

# Prefixes as transitivizers

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## 1. Introduction

Prefixes in German<sup>1</sup> (like certain particles and resultatives) may combine with intransitive base verbs and derive transitive complex verbs. This is illustrated in (1) (cf. Kühnhold 1973; Stiebels 1996):

|     |                        |  |
|-----|------------------------|--|
| (1) | intransitive base verb | transitive prefix verb                         |
| a.  | lachen, ‘laugh’        | jemanden <b>ver</b> lachen, ‘laugh at someone’ |
| b.  | trödeln, ‘loiter’      | Zeit <b>ver</b> trödeln, ‘waste time’          |
| c.  | arbeiten, ‘work’       | etwas <b>er</b> arbeiten, ‘work out something’ |
| d.  | lügen, ‘lie’           | jemanden <b>be</b> lügen, ‘lie to someone’     |

(1) shows uncontroversial cases of transitivization in German. Whereas the simplex verbs on the left are intransitive, the verbs on the right, derived from the verbs on the left through the addition of a prefix, are transitive and select direct objects with accusative case.

The kind of transitivization exhibited in (1) is a reflex of the semantic modification of the verb’s lexical meaning that is triggered by the prefix. The intransitive verb and the prefix are predicates that both take one (individual-type) argument. The combination of these two predicates yields a transitive verb with a complex meaning and two individual-type arguments. Accordingly, the derivation of the prefix verb *vertrödeln* in (1b) can be represented as in (2) (cf. Stiebels 1996):<sup>2</sup>

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<sup>1</sup> I will use the term ‘prefix’ for the inseparable prefixes in German, reserving the term ‘particle’ for the separable ones. Prefixes in German may be deaccented variants of former prepositions (*be-*, *ent-*, *er-*, *ver-*, *ge-*, *miß-*, *voll-*, *zer-*) or variants of existing prepositions (so-called P-prefixes: *durch-*, *hinter-*, *über-*, *um-*, *unter-*, *wider-*).

<sup>2</sup> In (2), both the prefix and the verb are represented as predicates that take an individual-type and an event-type argument. When the prefix is combined with the base verb, the two event arguments merge, and the individual-type argument of the prefix is added to the argument structure of the verb, a semantic operation called Event Identification (cf. Kratzer 1994). Notice that Stiebels (1996) assumes a different lexical operation in order to combine the prefix with the base verb, but this difference is of no significance here. In (2), I have therefore substituted the event-variable *e* for Stiebels’ situation variable *s*.

- (2) a. *trödeln*:  $\lambda x \lambda e$  [LOITER(x)(e)]  
 b. *ver-*:  $\lambda u \lambda e$  [CONSUME(u)(e)] (cf. Stiebels 1996, 139)  
 c. *vertrödeln*:  $\lambda u \lambda x \lambda e$  [[LOITER(x)  $\wedge$  CONSUME(u)](e)]

In this paper, I argue that all verbal prefixes in German have a transitivity function. Importantly, however, and in contrast to what one might conclude from (1) and (2), I do not understand transitivity by a prefix in a semantic sense. Instead, I claim that prefixes are *syntactic* transitivity functions. My starting point is the observation that the vast majority of prefix verbs in German are either obligatorily transitive or unaccusative. By “obligatorily transitive” I mean that the prefix verb must occur with its direct object; in contrast to many transitive simplex verbs, prefix verbs cannot leave their internal argument implicit. Every prefix verb requires an NP-argument in object position, and I argue that this requirement is a consequence of the syntactic representation of the prefix.

I assume that internal arguments are generated as specifiers of a functional head  $\text{Trans}^0$ . I claim that  $\text{Trans}$  is optional, but *if*  $\text{Trans}$  is part of syntactic structure, its specifier *must* be filled with a syntactic argument-NP.  $\text{SpecTrans}$  is the canonical position for internal arguments; if accusative case is available, it is assigned to this position. Crucially, I take prefixes to be realizations of the  $\text{Trans}$ -head. The implication is that, whenever there is an overt element like a prefix that indicates the existence of  $\text{Trans}^0$ , the syntactic structure must include an internal argument-NP. Therefore, a prefix verb must be either transitive (in which case accusative case is structurally assigned to  $\text{SpecTrans}$ ) or unaccusative.

This paper is organized as follows. I discuss the notions “optional” and “obligatory argument” in section 2. I assume that an argument that can be freely omitted without any specific contextual or interpretative requirements is optional; any argument that cannot be eliminated is obligatory. In section 3 I provide the main empirical evidence for my analysis in showing that prefix verbs in German are either obligatorily transitive or unaccusative. The explanation I offer in section 4 is based on the idea that prefixes are realizations of a functional head  $\text{Trans}^0$ . In section 5, I provide some cross-linguistic evidence for this idea, and in section 6, I discuss some potential problems. Section 7 extends the analysis to transitive verbs without prefixes.

## 2. Obligatory vs. optional arguments

It is well-known that the direct object of some transitive verbs is optional, while the internal argument of others is obligatory. In this paper I will simply use what has been called the “elimination test” (cf. Helbig 1992) in order to evaluate whether an argument is optional or obligatory. If the internal argument of a verb can be omitted, and the sentence is still grammatical, then the argument is

optional. Compare (3) and (4):

- (3) a. Der König heiratet seine Tochter.  
      ‘The king marries his daughter’  
      b. Der König heiratet.
- (4) a. Der König verheiratet seine Tochter.  
      ‘The king marries off his daughter’  
      b. \*Der König verheiratet.

In (3b), the direct object of the transitive verb *heiraten* is left out, but the sentence remains grammatical. This means that the direct object is optional. In contrast, if the internal argument of the complex verb *verheiraten* in (4) is omitted, the sentence is ungrammatical. This means that *verheiraten* cannot be used intransitively; its direct object is obligatory.

The elimination test, simple as it is, is not uncontroversial. The major problem is that even obligatory arguments can be left out in certain contexts and under certain circumstances. In the following, I discuss these circumstances briefly, arguing that arguments that can only be omitted in specific contexts do not qualify as optional.<sup>3</sup>

First, (5) shows that in German, an argument can be omitted if it occurs in the topic position (which I take to be SpecC):

- (5) Den hab' ich schon aufgeweckt            →        \_ hab' ich schon aufgeweckt  
      ‘I have woken him up already’

As argued by Jacobs (1994), this kind of ellipsis, which he calls the *null-topic* construction, is licensed only by the specific syntactic context in which the argument occurs. (5) does not imply that the deleted argument is optional in any sense which is relevant for the purposes of this paper.

Second, some verbs receive *special interpretations* when one or more internal arguments are omitted:

- (6) Er gibt, ‘He gives’  
      special meaning:        ‘He deals the cards’
- (7) Sie trinkt, ‘She drinks’  
      special meaning:        ‘She drinks too much alcohol’

According to Jacobs (1994) and Rapp (1997), the intransitive form of the verbs *geben*, ‘give’, and *trinken*, ‘drink’, which is associated with a special interpretation is listed as a separate lexical entry different from that of the regular verb. Hence (6) and (7) do not say anything about whether the arguments of the

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<sup>3</sup> The following discussion is based on Jacobs (1994).

regular lexical entries of *geben* and *trinken* are obligatory or optional.

