wife revered
   'John revered his wife very much'

b. So sehr hat Hans seine Frau verehrt (daß ...)
   so much has John his wife revered (that ...)
   'John revered his wife so much that ...'

c. *Nicht hat Hans seine Frau verehrt
   not has John his wife revered
   'John didn't revere his wife'

d. Überhaupt nicht hat Hans seine Frau verehrt
   absolutely not has John his wife revered
   'John absolutely did not revere his wife'

It has to be noted at this point that the possibility of adding modifiers or focus to particles is not available for all particles. Certain particles appear to allow modifiers (cf. (10)a) but they can nevertheless not be topicalized and focused (cf. (10)b,c; see also Stiebel & Wunderlich 1994).

(10) a. Moel hat die Suppe ganz aufgegessen
   Moel has the soup completely up-eaten
   'Moel completely ate up the soup'

Hans hat das Verkehrsschild halb ausgefahren
Hans has the traffic-sign half down-driven
'John partially knocked down the traffic sign'

b. *Ganz auf hat Moel die Suppe gegessen
   Completely up has Moel the soup eaten
   'Moel completely ate up the soup'

Hans hat das Verkehrsschild halb ausgefahren
Hans has the traffic-sign half down-driven
'John partially knocked down the traffic sign'

² a. "UM hat Hans das Verkehrsschild gefahren
   DOWN has John the traffic-sign driven
   'John knocked DOWN the traffic sign'

² b. "AUF hat Moel die Suppe gegessen
   up has Moel the soup eaten
   'Moel completely ate UP the soup'
To account for contrasts as in (8) and (10), Stiebels & Wunderlich (1994) propose that there are two kinds of particles: 'true' particles as in (10) and resultative particles as in (8) [c]. Resultative particles are the heads of independent predicative phrases and hence can be modified syntactically and undergo topicalization. True particles, on the other hand, combine with verbs in the lexicon, yielding a complex verb that is inserted as a single head in the syntax (separability is guaranteed by the stipulation that particles have to be visible in the syntax). The modifiers in (10) are thus attached to the complex particle-verb rather than to the particle itself.

There are several shortcomings with a lexical approach to particles. First, it is not obvious how the approach could be extended to degree words and negation that clearly do not involve a resultative meaning. Since degree words, negation and particles are subject to the same restriction - i.e., topicalization of these elements is only possible when they are focused or modified - it seems desirable to give a unified account for these phenomena. Second and more importantly, as I pointed out above, only focused or modified particles display praphrasal properties in the sense that they can appear in topic position. Since the meaning of the complex verb weg-schicken 'send away' is the same in all of (8a-c) [c.e., resultative], one would expect that the particle should function as a predicative XP in all three examples. However, since topicalization is prohibited in (8a), it has to be assumed in a lexical approach that resultative particles have to combine with the verb in the lexicon as 'true' particles in cases where they are not focused or modified later on in the syntax. It is not clear how this kind of 'look-ahead' property of lexical composition can be implemented in a lexical approach to particles.

The assumption that resultative particles are predicative XPs and 'true' particles are part of the lexical verb thus does not seem to be sufficient to account for the facts in (8) through (10). What then is the correct generalization for the (im)possibility of topicalization of particles in German? What I will propose here is that the crucial property that licenses topicalization is indeed an interpretive property, but contra Stiebels & Wunderlich (1994), I argue that this property cannot be reduced to the difference between a resultative vs. non-resultative interpretation of particles. Rather, I will make the simple claim that topicalization is restricted to phrases that are contrastively focused. In other words, particles can only be topicalized when the particle itself (to be distinguished from the particle-verb combination) is contrastively focused. This assumption immediately accounts for the contrast between (8a) and (8c): in the former example, the particle is not focused and therefore topicalization is blocked.

As a consequence of the assumption that focus is a necessary condition for topicalization, particles that for independent reasons do not permit resultative focus can never undergo topicalization. I will now show that the resistance to focus in fact plays a crucial role in the examples in (8) through (10). Consider first how contrastive focus is instantiated with particles. A resultative particle as in auf-machen 'open-mark' can easily be contrasted with a particle expressing a possible counterpart (cf. (11)a). Particles in combinations like auf-essen 'eat up', or um-fahren 'knock down', on the other hand, do not seem to have any counterpart (cf. (11)b,c; note again that what has to be contrasted here is the particle auf in auf-essen and not the whole particle-verb).

In (8)c, on the other hand, nothing blocks a modifier inside the particle PP - i.e., the particle forms a constituent with the modifier and topicalization is fine (as for the focus require-

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(11) a. aufmachen und zuschneiden 
open-make and cut-open 'open and close'

b. aufessen und ??essen 
up-eat and ??eat 'eat up and eat ??'

c. umfahren und ??fahren 
down-drive and ??drive 'knock down and knock ??'

The reason for the lack of a focus counterpart for the particles in (11)b,c has to do with the way meaning is assigned to these particle-verb combinations. Particle-verbs like eat up or knock down receive an idiomatic interpretation; that is, a reading that is not assigned compositionally (see the discussion at the beginning of this section). Particle-verbs with an idiomatic reading are thus not transparent semantically but constitute an opaque domain for interpretation. Suppose now that interpretational effects like focus or modification cannot 'see' into semantically opaque domains. As a consequence, particles in (semi-)idiomatic particle-verb combinations are not accessible for contrastive focus or modification.

The impossibility of topicalization in the examples in (10)b,c can be accounted for as follows: the particles in (10) are part of idiomatic particle-verbs and hence are not accessible for modification. Thus, the modifiers cannot appear inside the particle PP but can only be attached to the particle-verb: i.e., the structure of (10)a,b is (12b), rather than (12a) (which is the structure of (8)c). In other words, while the modifier and the particle form a constituent in (12a) (=8c), they do not form an independent constituent in (12b) (=10a,b). Since topicalization cannot affect discontinuous constituents in German, the structures in (10)b,c are ill-formed."
ment, I will simply assume that adding a modifier puts the modified phrase automatically in focus.

To summarize, the examples in (8) to (10) are accounted for as follows: (8)a, (9)c are impossible because the particles are not focused; (8)b,c, (9)d involve focused (or modified) particles and hence are licit topicalization structures; and finally (10)b,c are blocked because the particles are in a semantically opaque domain which renders the particle inaccessible for modification or focus, and hence a necessary precondition for topicalization cannot be met. Note again that while particle-verbs represent an opaque semantic domain (i.e., modification or focus cannot affect parts of the particle-verb combination), they do not constitute an opaque syntactic domain. This becomes clear when we recall syntactic processes like verb-raising that crucially affect only the verb and cannot apply to the particle-verb combination.

Returning now to the difference between prefixes and particles, one might speculate that prefix-verbs are like idiomatic particle-verbs in that they do not allow modification or focus due to the fact that they form an opaque semantic domain. This assumption, however, has to be rejected for various reasons. First, it is empirically wrong, since most prefix-verb combinations show a transparent rather than an idiomatic interpretation (but nevertheless prohibit modification and focus). Second, the syntactic difference between prefixes and particles still has to be accounted for (i.e., prefixes are never stranded in a V2 context, particles always have to be stranded - independent of whether they have an idiomatic or compositional meaning). And third, it would miss the generalization that all prefixes generally disallow modification or focus (whereas particles only in certain circumstances do).

To conclude, we have seen that the impossibility of focus or modification for prefixes can be taken as support for the assumption that prefixes are functional heads whereas particles act more like XP-complements of the verb. If prefixes and particles had the same structure, one would lose the generalization that only particles show phrasal behavior. Furthermore, the analysis proposed here allows us to give a unified account for "true" and resultative particles that does not involve a syntactic condition on lexical composition.

2.3. Argument structure

This section investigates the argument-structure of PE-verbs which will provide further support for the assumption that particles appear in complement position of the verb and prefixes are verbal heads. The first piece of evidence for the analysis proposed here is that particles but not prefixes can saturate an argument of the verb. Stiebels & Wunderlich (1994:953) note that an underlying prepositional object can only be left unexpressed if the PE ends up as a particle (cf. (13)a,b); if the PE is incorporated into the verb, object drop is impossible (cf. the prefix in (13)c):

(13) a. Sie setzt den Hut auf (den Kopf)
    she puts the hat on (the head)
    'She is putting the hat on (her head)'

b. Sie läuft durch (den Park)
    she runs through (the park)
    'She is running through (the park)'

c. Sie durchläuft *(den Park)
    she through-runs (the park)
    'She is running through (the park)'

Another argument for different syntactic structures of prefixes and particles is provided by the argument structure alternations encountered only with prefix-verbs but not with particle-verbs (cf. van Hoof 1996, Olsen 1995a,b, Stiebels & Wunderlich 1994). Prefix-verbs behave like applicative constructions (cf. Baker 1988) - i.e., ACC is assigned to the underlying prepositional argument and the underlying theme argument ends up as an (optional) oblique instrumental PP. This is illustrated in (14): in (14a), the PE über functions as a preposition, and the theme argument is assigned ACC. In the prefix-verb constructions in (14)b,c, theme arguments show up as instrumental PPs, and underlying locatives get ACC.