If a verb's internal argument is omitted, it is still part of the interpretation. For example, if we say *Peter reads*, we implicitly know that he must read *something*. A third observation regarding the intransitive use of transitive verbs is that sometimes, the implicit argument of a verb that is used intransitively requires a *definite interpretation*; its reference must be contextually given (cf. Helbig 1992). For example, the PP-argument of *einwilligen*, 'agree', can only be omitted if the speaker and the hearer know from the context to what entity this argument refers. In (8a), for example, speaker and hearer must know with what the king agreed in order to make (8a) a well-formed utterance. Therefore, (8b), where this requirement is contradicted by the additional statement, is odd. In contrast, (9) shows that the implicit argument of *heiraten* does not require a definite interpretation:

- (8) a. Der König hat eingewilligt, 'The king agreed'  
b. ??Der König hat eingewilligt, aber ich weiß nicht, in was.  
'The king agreed, but I don't know with what'
- (9) Der König heiratet, aber ich weiß nicht, wen.  
'The king gets married, but I don't know to whom'

I assume that only those arguments that can be omitted without a definite interpretation being required can genuinely be regarded as optional. This makes *heiraten*, but not *einwilligen*, an optionally transitive verb.

A fourth context that licenses the intransitive use of verbs and obscures the distinction between optional and obligatory arguments has been noted by Helbig (1992) and Jacobs (1994). As shown in (11), generic/habitual or contrastive verb interpretations allow the omission of otherwise obligatory arguments:

- (10) a. Die Polizei beschuldigte die Demonstranten.  
'The police accused the demonstrators'  
b. \*Die Polizei beschuldigte.
- (11) Schuldige beschuldigen gern.  
'Guilty people like making accusations'

As shown by (10b), if the elimination test is applied to the prefix verb *beschuldigen*, 'accuse', in a non-generic context, the result specifies the internal argument as obligatory. However, in a generic statement like (11), the verb can nevertheless occur without its object. Again, as with (5)-(9), since a special context is required in order to omit the direct object, it is not possible to conclude from (11) that the argument of *beschuldigen* is optional. Only if the elimination test yields a grammatical result without being restricted to special contexts or interpretations, is the omitted argument truly optional.

These considerations have to be kept in mind when we turn to the data that I present in the next sections. It is possible that for some of the verbs classified as obligatorily transitive, an appropriate context or interpretation can be construed in which their internal argument can be omitted. However, the arguments are still obligatory, as long as they can be left out *only* in these contexts.<sup>4</sup>

### 3. Prefix verbs and obligatory arguments

In this section, I want to show that prefix verbs take obligatory internal arguments. Consider the following pairs:

|      |  |  |  |
|------|--|--|--|
| (12) | transitive base verb                         |  | transitive prefix verb                               |
|      | a. einen Brief schreiben<br>'write a letter' |  | Tinte <b>verschreiben</b><br>'use up ink by writing' |
|      | b. ein Bild malen<br>'paint a picture'       |  | die Wand <b>bemalen</b><br>'paint on the wall'       |
|      | c. ein Gedicht lesen<br>'read a poem'        |  | ein Gedicht <b>verlesen</b><br>'read out a poem'     |

The verbs in the left column of (12) are transitive simplex verbs, the verbs on the right are transitive prefix verbs based on these verbs.<sup>5</sup> The crucial difference between these verbs is that while the internal arguments of the simplex verbs are optional, those of the transitive prefix verbs are obligatory:

|      |  |   |  |
|------|--|---|--|
| (13) | a. Peter malt ein Bild.<br>'Peter paints a picture'      | - | Peter <b>bemalt</b> die Wand<br>'Peter paints on the wall' |
|      | b. Peter malt.   | - | *Peter bemalt.   |
| (14) | a. Peter schreibt einen Brief<br>'Peter writes a letter' | - | Peter <b>verschreibt</b> die Tinte<br>'Peter uses up ink'  |
|      | b. Peter schreibt.                                       | - | *Peter verschreibt.  |

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<sup>4</sup> Notice in this respect that it is also possible that a phonologically invisible argument is still syntactically present (cf. Grewendorf 1992):

- (i) a. Gespräche können  $e_i$  wieder miteinander $_i$  versöhnen (Binding)  
'Conversations can help people make reconciliations'
- b. Das schöne Wetter lädt  $e_i$  ein PRO $_i$  zu bleiben (Control)  
'The beautiful weather invites one to stay'

Although the implicit arguments in (ia) and (ib) apparently have been omitted, they are still syntactically active with respect to binding and control.

<sup>5</sup> See section 7.1 on the relation between a particular simplex transitive verb and a transitive prefix verb that is derived from this simplex verb.



The question is how this correspondence can be accounted for theoretically. The proposal that I make in the next section is essentially a *syntactic* approach; I will argue that it is the syntactic representation of the prefix that causes the prefix verbs in (13)-(15) to be obligatorily transitive. An alternative approach would be to assume that obligatory transitivity is the result of a specific *semantic* property of a verb, and that the addition of a prefix always derives a verb whose complex semantics has this specific property. In the following I want to show that obligatoriness or optionality of internal arguments cannot be related solely to specific semantic properties of a verb.

Rapp (1997) argues that only transitive verbs which select incremental Themes as their direct objects can optionally be used intransitively. This assumption accounts for the difference between the simplex verb *malen* and the prefix verb *bemalen* that is exhibited in (13). The simplex verb *malen* denotes an incremental Theme, but the prefix *be-* changes the meaning of the verb in such a way that the direct object of the prefix verb does not denote an incremental Theme. It now follows from Rapp's proposal that *bemalen* is obligatorily transitive; no appeal to the syntactic representation of the prefix verb needs to be made.

However, a semantic approach like Rapp's cannot account for the obligatory transitivity of all prefix verbs. First, it is hard to see why the *incremental* Theme of *schreiben*, 'write', in (14) can be omitted while the *decremental* Theme of *verschreiben*, 'use up by writing', cannot. Second, it seems quite clear that the thematic properties of the internal argument of the simplex verb *lesen*, 'read', in (15) are *not* different from those of the derived prefix verb *verlesen*, 'read out'.<sup>7</sup> However, whereas the direct object of *lesen* can be omitted, the direct object of *verlesen* is obligatory. Third, Rapp herself notes counterexamples to her generalization that incremental Themes can be omitted (see also Dowty 1991):

- |      |    |  |   |                  |
|------|----|--|---|------------------|
| (17) | a. | Peter isst ein Stück Brot.<br>Peter eats a piece of bread        | - | Peter isst.      |
|      | b. | Peter verzehrt ein Stück Brot.<br>Peter eats up a piece of bread | - | *Peter verzehrt. |

As Rapp admits, although both the object of the simplex verb *essen*, 'eat' and that of the prefix verb *verzehren*, 'devour', are incremental Themes, only the object of the simplex verb can be omitted. This does not follow from Rapp's semantic account, but it follows directly from my proposal, according to which it is the syntactic status of the prefix *ver-* in (17b) that is responsible for the

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<sup>7</sup> I do not claim that the two verbs *lesen* and *verlesen* are identical in meaning (for example, you can read without uttering a sound, a situation which cannot be described by using the verb *verlesen*). However, the thematic relation between the events expressed by the verbs and their respective arguments are the same.

obligatoriness of the direct object.