(14) a. weil der Hans die Zettel über das Loch klette prep.
    since the John [the notes]-ACC over [the hole]-ACC stack
    'since John stuck the notes over the hole'

b. weil der Hans das Loch mit den Zetteln über klette prefix2
    since the John [the hole]-ACC with the notes over
    'since John covered the hole with the notes'

c. weil der Hans die Tür mit den Zetteln be klette prefix
    since the John [the door]-ACC with the notes
    'since John stuck the doors over'

Particle-verbs, on the other hand, do not allow this argument structure and case pattern (cf. (15)a,b) but always assign ACC to the underlying theme argument (cf. (15)c).6

(15) a. *weil der Hans das Loch mit den Zetteln über klette particle
    since the John [the hole]-ACC with the notes over
    'since John stuck the notes over the hole'

b. *weil der Hans das Loch mit den Zetteln über klette particle
    since the John [the hole]-ACC with the notes over
    'since John stuck the notes over the hole'

6 Underlining indicates the most prominent stress. As will be shown in section 3.1, particle-verbs and prefix-verbs crucially differ w.r.t. their stress properties - particle-verbs receive compound stress, prefix-verbs receive word stress. Stress can thus be taken as a way to differentiate between prefixes and particles.

7 In examples like (15c), the preferred position for the ACC argument is to the left of the PP (i.e., it has to undergo scrambling). For the discussion here, this fact does not matter. Furthermore, for most speakers, the particle über has to show up with the pronominal element di(e). Although ultimately important for a characterization of the particle über, it can be ignored here since di(e) is not obligatory with all particles (e.g., Hans hat den Zeitung an den Kühlschrank angeklebt 'John stuck the note on the fridge'.)
The pattern is schematized in (16); optional arguments are in brackets:

(16) a. SUBJ THEME-ACC PP-LOC VERB = (14a)
    b. SUBJ THEME-INST LOC-ACC PREFIX-VERB = (14b,c)
    c. SUBJ THEME-ACC PP-LOC PART-VERB = (15a,b)
    d. SUBJ THEME-ACC PP-LOC PART-VERB = (15c)

Furthermore, as has been noted in the literature (cf. Anderson 1971, Tenny 1994, van Hout 1996 and references therein), the argument that ends up with ACC case receives a so-called holistic interpretation. In examples like in (14a) and (15c), a holistic interpretation applies to the underlying theme argument; i.e., the hole or the door have to be covered completely.

To account for the pattern in (16), I will make the following assumptions about case and thematic licensing: i) an argument has to be in a local relation with its licensor (following Bobaljik 1995. I assume that head-complement as well as head-specifier are local relations), and ii) ACC is assigned in SpecVP to which the closest argument raises. Let us see how these assumptions together with the structures for prefixes and particles as proposed in (4) account for the case and argument alternations.

The structure in (17) is the basic structure of a transitive verb with a prepositional object. The direct theme argument is generated in SpecVP where it is in a local relation with the theta licensing verb (theta relations are indicated by indices). The locative argument appears as the complement of the preposition, hence it is in a local relation with the licensing P-head which also assigns case to the prepositional complement. As for ACC case, ACC is assigned to the closest argument to SpecP, i.e., the theme argument in SpecVP.29

Turning to the prefix-variant of the PE super as in (14b), recall that prefixes are the head of a VP-layer above the VP headed by the main verb. The crucial idea is that the presence of a prefix extends the argument structure of the main verb - i.e., prefixes open an additional thematic position. As in (17), the underlying theme argument is in specifier or complement position of V1, where it is theta-licensed by the main verb. The locative argument, however, cannot be generated inside VP, since it is thematically associated with the prefix rather than with the main verb, and hence it would fail to be licensed thematically in VP. However, since prefixes open an additional argument position (SpecVP2), there is a position where the locative argument can be generated and licensed thematically - in SpecVP3, LOC is in a local relation with its theta licensor, the prefix über in V1.

Assuming that the specifier of VP2 is the base position of the underlying locative argument, we have now an explanation for the case pattern of prefix-verbs: since the locative is closer to SpecP than the theme, it is the one that gets assigned ACC case. Since ACC case is only assigned once in German,21 the theme argument in SpecVP, is left without case and shows up as an oblique instrumental PP.22

1 The analysis proposed here is intended to present an outline of an account of the case and argument structure properties of PE-verbs. In many places, I refrain from specific mechanical implementations that seem to be orthogonal to the issues discussed in this paper. However, for a thorough theoretical account see Wurmband (to prep.).

29 This course raises various questions about issues like equidistance, multiple specifiers etc. that seem to be irrelevant for the discussion here. For the sake of this paper, I will simply assume that the subject in its base position does not interfere with ACC case checking of the object.

21 It is claimed in descriptive grammars that there are a few verbs that apparently allow two ACCs. However, in spoken language, one of the two ACC is always replaced by an AT.

22 I don't have an explanation why theme arguments end up as instrumental PPs (the same pattern is found for the class of prepositional verbs in e.g., English).
The impossibility of examples like (15)a.b in contrast to (14)c,d is thus accounted for by the lack of the additional thematic position that is created by prefixes but not by particles. Since the locative argument - by failure of being in a local relation with a licensing head - cannot be licensed thematically, it has to remain unrealized (cf. (19)). If, however, an additional preposition is available, the locative argument can show up as the object of this preposition. This analysis then provides an account for the PE-doubling effect in particle-verb constructions in German (example (15)c repeated here as (20)a):

(20) a. weil der Hans über das Loch einen Zettel überklebte
    since the John over the hole [a note]-acc dr-over stuck
    'since John stuck a note over the hole'

b. weil der Hans auf der Tür einen Zettel aufklebte
    since the John on the door [a note]-acc on stuck
    'since John stuck a note on the door'

Before turning to the prosodic properties of PE-constructions, I will first address an apparent counterexample to the theory proposed so far.