Finally, a semantic approach to obligatory transitivity fails to explain the following examples:

- (18) a. Peter wartet auf einen Freund - Peter wartet.  
'Peter is waiting for a friend'  
b. Peter **erwartet** einen Freund - \*Peter erwartet.  
'Peter expects a friend'
- (19) a. Peter hilft einem Freund - Peter hilft.  
'Peter helps a friend'  
b. Peter **unterstützt** einen Freund - \*Peter unterstützt.  
'Peter supports a friend'

The direct object of the prefix verb *erwarten* corresponds to the PP-argument of its simple base verb *warten*. The latter can be omitted, but the former cannot. The internal argument of *helfen* is a benefactive, and this thematic role is quite often expressed by dative case (cf. e.g. Pinker 1991). However, the benefactive of the prefix verb *unterstützen* is expressed by an accusative object. Crucially, the (dative) argument of *helfen* can be omitted, but that of *unterstützen* cannot. Given that the meaning of the simplex verbs in (18) and (19) is quite similar to the meaning of the prefix verbs, it seems impossible to account for the obligatoriness or optionality of the internal arguments in (18) and (19) on the basis of thematic or semantic differences between the verbs that select them. The main difference between these verbs is structural: only the obligatorily transitive verbs are morphologically complex.

Before I give a syntactic explanation for the generalization that prefix verbs require the realization of their direct objects in the next section, I want to address an observation concerning *intransitive* prefix verbs:

- (20) intransitive verbs with prefix *ver-*:  
a. Die Zeitung verbrennt, 'The paper burns'  
b. Die Blumen verblühen, 'The flowers wither'  
c. Die Wunde verheilt, 'The wound heals'
- (21) intransitive verbs with prefix *er-*:  
a. Der Mann ertrinkt, 'The man is drowning'  
b. Das Mädchen errötete, 'The girl blushed'  
c. Das Kind erwacht, 'The child wakes up'

At first sight, it looks as if the verbs in (20) and (21) contradicted the generalization discussed above, but on closer inspection it turns out that they do not. Intransitive prefix verbs are unaccusatives (cf. Hoekstra, Lansu & Westerduin (1987) for the same claim about Dutch prefix verbs). As is assumed by Perlmutter (1978), Burzio (1986), Levin & Rappaport (1995), and Borer (1998),



among many others, the subjects of unaccusatives are generated in object position, but, due to the verb's inability to assign accusative case, they have to undergo NP-movement to the subject position where they receive nominative case. Evidence for the claim that the verbs in (20) and (21) are in fact unaccusative is provided by the following examples:

- (22) a. die **ver**brannte Zeitung, 'The burned newspaper'  
 b. \*die gebrannte Zeitung
- (23) a. \*Hier wird **ver**heilt.  
 b. Hier wird geheilt, lit. 'Here is healed'
- (24) a. Er *ist* **er**trunken, 'He drowned'  
 b. Er *hat* getrunken, 'He drank'

In (22)-(24), three tests for unaccusativity (cf. Grewendorf 1989) are applied to intransitive prefix verbs. First, the past participle of an unaccusative verb can be used as an attributive adjective modifying the subject, which is not possible with an unergative verb. Second, unaccusatives do not allow impersonal passives, but unergatives do. Third, unaccusative verbs select the *sein*-auxiliary, whereas unergative verbs select *haben*. All three tests show that the respective prefix verbs are unaccusative. This means that the NP-arguments in (22)-(24) are derived subjects that were generated in object position, which in turn shows that these intransitive verbs do not challenge the generalization that prefix verbs have obligatory internal arguments. The verbs in (20)-(24) only differ from obligatorily transitive prefix verbs in that they do not select an external argument and do not assign accusative case. However, as is the case with transitive prefix verbs, their object position is occupied with an NP-argument.

#### 4. The proposal: Linking and syntactic heads

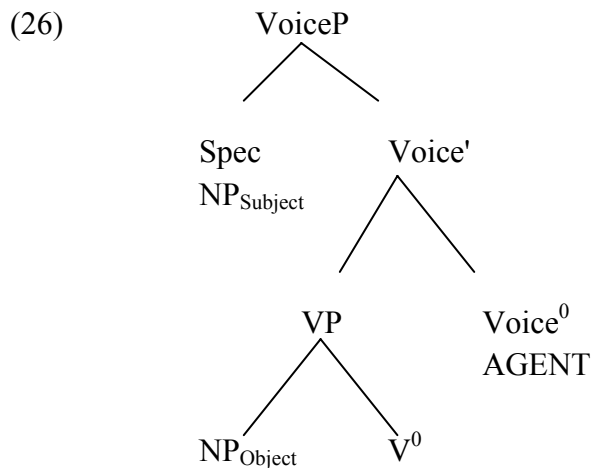
In this section I argue that the observed obligatoriness of internal arguments of prefix verbs follows from the fact that prefixes are syntactic heads which introduce a syntactic position designated for an internal argument of the verb. The occurrence of a prefix is directly linked to the projection of this syntactic position which must be filled with an NP.

This proposal is related to a similar idea advocated by Kratzer (1994, 1996) regarding the *external* argument of the verb. Consider the so-called Neo-Davidsonian representation of the verb *eat* in (25) (cf. Parsons 1990):

- (25) *eat*:  $\lambda y \lambda x \lambda e[\text{EAT}(e) \wedge \text{THEME}(y)(e) \wedge \text{AGENT}(x)(e)]$

According to (25), the verb *eat* expresses a set of eating-events such that the

internal argument  $y$  stands in the Theme-relation and the external argument  $x$  in the Agent-relation to these events. Kratzer (1994, 1996) suggests to modify (25) such that the external argument is no longer taken to be part of the lexical representation of the verb. She suggests that subjects are introduced by a separate AGENT-predicate that is located in a functional head  $\text{Voice}^0$ .  $\text{Voice}^0$  takes the VP as its sister:



The basic lexical representation of the verb in (27a) is associated with  $V^0$ , whereas  $\text{Voice}^0$  hosts a secondary predicate which is phonologically zero. The semantics of  $\text{Voice}^0$  is given in (27b):

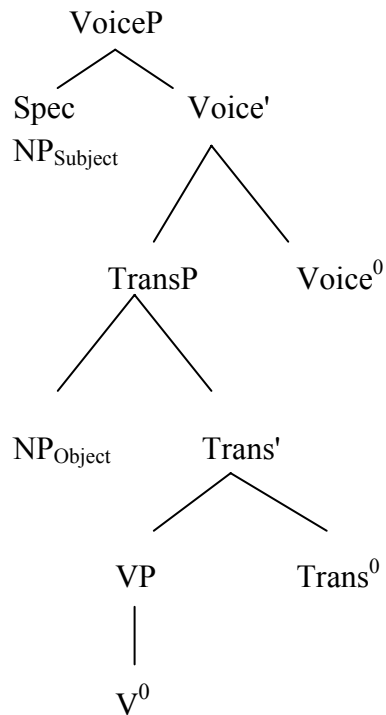
- (27) a. *eat*:  $\lambda y \lambda e [\text{EAT}(e) \wedge \text{THEME}(y)(e)]$   
 b. *Voice*:  $\lambda x \lambda e [\text{AGENT}(x)(e)]$

Kratzer suggests that the verb undergoes head movement and combines with the zero-predicate in  $\text{Voice}^0$ . The combination of the two predicates yields the semantics in (25).<sup>8</sup> Crucially,  $\text{Voice}^0$  projects a specifier position which must be filled with an NP-argument. This NP is then interpreted as the external argument of the verb.