2.4. An apparent counterexample

Stiebels & Wunderlich (1994) claim that argument inheritance (i.e., when the locative argument becomes the direct argument of the PE-verb) is not only attested with certain prefix-verbs, but apparently also possible with particle-verb combinations. Examples of the following sort would constitute a problem for the analysis proposed here since the PE-combination in (21) is a particle-verb which seems to display the pattern described for prefix-verbs:

(21) a. weil Hans die Farbe auf den Schrank malte
    since John color-acc on the cupboard painted
    'since John painted color on the cupboard'

b. weil Hans den Schrank mit der Farbe malte
    since John [the cupboard]-acc with color on painted
    'since John painted the cupboard with color'

ACC assignment to the locative argument as in (21)b is unexpected since the locative argument should not be licensed thematically in a particle-verb construction (cf. (21)b) vs. (15)).

Let us look at these examples in more detail: note first that the case properties change when the surface object color is replaced with a DP like a face:

(22) a. weil Hans ein Gesicht auf den Schrank malte
    since John [a face]-acc on the cupboard painted
    'since John painted a face on the cupboard'

Note that I do not assume that there is a ban against empty headed VP-projections (e.g., double object constructions). Rather, the implicit assumption here is that, in the absence of a prefix, the number of VP-layers is determined by the argument structure of the main verb. If the main verb (like stick in the examples), does not give rise to an additional VP-layer, no additional VP is available.
b. weil Hans den Schrank mit einem Gesicht an malte since John [the cupboard]-acc with a face on painted
"since John painted a face on the cupboard"
"since John painted the cupboard with a face"
c. weil Hans den Schrank mit einem Gesicht be malte since John [the cupboard]-acc with a face PRFX painted
"since John painted a face on the cupboard"

Comparing (21)b with (22)b, we see that an instrumental PP is only possible in a particle-verb construction when the PP is interpreted as a semantic instrumental PP rather than an underlying theme argument. Thus, a sentence like (22)b is pragmatically bizarre, since faces are usually not used as painting utensils. In contrast, no requirement of a 'real' instrumental interpretation has to be fulfilled for with-PPs in prefix-constructions like in (22)c. The contrasts in (21) and (22) follow, if it is assumed that with-PPs in particle-verb constructions are real adjunct PPs that are not generated in the specifier position of any VP. Examples like (21)b, thus lack an underlying theme argument which 'frees' the Spec-VP position. Under these circumstances, a locative argument can be realized in Spec-VP since it ends up in a local relation with the particle.

(23) Particle-verb with no underlying direct object

```
  VP
   /\  
  |
  VP
   /\  
  |
  V
   /|\  
  V
   /\  
  VP
   /\  
  |  
  ACC
   /\  
  |
  Hans
   /\  
  |
  vp
   /\  
  |
  V
   /\  
  LOC
  Part an malte
```

2.5. Conclusion

I have proposed that the difference between prefixes and particles - i.e., the assumption that particles are complements of the verb but that prefixes are verbal heads that open a new thematic position - together with basic assumptions about case assignment and thematic licensing provide an account for the case and argument structure properties of prefix- and particle-verbs. Syntactic separability, the behavior of particles w.r.t. topicalization, and the similarity between particle-verbs and prusal idioms have shown that a lexical approach to particle-verbs is inadequate: a stipulative account of syntactic head movement seems unavoidable, and the lexicon has to be extended as to include syntactic information like modification of focus.

Heads or phrases?

For prefix-verbs, the situation is more complex and it seems that a decision between various approaches can only be made at a theoretical level rather than on empirical grounds. To illustrate this point, compare the approach taken here with the standard analysis of applicative constructions (i.e. P-incorporation à la Baker 1988) which has also been extended to prefix-verbs (cf. Büring 1991, Zeller 1997). The main difference between the analysis proposed here and the P-incorporation approach is the relative ordering of the prefix and the verb: while the verb starts out higher than the prefix in a P-incorporation analysis (hence the prefix incorporates into the verb), I have proposed that the verb starts out in a lower position than the prefix (hence the verb incorporates into the prefix). Both approaches explain why prefixes behave like heads and why they cannot be separated from the verb. The distribution of ACC case is usually accounted for by means of a notion of 'government' in a P-incorporation approach: case is assigned by the verb under government; and incorporation of the prefix renders the PP transparent for government (cf. Baker 1988). To account for the distribution of ACC case in the approach taken here, a notion of 'being closer' has been adopted (Chomsky's 1995 Attract Closer). Thus, at this point, a V-incorporation approach and a P-incorporation approach seem to be empirically indistinguishable and to reduce to the question which approach is more appropriate in a given theoretical background. Since it is assumed here that structural case is not assigned under government by the verb but is rather instantiated as a checking relation between a noun phrase and a functional head, I have chosen the V-incorporation approach which does not require any notion of government, barrihood, or special mechanism of case assignment.