My proposal has obvious parallels to Kratzer's analysis. I suggest that direct objects are generated in the specifier position of a functional head which I call  $\text{Trans}^0$ . Like  $\text{Voice}^0$ ,  $\text{Trans}^0$  projects a phrase in syntax which is located between the VP and Voice; like  $\text{Voice}^0$ , the  $\text{Trans}^0$ -head automatically creates a specifier position which must be filled with an NP-argument of the verb. Whereas an NP in  $\text{SpecVoice}$  is the external argument, I assume that an NP in  $\text{SpecTrans}$  denotes an internal argument of the verb (Theme, Patient etc.). The syntax above VP in German hence looks like (28):

<sup>8</sup> Again, the semantic operation that derives (25) by combining (27a) and (27b) is Event Identification (see note 2).

(28)



I assume that  $\text{Trans}^0$  only projects if a transitive verb occurs with a direct object. In other words, the syntax of intransitive verbs (or of verbs that are used intransitively) does not include a  $\text{Trans}^0$ -projection. However, if  $\text{Trans}^0$  projects, it automatically projects a specifier, and this specifier must be filled with an NP. The crucial assumption, which lies at the core of my explanation, is that prefixes in German are overt realizations of  $\text{Trans}^0$ . The verb incorporates into  $\text{Trans}^0$  and combines with the prefix; this complex head then moves on to Voice (cf. Zeller 1996; Wurmbrand 1998 for similar proposals).<sup>9</sup> Postponing the discussion

<sup>9</sup> There is an alternative way of implementing the idea that prefixes are syntactic heads. Prefixes may be analyzed as the heads of phrasal sisters of the verb; it is then the prefix which incorporates into the verb before the verb moves to Voice. This option corresponds roughly to the Small-Clause-analysis of prefix verbs that has been suggested by various authors (cf. e.g. Hoekstra, Lansu, & Westerduin 1987; den Dikken 1995; Paslawska 1998). My main reason for not adopting this possibility here is the following. I consider *particles* to realize heads of phrasal sisters of the verb that do not incorporate into the verb; this latter property explains that they can be separated from the verb (cf. Zeller 1999). If inseparable prefixes were generated in the same position as particles, we would expect particles and prefixes to be mutually exclusive. However, contrary to what is sometimes claimed in the literature, particles can combine with prefix verbs:

- |     |  |   |  |
|-----|--|---|--|
| (i) | <i>be-halten</i> , Pref-V, 'keep'      | - | <i>ein-behalten</i> , Prt Pref-V; 'keep back'      |
|     | <i>be-zahlen</i> , Pref-V, 'pay'       | - | <i>aus-be-zahlen</i> , Prt Pref-V 'pay out'        |
|     | <i>er-kennen</i> , Pref-V, 'recognize' | - | <i>ab-er-kennen</i> , Prt Pref-V 'deprive of sth.' |

Stiebels (1996) notes that with complex verbs in German, the order particle-prefix verb is much more frequent than the order prefix-particle verb, which hardly occurs at all. If it was assumed that all verbal modifiers were located in the same syntactic position, there would be no explanation for the data in (i). In contrast, in the structural representation I propose, the

of transitive simplex verbs to section 7, my proposal now predicts a direct relation between the presence of an internal argument and the presence of a prefix. If a prefix is present, this is a clear indication of a Trans-projection. Therefore, an NP is needed that can fulfill the requirement to realize SpecTrans. Since the external argument-NP occupies the SpecVoice-position, some other NP must be generated in SpecTrans. If it is available, it will be the internal argument of the prefix verb.

Notice that, in contrast to what Kratzer assumes about Voice<sup>0</sup>, I do not claim that Trans<sup>0</sup> must include a predicate that introduces a Theme argument in SpecTrans through a semantic process of complex predicate formation. Although there certainly are prefixes whose lexical semantics has precisely this effect (see the examples in (1) in section 1), my proposal states that the transitivity function of prefixes is in a strict sense syntactic. The prefix requires its specifier to be filled with an NP, but it does not put any thematic requirements on the argument this NP corresponds to. Therefore, direct objects of prefix verbs can be Themes (*ein Bild beschreiben*, ‘describe a picture’), Goals (*den Berg besteigen*, ‘climb on the mountain’), Sources (*den Raum verlassen*, ‘leave the room’), Benefactives (*jemanden unterstützen*, ‘support somebody’) etc. The only thematic argument that cannot be located in SpecTrans is the Agent, since Agents are typically generated as external arguments in SpecVoice.

The syntactic character of transitivity illustrated above implies that the argument that is linked to the NP in the specifier position created by the prefix does not even have to be a semantic argument of the prefix, but may also be an original argument of the base verb (see (15) in section 3 and (29)-(30) below). However, even if the internal argument of a prefix verb is *semantically* an argument of the verb, it is always a *syntactic* argument of the prefix, because it is located in a syntactic position introduced by means of the prefix. Prefixes are transitivity markers, because they are syntactic heads that project specifiers which are to be realized by NPs.

Let me now turn to accusative case assignment. Following a proposal made in Chomsky (1995), I assume that accusative case assignment depends on two conditions. First, the verb must have the lexical property to assign accusative case, and second, it must end up in a functional position from where it can assign this case structurally.<sup>10</sup> The idea of having a functional category above VP whose specifier is the designated position for direct objects is quite standard for German (cf. Grewendorf 1991; Sabel 1996) and has been advocated for

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derivation of the verbs in (i) is straightforward. When the verb incorporates into Trans<sup>0</sup>, it combines with the prefix, while a particle may be left behind inside a complement phrase to the left of the verb.

<sup>10</sup> According to Chomsky (1995), verbs must be lexically specified as being able to assign accusative case (cf. Chomsky (1995, 368), where it is assumed that the verb bears a feature [(assign) accusative case]). Furthermore, Chomsky argues that direct objects check accusative case in the specifier position of a functional category above VP (Chomsky’s small v).

English as well (cf. Johnson 1991; Borer 1998). I assume that this position is SpecTrans; if the verb has the lexical property to assign accusative case, it is assigned to the direct object via Spec-Head-agreement when the verb has raised to Trans<sup>0</sup>.

The following data provide evidence for the claim that prefixes introduce positions to which accusative case is assigned. Consider the following pairs:

- (29) a. Ich drohe ihm<sub>dat</sub>  
 b. Ich **bedrohe** ihn<sub>acc</sub>  
 'I threaten him'

- (30) a. Ich folge ihm<sub>dat</sub>  
 b. Ich **verfolge** ihn<sub>acc</sub>  
 'I follow him'

Notice first that (29b) and (30b) are further examples of prefix verbs whose direct objects are semantic arguments of the base verbs. However, the crucial point regarding (29) and (30) is the syntactic difference that is triggered by the addition of a prefix: the case on the internal arguments changes. In (29a) and (30a), the simplex verbs take internal arguments that are realized as dative objects. In contrast, the internal arguments of the corresponding prefix verbs bear accusative case. Importantly, this kind of case alternation is not observed to take place in the other direction. There is no simple base verb with an accusative object which becomes the dative object of a corresponding prefix verb (cf. Kühnhold 1973). This suggests that the case alternation in (29) and (30) is in fact the result of adding a prefix to the verb. This observation is accounted for in my proposal by assuming that the prefix introduces the syntactic position where direct objects are assigned case.