To sum up, I have shown that different structures for prefixes and particles correlate with different syntactic, semantic, and argument structure properties of prefixes vs. particles. While each property could of course be seen as an independent phenomenon, I consider it an advantage that the theory proposed here allows us to tie various facts together and give a unified account that is based on one major assumption: particles are arguments, prefixes are verbal heads.

3. Prosodic structure of prefixes and particles

Besides the syntactic differences between prefixes and particles discussed in the previous section, prefixes and particles also differ in their phonological properties. In this section, I will show that the head vs. complement distinction I have proposed for prefixes vs. particles carries over to phonology. We will see that prefix-verbs behave like simple words w.r.t. stress assignment and deletion under identity (a deletion process to be discussed in detail below), whereas particle-verbs behave like phrases. Assuming that different syntactic structures translate into different prosodic structures, it is correctly predicted that particle-verbs are syntactically and prosodically phrases - therefore carry phrasal stress, whereas prefix-verbs are syntactically and prosodically heads - therefore bear word stress.

Under the syntactic structure I have proposed for PL-verbs, prefix-verbs are heads and particle-verbs are phrases. I will assume that syntactic structures are mapped into prosodic
structure as follows: minimal categories (X’s) correspond to prosodic words (PWds); non-minimal categories (X/XPs) correspond to phonological phrases (PhPs; cf. Selkirk 1972, 1995). This yields the following prosodic structures for PE-verbs:

\[
\begin{align*}
\text{a. Prefix-Verb} & \quad \text{b. Particle-Verb} \\
V^* & \quad V^* \\
\text{PRFX} V^* & \quad \text{PART} V^* \\
\text{be} & \quad \text{stehen} \\
\text{stellen} & \quad \text{auf} \\
\Rightarrow \text{PWd} & \quad \Rightarrow \text{PhP}
\end{align*}
\]

Thus, a prefix-verb is a PWd, whereas a particle-verb is a PhP. In the following sections, I will discuss how this prosodic difference accounts for the stress (section 3.1) and deletion under identity properties (section 3.2) of PE-verbs.

3.1 Stress properties of PE-verbs

The major phonological difference between prefixes and particles is illustrated by the PE-verb *anfahren* which has two stress patterns. If the PE bears the most prominent stress, it can only be a particle, if the verb bears the most prominent stress, the PE is a prefix (the most prominent stress is indicated by underlining):

\[
\begin{align*}
\text{a. weil er das Verkehrschild anfahrt} & \quad \text{prefix} \\
& \quad \text{‘since he drove around the traffic sign’} \\
\text{b. weil er das Verkehrschild aufgah} & \quad \text{particle} \\
& \quad \text{‘since he knocked down the traffic sign’}
\end{align*}
\]

More specifically, particles carry compound stress (which is initial in German); prefixes are unstressed or carry at most secondary word stress.

\[
\begin{align*}
\text{a. Particle} & \quad \text{b. Prefix} \\
\text{auf-gehen} & \quad \text{ver-gehen} \\
\text{PART-give} & \quad \text{PRFX-give} \\
& \quad \text{‘give up’} \\
\text{parti-verb} & \quad \text{prefix-verb} \\
\ast \text{parti-verb} & \quad \ast \text{prefix-verb}
\end{align*}
\]

3.2 Deletion under Identity

In this section, I will investigate the so-called Deletion under Identity or Coordination Reduction construction. We will see that the deletion facts provide some further insight into the prosodic structure of prefixes and particles. Before investigating the behavior of prefixes and particles w.r.t. deletion under identity, I will first discuss when deletion under identity is possible and what the relevant constraints are.

3.2.1 First approach: particles are words, prefixes are smaller than words

Deletion under identity refers to the following quite common deletion process in German (unpronounced material is indicated by strike-out):

\[
\begin{align*}
\text{a. weil Maria Gurkenrasae und Tomatensalat verabscheut} \\
& \quad \text{since Maria cucumber salad and tomato salad detests} \\
& \quad \text{‘since Maria detests cucumber salad and tomato salad’}
\end{align*}
\]