The analysis can be spelled out in more detail as follows. Suppose that the verbs *folgen* and *drohen* have the inherent lexical property to assign accusative case, but that this case cannot be assigned in (29a) and (30a) because Trans is absent. Since structural nominative case is not available (it is assigned to the external argument), the internal arguments of the simplex verbs must receive a non-structural case (i.e. dative). However, when a prefix occurs, it realizes Trans<sup>0</sup>; Trans<sup>0</sup> projects, and the verb can assign accusative case structurally to its argument in SpecTrans.

This means that there are verbs that have the lexical property to assign structural case, but that lack the structural means to assign it if there is no Trans-projection. The mirror image of this situation is what we find with unaccusative prefix verbs. Suppose a prefix creates the structural position Trans, but the verb lacks the lexical property to assign accusative case. Then SpecTrans must still be filled, but the respective NP cannot receive case in this position. Since the inability to assign accusative case corresponds to the absence of an external argument (“Burzio’s generalization”, cf. Burzio 1986), there is no Agent. There-

fore, nominative case is still available. This results in the typical pattern found with unaccusative verbs. The syntactic position created by the prefix must be filled with an NP that denotes an internal argument, and this NP must move to a higher specifier position in order to receive nominative case.

Finally, consider the situation in which a prefix verb has the lexical property to assign accusative case, but is semantically intransitive (i.e. its lexical conceptual structure only includes one argument position). Since the verb may assign accusative case, Burzio's generalization predicts that this single conceptual argument is an Agent that is realized in SpecVoice. But since a prefix is present, SpecTrans must be filled as well. The only way to fulfill this requirement is to insert a semantically vacuous syntactic dummy element into SpecTrans that functions as the direct object. This situation is exactly what we find in the case of *inherently reflexive* prefix verbs:

- (31) a. Peter hat \*(sich) erkältet  
'Peter caught a cold'  
b. Peter hat \*(sich) verschrieben  
'Peter made a writing mistake'  
c. Peter hat \*(sich) beeilt  
'Peter hurried'

The reflexive pronouns in (31) have no semantic function; in terms of their lexical argument structure, the verbs in (31) are intransitive. However, my proposal predicts correctly that, due to the fact that a prefix is present, a syntactic position is created that must be filled with an NP. The semantically empty reflexives in (31) are expletive elements that fulfill this syntactic requirement. These verbs hence provide further evidence for my claim that the obligatoriness of a direct object NP that appears with prefix verbs is not the result of a semantic change induced by the prefix. Rather, a direct object NP occurs as the result of a syntactic requirement that is associated with the Trans-projection realized by the prefix.

## 5. Cross-linguistic evidence

In this section I compare prefixes to affixal elements in other languages whose transitivizing function has been observed by other linguists.

### 5.1 Strait Salish

Jelinek (1995, 492) observes that in Strait Salish, transitivity of the verb is marked morphologically and that "predicates with an overt transitivizer suffix require internal arguments". This is illustrated by (32):

- (32)  $n \leftrightarrow p$  - t -  $\eta$  =  $s \leftrightarrow ' = \emptyset$   
 advise- **Trans Voice**(pass.) Fut. 3Abs.  
 'He will be advised' (Jelinek 1995, 495)

(32) shows that both transitivity and (passive) Voice are marked through affixes that attach to the verb stem. The derivation of verbs in Strait Salish can be analyzed on the basis of the structure proposed in (28) above. The verb moves to  $\text{Trans}^0$  and then to  $\text{Voice}^0$  and combines with the respective affixes. The presence of a Trans-head automatically creates a specifier position which must be obligatorily filled with an internal argument. Since (32) is a passive construction, accusative case cannot be assigned to the NP in SpecTrans, and the internal argument becomes the derived subject of the passive clause.

The following data from Samish (a dialect of Strait Salish), taken from Galloway (1990), reveal interesting semantic parallels between transitivized verbs in Samish and complex verbs in German:

- (33) a.  $/\lambda x |^\circ - ut/$   
 spit- **Trans** (Galloway 1990, 69)  
 'spit something out'  
 German: 'etwas **ausspucken**'
- b.  $/\lambda \leftrightarrow 'x |^\circ - n/$   
 spit- **Trans** (Galloway 1990, 69)  
 'spit at someone'  
 German: 'jemanden **bespucken**'
- c.  $/c \leftrightarrow 'x^\circ - n/$   
 throw-**Trans** (Galloway 1990, 74)  
 'throw at somebody'  
 German: 'jemanden **bewerfen**'

In (33a) and (33b), the base verb 'spit' has been modified with transitivizers. Different transitivizers in Samish may add different semantic aspects to the meaning of the verb, as can be seen by the German translations. Interestingly, if the Samish transitivizer used in (33b) is combined with a different verb stem, the German translation is a prefix verb which is also built by combining the same prefix as in (33b) with a different stem. This observation supports the claim that prefixes in German have the same status as transitivizers in Samish. Since the latter are taken to be elements that introduce internal arguments, it seems justified to make the same assumption about prefixes in German.

## 5.2 Aspectual prefixes in Czech

Given the long-known parallels between morphologically complex verbs in German and the aspectual system of Slavic languages, it is worthwhile to also consider the argument structure of Slavic prefix verbs. Although there is cer-

tainly no 1:1-correspondence between perfectivity and transitivity<sup>11</sup>, Filip (1993, 211) observes that “[i]n Slavic languages, like in other Indo-European languages, there are numerous examples in which prefixation functions as a lexical process of transitivity”. The list of the following perfective verbs from Czech, taken from Filip (1993), illustrates that the semantics of these transitive verbs corresponds to the semantics of complex verbs in German:

|      |    |  |                                |
|------|----|--|--------------------------------|
| (34) | a. | <i>nadepsat</i> , 'write above', 'entitle'       | German: <b>überschreiben</b>   |
|      | b. | <i>popsat</i> , 'cover with writing', 'describe' | German: <b>beschreiben</b>     |
|      | c. | <i>predepsat</i> , 'prescribe'                   | German: <b>verschreiben</b>    |
|      | d. | <i>rozepsat</i> , 'write out'                    | German: <b>ausschreiben</b>    |
|      | e. | <i>napsat</i> , 'write up'                       | German: <b>aufschreiben</b>    |
|      | f. | <i>dopsat</i> , 'finish writing'                 | German: <b>fertigschreiben</b> |
|      | g. | <i>obepsat</i> , 'write all around'              | German: <b>herumschreiben</b>  |

As is the case in Samish and German, the perfectivity prefixes in Czech modify the lexical semantics of the verb. At the same time, they may have the effect to transitivity the verb. This observation supports the view that prefixes in German, besides their well-known effects on the lexical semantics of the verb, introduce obligatory internal arguments and therefore derive transitive or unaccusative verbs.

## 6. Syntactic word formation, linking, and the lexicon

According to traditional assumptions about the interface between the lexicon and syntactic structure, it is expected that the meaning of a word derived in the syntax is completely transparent. This follows from the assumption that the elements that occupy syntactic head positions are taken from the lexicon and inserted into the syntactic tree. Each lexical item has a well-defined meaning, and at the interface between syntax and semantics, the syntactic tree is interpreted compositionally. This seems to imply that the meaning of a complex head derived by head movement can always be analyzed in terms of the meaning of its parts.

In this respect, there seems to be a problem with my proposal to analyze prefix verbs as being formed in syntax. As is well-known, the meaning of many prefix verbs is idiomatic and cannot be derived on the basis of the meaning of their parts. This is illustrated by the following examples:

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<sup>11</sup> Interestingly, and in accordance with my hypothesis, it can be observed that many intransitive verbs marked for perfectivity are unaccusative (see Abraham 1993 on the relation between perfectivity/terminativity and unaccusativity).



- (35) a. **entführen**, lit.: Pref-lead, ‘kidnap’  
 b. **verstehen**, lit.: Pref-stand, ‘understand’  
 c. **überlegen**, lit. Pref-lay, ‘think’  
 d. **benehmen**, lit. Pref-take, ‘behave’

None of the verbs in (35) can be analyzed as being derived by simply combining the meaning of the base verb with a special meaning of the respective prefix. Rather, an idiosyncratic lexical meaning must be associated with each of the prefix verbs in (35). It remains to be shown how idiosyncratic prefix verbs are analyzed in the theory proposed in the previous sections.

Before I do so, I wish to point out that a similar problem occurs with respect to Kratzer’s (1994, 1996) theory about Voice and the subject argument of the verb. Recall that according to Kratzer, the basic lexical entry of a verb does not include an external argument. This argument is introduced in the syntax by the Agent-predicate which is located in Voice. (36) repeats (25) and (27) from section 4:

- (36) a. *eat*:  $\lambda y \lambda e$  [EAT(e)  $\wedge$  THEME(y)(e)]  
 b. Voice:  $\lambda x \lambda e$ [AGENT(x)(e)]  
 c. *eat*+Voice:  $\lambda y \lambda x \lambda e$ [EAT (e)  $\wedge$  THEME(y)(e)  $\wedge$  AGENT(x)(e)]

The completed meaning of *eat* which also includes the Agent-argument is the result of syntactic word formation (the verb moves to Voice<sup>0</sup> in order to combine with (36b)). One may be inclined to assume that the mere addition of an external argument will never create a problem with compositionality. This assumption, however, is only true if it can be shown that the meaning of every (agentive) verb can be decomposed into one part which corresponds to the Agent and another part which represents the meaning of the verb. Crucially, this core meaning of the verb must be semantically autonomous; it may not include any reference to the external argument, since the Agent is only introduced by Voice<sup>0</sup>.

Unfortunately, it can be shown that with some verbs, this condition is not fulfilled. If we look at the meaning of *eat* more carefully, we find that its lexical conceptual structure (= its core meaning; the meaning that in Kratzer’s theory is associated with V<sup>0</sup>) already includes a semantic part that refers to the Agent. In order to illustrate this, consider the lexical conceptual structure of *eat* as represented in Jackendoff (1990):

- (37) Lexical conceptual structure of *eat* (cf. Jackendoff 1990, 253):

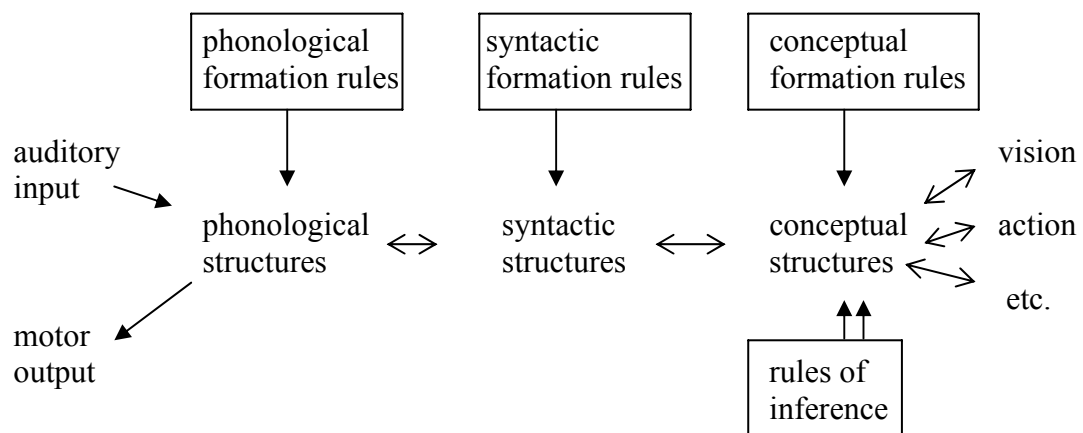
[<sub>Event</sub>CAUSE ([<sub>Thing</sub>] <sup>$\alpha$</sup> , [<sub>Event</sub>GO ([<sub>Thing</sub>FOOD], [<sub>Path</sub>TO ([IN ([MOUTH OF([<sub>Thing</sub>  $\alpha$ ]))]))])])])]

(37) says that *drink* expresses a conceptual entity of the category “Event”, which is specified as the “movement” of something into the mouth of someone. In Jackendoff’s theory, thematic arguments are positions in the lexical conceptual structure. The Agent (the external argument) is the first argument of CAUSE, the Theme is the first argument of GO etc. Furthermore, in (37), the fact that the object of *eat* must be some kind of food is represented as a selectional restriction on the first argument of GO. What is particularly relevant for my analysis is that (37) specifies that in an eating-event, the food ends up in the mouth of *the Agent* (and not in somebody else’s mouth). Notice that this semantic fact must be part of the meaning of *eat*, because it is the only aspect that distinguishes this verb’s meaning from the meaning of *feed* (which must specify that the goal of the food is the mouth of somebody who is *not* the Agent). Consequently, Jackendoff represents this aspect through a conceptual binding index (the Greek letter  $\alpha$  in (37)) that links the two respective conceptual arguments, the Agent and the Thing-argument of the MOUTH-OF-predicate (henceforth the “Goal”).

The problem for Kratzer’s approach is that, because of the binding index on the Goal, the Agent cannot be severed from the verb, for then the Goal would have no conceptual antecedent. If we were to isolate a part of (37) that does not include the Agent and associate it with  $V^0$  while the Agent-argument is introduced by  $\text{Voice}^0$ , how could we guarantee that this Agent-argument will bind the Goal after the meaning of *eat* in  $V^0$  has combined with  $\text{Voice}^0$ ? The crucial point is that whatever mechanism would add this aspect to the interpretation, it would render the meaning of *eat* non-compositional. The conclusion is that the lexical conceptual structure in (37) is a lexical primitive. Therefore, the question about the interpretation of syntactic heads that participate in syntactic word formation has to be asked not only with respect to prefix verbs, but also with respect to the combination of  $\text{Voice}^0$  and the verb.