I will not commit myself here to a specific theory of stress assignment. An analysis of stress in German would run the risk of diverting the attention from the main topic of this paper to the quite complex and controversial issue of stress in German. For extensive discussions of stress in German and Dutch see for instance Oldehoof (1985), Kager (1989), Boot (1995), Leecher (1995), or Wiese (1996). What is important for the discussion in this paper is that particle-verbs pattern with compounds whereas prefix-verbs pattern with simple or affixed words. Every theory of stress has to involve the difference between compound stress and word stress in some or the other form. The reader is therefore asked to choose his favorite approach to stress assignment in German and apply it to the examples in the text.
b. weil Maria Gurkensalat und Gurkengemüse verabscheut
   'since Maria detests cucumber salad and cucumber vegetables'

Typically, identical material that appears in both parts of a conjunction can be deleted under certain conditions. That the structure involves some kind of deletion rather than simply coordination of the left part of the compound is discernible from the meaning of a the utterance: what is deleted in (27)a is not salad consisting of cucumbers and tomatoes, but cucumber salad and tomatos salad. Booij (1985) defines the conditions for deletion under identity in Dutch as follows (the constraints can be applied to German as well):

(28) Coordination reduction (optional)

<table>
<thead>
<tr>
<th>Delete Y. Conditions:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. Y = α [\alpha]</td>
</tr>
<tr>
<td>b. Y is adjacent to a conjunction</td>
</tr>
<tr>
<td>c. There is a remnant that, like its counterpart, can function as a focus constituent</td>
</tr>
</tbody>
</table>

The first condition states that deletion can only apply to phonological words or bigger prosodic units. For bound morphemes, this implies that only affixes that have the status of a phonological word can be deleted. Evidence for this claim is provided by suffixes like -ig 'y' vs. suffixes like -artig 'like' that derive adjectives from nouns. The former class of affixes undergo syllabification with the stem whereas the latter represent an independent domain for syllabification. The suffix -artig, when attached to a noun, does not resyllabify with the noun: the -i in the coda of the noun eiis 'ice' cannot be syllabified as the onset of the suffix (cf. (29)a); instead insertion of the glottal stop takes place in onset position. The suffix -ig, on the other hand, shows the opposite distribution: it cannot be preceded by a glottal stop but it has to syllabify with the noun (cf. (29)b).

(29) a. eis + artig
   ice-like
   Æ eis.7artig, *ei.artig

b. eis + ig
   ice + y
   Æ *eis.7ig, ei.ig

Assuming that the syllabification facts and the distribution of glottal stop indicate that -artig constitutes an independent PWd, whereas -ig is of a smaller prosodic category, the first condition in (28) predicts that -artig, but not -ig can be deleted under coordination:

(30) a. eisartig oder wasserartig
   icelike or waterlike

b. *eisig oder rutschig
   icy or slippery

Heads or phrases?

As the contrast in (30) shows, deletion is possible in the case of -artig but blocked in the case of -ig which follows from a difference in the prosodic structure of the two suffixes: the former projects to a PWd, while the latter doesn't.

The second condition on coordination reduction requires that the deleted material is adjacent to a conjunction. This assumption seems to be too strict since there are for instance cases where deletion can apply between two arguments in the absence of a conjunction.\(^{14}\) In order to capture this observation, Wiese (1996) reformulates the conditions on deletion as follows:

(31) Word Deletion

Delete a phonological word,
   a. if it occurs adjacent to a phrase boundary, and
   b. if a phonologically identical phonological word exists in an adjacent sister phrase

Wiese's formulation of deletion has two advantages: i) it involves a more accurate characterization of the environment where deletion can apply (condition a.); and ii) it includes a notion of parallelism which is a necessary precondition for deletion (condition b.). However, it does not involve a restriction on the remnant structure - i.e., Booij's third condition. I will now show that a condition on the remnant is indeed necessary and cannot be reduced to constraints on the deleted material.

The third condition on coordination reduction requires that the remnant has to form a (focus) constituent. This constraint is crucial for examples with a more complex structure. As is shown in (32), deletion of one noun in a compound consisting of three parts is not always possible: while it is fine in examples like (32)d, it is impossible in examples like (32)e:

(32) a. Reiseschreibmaschinen und Bürotischenschreibmaschinen
   travel-typewriters and office-typewriters
   'portable typewriters and office-typewriters'

\(^{14}\) Consider the following examples:

i. weil der Hans die Erst- den Zwei-jahresstudenten vorgestellt hat
   since the John the first- the second year students introduced has
ii. *weil der Hans die Erst- gestern den Zwei-jahresstudenten vorgestellt hat
   since the John the first- yesterday the second year students introduced has
iii. *die Erst- hat Hans gestern den Zwei-jahresstudenten vorgestellt
   the first- has Hans yesterday the second year students introduced
   since John introduced the first year students to the second year students yesterday

The example in i. illustrates that 'deletion under identity' can apply in the absence of a conjunction. However, what is interesting is that this form of deletion also requires some form of adjacency: if the two arguments involved are separated by an adverb, deletion is blocked (cf. ii.). On the other hand, the adjacency restriction is loosened if one of the arguments is topicalized. We will not draw any conclusion from these facts w.r.t. scrambling or topicalization here but leave the issue for future research.
adequate description of deletion under identity. The considerations above, lead to the following reformulation of Booij’s and Wiese’s conditions on deletion under identity:

(34) **Deletion under Identity**

Delete a phonological word,

a. if it occurs adjacent to a phrase boundary
b. if a phonologically identical phonological word exists in an adjacent sister phrase
c. there is a remnant that, like its counterpart, can function as a focus constituent

Let us now look at the behavior of particles and prefixes w.r.t. deletion under identity. If the assumptions about deletion under identity (Booij 1985 & Wiese 1996) are correct, deletion provides a test to determine whether prefixes and particles are PWds. Provided that conditions a., b. and c. are met, the PE would constitute a PWd if deletion is possible. If deletion is prohibited, the PE is not a PWd. Starting with particle-verbs, (35b) shows that deletion of the particle is possible. One thus concludes that particles have the status of PWds.

(35) a. weil altes Bier gewöhnlich überschäumt oder überproduziert

Since old beer usually PART-froths or PART-bubbles

b. weil altes Bier gewöhnlich überschäumt oder überproduziert

Since old beer usually PART-froths or PART-bubbles

Turning now to prefix-verbs, we see that in contrast to the particle in (35b), deletion of the prefix is prohibited in (36b):

(36) a. weil sie ständig mit Arbeit überhäuft und überfordert wird

Since she always works PRFX-headed and PRFX-loaded becomes

b. *weil sie ständig mit Arbeit überhäuft und überfordert wird

Since she always works PRFX-head ed and PRFX-loaded becomes

Wiese (1996) concludes from the ungrammaticality of (36b) that prefixes are smaller units than PWds. The remnant (i.e., the verb) clearly forms a constituent (hence condition c. is met). The deleted material is adjacent to a phrase boundary (hence condition a. is met). However, assuming that prefixes are not PWds, neither the requirement that the deleted item has to be a PWd nor condition b. can be met: by parallelism the non-deleted prefix would not be a PWd either and hence condition b. which requires that an identical phonological word exists in an adjacent sister phrase - is violated.

---

17 Richard Wiese pointed out to me that examples like (32c) show some variation among speakers; some speakers do not find (32c) ungrammatical, which would mean that the third condition on deletion is in fact not active for those speakers.
3.2.2 Second approach: particle-verbs are phrases, prefix-verbs are heads

At this point the question arises what constitutes a 'PWD'. Since phonologically the same string of sounds and phonological properties is involved in the particle *über* and the prefix *über* it is not clear why the two elements should be assigned different prosodic values. Furthermore, prefixes like *über* show properties typically associated with PWds: *über* is disyllabic and carries secondary stress, hence clearly has to be considered as a foot (F). Moreover, *über* can appear independently without being attached to a host. What is different, however, is the character of the category that is created by combining the particle *über* and a verb vs. the prefix *über* and a verb: a prefix-verb is a head or a PWD, whereas a particle-verb is a phrase or a PPh. The aim of this subsection is to provide an analysis that does not require different prosodic structures for phonologically identical elements, but makes use of the structural difference between prefix-verbs and particle-verbs as argued for throughout this paper.

I would like to suggest that what determines whether an element is a PWD or not depends solely on the phonological shape of the item. Items like the prefix *über* that project to a foot (cf. stress) also project to a PWD. Syllables containing schwa do not project to a foot, and therefore also cannot project to a PWD (following the assumption that prosodic units cannot be skipped in the prosodic hierarchy; cf. Selkirk 1995).

Under these considerations, the conditions on deletion under identity (cf. Booij 1985 & Wiese 1990) yield the wrong results. To see why this is the case, consider (36)b again. If prefixes like *über* are PWds, it would be predicted that they should be able to undergo deletion (provided that the other conditions are met). However, since (36)b is ungrammatical (and condition a – c in (34) are met), it is impossible to keep both the assumption that prefixes like *über* are PWds and the condition that PWds (or bigger categories) can be deleted freely. Since for the reasons mentioned above I believe that elements like *über* should be characterized as PWds, a reformulation of the condition on the prosodic nature of items that can undergo deletion is necessary. To do so, let us consider the structure of a prefix-verb vs. a particle-verb again:

(S7) a. Prefix-Verb
   PWD
   *über
   setzen
   *

b. Particle-Verb
   PWD
   *über
   setzen
   *

The comparison of the structure of a prefix-verb with the structure of a particle-verb shows that while particles are dominated by a PPh, prefixes are dominated by a PWD. I will assume that this kind of recursive structure is what blocks deletion of prefixes. The idea is that in a recursive structure (setting aside compounds for the moment; see below), only the highest recursive PWD can be deleted. I will therefore suggest the following modification for the conditions on deletion under identity:

(38) a. Deletion under identity (final version)
   
   X may be deleted if
   • X is not dominated by a PWD
   • X occurs adjacent to a phrase boundary and an identical X exists in an adjacent sister phrase
   • the remnant Y is a constituent that is contrastively focused with a counterpart of Y

The first condition in (38) also explains why deletion of affixes as in (30)d (repeated as (39)a) and deletion of prefixes as in (39)b is impossible: in both cases, the deleted item is part of a PWD - the PWD dominating the affix and the host, and therefore the first condition in (38) is not met. Note that under this definition of deletion under identity, the status of the deleted item is irrelevant (in contrast to Booij 1985 and Wiese 1996).