My answer to this question is based on the insight that non-transparency of complex verbs is only a problem for a syntactic approach to word formation if the relation between the lexicon and syntax is regarded as strictly linear. If it is assumed that the lexicon “precedes” syntax, then the only point where idiosyncratic information can be associated with syntactic structures is the moment of lexical insertion. If lexical insertion takes place before the syntax operates, then structures that are formed as the result of syntactic movement cannot have idiosyncratic lexical meanings. However, what I suggest here is that this linear perspective is incorrect. The alternative proposal that I defend in this section is based on the conception of the architecture of the mind, proposed by Jackendoff (1990, 1997) and adopted in Zeller (1999):

(38) Overall organization of the mental information structure (Jackendoff 1990, 16)



(38) shows that grammar consists of three components, phonological structure, syntactic structure, and conceptual structure, all three of which are generative systems with different atoms and different rules and operations. The link between two different modules of the language faculty is established by a separate *interface module* that relates the two modules to each other. This interface module is characterized by a set of what Jackendoff (1990, 1997) calls *correspondence rules* (indicated by the double arrows in (38)). These correspondence rules mediate between two distinct forms of representations. For example, correspondence rules are necessary to relate the representation at the phonological interface level of syntax in (39a) to the intonational phrases in (39b) (cf. Jackendoff 1997, 26):

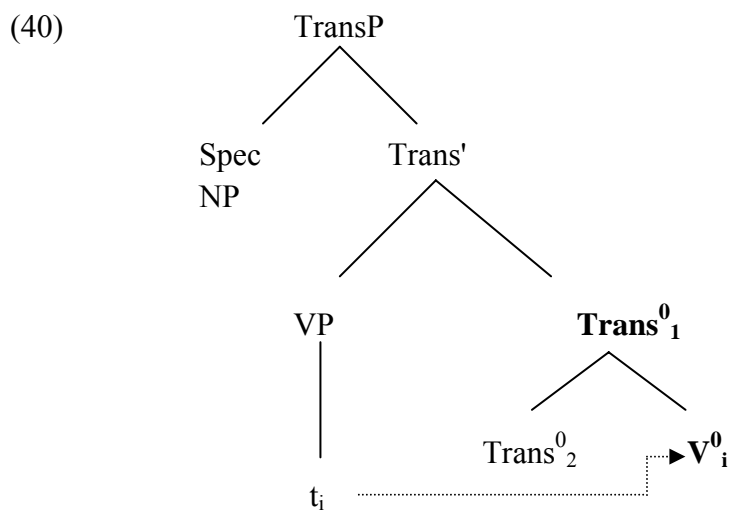
- (39) a. SS: [this [is [the cat [that [ate [the rat [that [ate [the cheese]]]]]]]]]]]  
 b. PS: [this is the cat] [that ate the rat] [that ate the cheese]

The interface between syntax and phonology must provide rules that guarantee that the syntactic structure in (39a) corresponds to the prosodic structure in (39b). In the same way, correspondence rules between syntactic structure and conceptual structure have to establish the relation between these two components.

The notions of interface module and correspondence rule lead Jackendoff (1997) to a new and more accurate view of the lexicon. He argues that a lexical entry is nothing other than a (small) correspondence rule, and the lexicon as a whole is part of the interface module. According to this conception of the relation between the lexicon and grammar, which Jackendoff (1997) calls *lexical licensing*, lexical items are not “taken” from the lexicon and inserted into syntax. Instead, a lexical item is a rule that operates at the interfaces; it includes information from all three generative systems and regulates how this information is combined. For example, a simple lexical item like *cat* provides a small chunk of phonology, a small chunk of syntax, and a small chunk of semantics, and it licenses these parts as the results of three independent derivations performed in

phonological structure, syntactic structure, and conceptual structure. What makes *cat* a lexical entry is the fact that knowledge of this word enables the language user to relate a syntactic representation  $N^0$  to a special sound (/kæt/) and a special meaning (“small furry animal”).

The crucial point emphasized in Zeller (1999) is that the model of lexical licensing makes it possible for the lexical interface to access complex structures that are derived by syntactic operations. A lexical item links a sound and a meaning to a particular piece of syntax - why should this part of syntactic structure not have been derived by movement? For example, it is clear that the entry of the idiomatic prefix verb *behmen*, ‘behave’, links a special meaning to a complex head that consists of the prefix and the verb. In my proposal, this complex head is a  $\text{Trans}^0$ -head derived by verb movement:



The fact that *behmen* has been derived syntactically does not prevent it from being lexically listed. The syntactic nodes corresponding to the verb and the prefix are combined by Move, and the lexical entry of an idiomatic prefix verb can link the complex head  $\text{Trans}^0_1$  to a special meaning. Notice that, despite its idiosyncratic semantic interpretation, the phonological interpretation of the prefix verb proceeds entirely compositionally; the lexical entry associates  $\text{Trans}^0_2$  and  $V^0$  with the regular phonological forms of the prefix and the verb. If a prefix verb is also semantically transparent,  $\text{Trans}^0_2$  and  $V^0$  are also linked to the regular *semantic* forms of the prefix and the verb.

Similar remarks can be made with respect to  $\text{Voice}^0$  and the lexical semantics of the verb. In cases where the Agent can be severed from the verb, we can associate a special meaning with  $\text{Voice}^0$  which combines with the verb and derives the whole verb meaning compositionally. However, as noted above in connection with the verb *eat*, certain verb meanings that include the Agent are lexical primitives. But all we have to assume for these cases is that special meanings like (37) are directly associated with the complex  $\text{Voice}^0$ -head that is derived by verb movement.

The view outlined above is in many respects not different from what has to be assumed in traditional lexicalist models. Complex verbs may have compositional or non-compositional meanings; they are either derived by a combination of two separate lexical entries or listed as one entry that links a special meaning to a complex structure. The crucial difference is that in my proposal, the relevant complex structures can be derived by head movement, regardless of their interpretation. Importantly, due to the syntactic projection of the individual parts of a complex verb ( $V^0$ ,  $\text{Trans}^0$ ,  $\text{Voice}^0$ ), the syntax includes positions which are designated for syntactic arguments (SpecVoice for the subject; SpecTrans for the object). These syntactic arguments correspond to conceptual arguments of the complex verb.

This view emphasizes again that the main function of  $\text{Trans}^0$  and  $\text{Voice}^0$  is not to introduce conceptual arguments like Agent, Theme, or Patient, but to create the syntactic context in which these conceptual arguments are realized by syntactic phrases. This means that my proposal is essentially a theory about *linking*. The core idea is that the lexical semantics of a verb may be fully specified with respect to its conceptual structure and its conceptual arguments, but that the syntactic realization of these arguments depends entirely on the presence of further syntactic elements like  $\text{Voice}^0$  and  $\text{Trans}^0$ . In the final section, I discuss this idea in its most radical form.

## 7. Extending the analysis

I argued that direct objects are introduced by a  $\text{Trans}^0$ -element, while external arguments are introduced by  $\text{Voice}^0$ . It would now be an interesting hypothesis to assume that the linking of *all* conceptual arguments of the verb is established in this manner: “secondary” elements create syntactic positions that serve as the base positions of the respective arguments of the verb. In this final section I want to explore this hypothesis with respect to internal arguments that are realized as direct objects, leaving open questions about arguments that are realized as PPs or with oblique case.

### 7.1. Simple verbs and zero morphemes

The fact that certain arguments of certain verbs do not have to be represented syntactically has always been a problem for theories about the lexicon/syntax interface. Consider, for example, the Theta Criterion (Chomsky 1981), which states that there is a 1:1-correspondence between the thematic roles assigned by the verb and the syntactic arguments to which these thematic roles are assigned. If a verb like, say, *malen*, ‘paint’, assigns two  $\theta$ -roles, we expect that it always occurs with two syntactic arguments. The optional transitivity of this verb is a problem for Theta Theory, because in its intransitive form, *malen* violates the

Theta Criterion.

The proposal I make in this paper suggests a new way of dealing with linking phenomena and the problem of optional transitivity. My first claim is that there is no such thing as the Theta Criterion - there is no universal principle that forces a verb to realize its conceptual arguments in syntax. Second, I assume that a verb may have a certain number of conceptual arguments, but these can only be linked to syntax if syntax provides particular structural positions for NPs that realize these arguments. Crucially, I argued that these positions are the specifiers of syntactic heads that may or may not be part of the syntactic tree. If they are, the respective argument-NP *must* occur; if they are not, the argument cannot occur. This means that the verb itself does not have linking properties; linking is established by the syntax.