(39) a. *eingr oder rutschig
   *icy or slippery

b. *überschreiben und übersetzen
   *PREFF-leap and PREFF-load

Let us now see how these assumptions could account for the deletion facts of compounds, particles, and examples which involve affixes that have PWD status as in (30) (repeated as (40)a). Since deletion is possible in all of (40), the deleted items cannot be dominated by a PWD.

(40) a. eisabig oder wasserglitz
   icy like or waterlike

b. überschäumen oder übersprühen
   PART-froth or PART-bubble

c. Gurkensalat und Tomatensalat
   cucumber salad and tomato salad

Building upon the idea proposed in the discussion of stress in section 3.1, I would like to claim that expressions like those in (40)a and the compounds in (40)c have the same prosodic structure as particle-verbs (40)b – i.e., are PPhs rather than PWDs (see also Wiese 1996 for similar speculations). This claim is supported by the stress pattern: all of the examples in (40) have compound stress and not – as would be expected if they were word stress. The assumption that compounds are phrases, of course, raises many questions about how compounds are formed, whether they are phrases throughout the derivation etc., which I cannot address here. Answers to those questions are highly dependent on specific
theoretical backgrounds and general assumptions about the organization of grammar. For this paper, it is sufficient to assume that (at least) at the level where deletion or stress assignment applies, the expressions in (40) are phrases rather than words.

The deletion properties from (39) through (40) are schematized as follows:

(41) a. PHP
    b. *PWd

Furthermore, the analysis proposed here makes the (correct) prediction that deletion of the verb should be possible in a particle-verb construction (i.e., a PHP), but not in a prefix-verb construction (i.e., a PWd). This is illustrated in (42)a vs. (42)b:

(42) a. weil er die Torte gerecht eingeile und aufteilte   particle
    b. *weil er die Torte gerecht verteile und verteile   prefix

Examples like (42)b are slightly better for some speakers when the prefix is stressed (i.e., contrastive stress overrides the regular stress pattern). I will assume here that in the latter case, prefix-verbs are reanalyzed phonologically as phrases.

Turning finally to the last condition for deletion under identity: the semantic prerequisite as well as the second condition on deletion under identity - i.e., that the deleted item has to be adjacent to a phrase boundary - seem to challenge the status of this deletion process as a phonological operation. At this point, I will merely raise the speculation that deletion under identity might have to be considered as a syntactic rather than a pure phonological operation.

Adopting a syntactic approach to deletion under identity would have various implications for the syntax/phonology interface and open many interesting questions (like for instance the syntactic structure of compounds) that I cannot address here. Since this paper is mainly concerned with the structure of particles and prefixes, I will leave a deeper investigation of deletion under identity for future research.

Summary

In this paper I have discussed a range of characteristics of prefixes and particles that can all be explained by different functions and structures of prefixes and particles. The properties discussed are summarized in the following table:

---

14 Note that reversing the two particle-verbs would be pragmatically odd. I assume that, as a general property of coordination, temporal relations have to correspond to linear order; e.g., 'burn off and on' is only felicitous in a world where things are switched off before they are switched on. Similar considerations apply to binomials (cf. Müller 1997).
<table>
<thead>
<tr>
<th>PROPERTIES</th>
<th>PARTICLES</th>
<th>PREFIXES</th>
</tr>
</thead>
<tbody>
<tr>
<td>separable from verb stem</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>can be modified or focused</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>can saturate an argument of the verb</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>deep object is surface object</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>receive most prominent stress</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>can delete under identity</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>hosting verb can be deleted under identity</td>
<td>yes</td>
<td>no</td>
</tr>
</tbody>
</table>

The main proposal is that particles are arguments, hence complements of the verb, and prefixes are verbal heads that trigger incorporation of the verb. The properties that particles (but not prefixes) can be modified and are able to saturate an argument of the verb follow immediately from this basic difference. Furthermore, obligatory stranding of particles and obligatory pied-piping of prefixes reduces to standard assumptions about head-movement. The different stress patterns of prefix-verbs vs. particle-verbs are accounted for by the different structures resulting from combining a particle and a verb vs. a prefix and a verb: the former yields a phrase, the latter yields a head - a difference that is also represented in the prosodic structure. Finally, the discussion of the last section has shown that the pronomic difference proposed for prefixes and particles allows us to also account for various deletion properties without stipulating different pronomic structures for phonologically identical items.

References