The transitivity of a verb depends solely on the presence or absence of  $\text{Trans}^0$ . If an internal argument is part of the verb's lexical conceptual structure and a Trans-head is there, the verb *must be* transitive - there is no other option. But if  $\text{Trans}^0$  is absent, the verb *cannot be* transitive; there is no possibility to realize a direct object. The implication is that there are no verbs that are optionally transitive, only the projection of  $\text{Trans}^0$  is optional.

One important question that now has to be answered concerns transitive simplex verbs. Since according to my hypothesis,  $\text{Trans}^0$  is always present when a verb realizes a direct object, we have to conclude that a simplex verb like e.g. *malen*, 'paint', in its transitive use must have combined with a transitivizer, but with one that is invisible, i.e. that does not have phonological content. In other words, the element that realizes  $\text{Trans}^0$  in (41b) is an element similar to the prefixes *ver-*, *be-* etc., with the sole difference that its phonological form is null:

- |      |    |   |   |
|------|----|---|---|
| (41) | a. | Peter malt  | = $\sqrt{\text{mal-}}$ + $\emptyset$ -Voice                             |
|      | b. | Peter malt Bilder<br>'Peter paints pictures'        | = $\sqrt{\text{mal-}}$ + $\emptyset$ - <b>Trans</b> + $\emptyset$ Voice |
|      | c. | Peter bemalt die Wand<br>'Peter paints on the wall' | = $\sqrt{\text{mal-}}$ + <b>Pref-Trans</b> + $\emptyset$ Voice          |

(41) shows that an (apparently) simplex verb like *malen* in fact occurs in two morphologically different forms that each correspond to a different syntax; the syntactic tree in which the verb occurs may or may not include  $\text{Trans}^0$  (and hence may or may not provide a syntactic position for the internal argument). If the verb occurs without its object, as in (41a),  $\text{Trans}^0$  and  $\text{SpecTrans}$  do not exist. Therefore, there is no appropriate syntactic position for an NP that could realize an internal argument. If the verb is transitive,  $\text{Trans}^0$  must be filled with an abstract transitivizer, (41b). Finally, prefixes are realizations of  $\text{Trans}^0$ . Therefore, a prefix verb can never be ambiguous with respect to the projection of  $\text{Trans}^0$  -  $\text{Trans}^0$  is always there, and therefore prefix verbs are either obligatorily transitive or unaccusative, (41c).

Notice that the intransitive syntactic representation of *malen* in (41a) does not imply that the Theme-argument is not there semantically - a verb like *malen* still is interpreted as having an (implicit) Theme-argument, even if this argument is not realized in syntax.

Although my analysis accounts in a straightforward way for the observation that only simplex verbs, but not prefix verbs, can be used intransitively, it so far fails to explain why simplex verbs may also have *obligatory* direct objects. In the theory outlined here, a simplex verb that is obligatorily transitive is a verb that obligatorily has to combine with a zero-prefix in  $\text{Trans}^0$ . For example, in order to exclude the occurrence of *finden*, ‘find’, in (42a) without a direct object, I have to assume that  $\sqrt{\text{find-}}$  is a bound morpheme that obligatorily selects the zero-prefix associated with  $\text{Trans}^0$  and therefore requires the syntax to produce the respective syntactic position:

- (42) a. \*Peter findet \* $\sqrt{\text{find-}}$  +  $\emptyset$ -Voice  
 b. Peter findet Geld  $\sqrt{\text{find-}}$  +  $\emptyset$ -**Trans** +  $\emptyset$ Voice  
 ‘Peter finds money’

The assumption that obligatorily transitive verbs are not licensed without a zero-prefix looks like an *ad hoc*-stipulation. However, there is independent evidence that this assumption is not as implausible as it might initially seem. Interestingly, we also find a considerable number of verbs that are only licensed in combination with *overt* prefixes:

- (43) a. \*gessen - **vergessen**, ‘forget’  
 b. \*letzen - **verletzen**, ‘hurt’  
 c. \*ginnen - **beginnen**, ‘start’  
 d. \*gnügen - **begnügen**, ‘be satisfied’

The prefix verbs in (43) are derived by attaching the prefixes *ver-* and *be-* to a verbal stem. Crucially, none of these stems can occur in isolation. The same observation can be made with respect to verbal stems of prefix verbs that are derived from adjectives or nouns:

- (44) a. langsam, ‘slow’ - \*langsamen - **verlangsamen**, ‘slow down’  
 b. mutig, ‘courageous’ - \*mutigen - **ermutigen**, ‘encourage’  
 c. Mann, ‘man’ - \*mannen - **bemannen**, ‘man’ (a ship)  
 d. Haupt, ‘head’ - \*haupten - **enthaupten**, ‘behead’

The prefix verbs on the right are derived from elements of category A and N on the left. Since verbal prefixes like *ver-* and *be-* cannot attach directly to adjectives and nouns in German, it has been argued that the derivation involves an intermediate step that zero-converts the adjectives and nouns into verbs (cf. Booij 1990). Since zero-conversion is at most a semi-productive process in

German, the verbs derived by zero-conversion must be stored as items in the lexicon. However, as shown in (44), many of these “intermediate” verbs do not exist independently of a prefix. We therefore must assume that the verbs in the middle column in (44) are stored in the lexicon together with the requirement that they combine with a particular prefix (cf. Zeller 1999). In this respect, they pattern with the verbs in (43) and, according to my analysis, also with verbs like *finden* in (42). This means that the properties of the verbal stems  $\sqrt{\text{gess-}}$ ,  $\sqrt{\text{mann-}}$  and  $\sqrt{\text{find-}}$  are quite similar. The only difference is that in order to be licensed, the first requires the prefix *ver-*, the second the prefix *be-*, and the third requires the zero-prefix.

## 7.2 Particles, resultatives, and PPs

In the final section of this paper, I want to briefly discuss elements in German that might be similar to prefixes with respect to their transitivizing function. A first observation is that particles and resultative predicates, like the prefixes discussed in section 1, can introduce direct objects:

- (45) a. Peter lächelt \*(das Mädchen) an.  
           ‘Peter smiles at the girl’  
       b. Der Hund bellte \*(die Hotelgäste) wach  
           ‘The dog barked the hotel guests awake’

(45a) is an example of a particle, and (45b) is an example of a resultative predicate that both introduce obligatory internal arguments. Now suppose that particles and resultatives are represented as predicates of Small Clause (SC)-complements of the verb that project a specifier position inside the SC (cf. Kayne 1985; Hoekstra 1988). This specifier position could be assumed to be similar to SpecTrans in that it must be filled with an NP-argument. If this was the case, particles and resultatives, like prefixes, could be regarded as transitivizers; they create syntactic positions for possible internal arguments of the verb.<sup>12</sup>

However, it must be noted that the requirement to have a direct object with a particle verb is not as strong as is the case with prefix verbs; therefore, not every particle verb is obligatorily transitive (cf. the table in section 3). This fact challenges the idea that particles are transitivizers like prefixes, but space limitations prevent me from discussing the linking properties of particle verbs

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<sup>12</sup> Notice that this analysis predicts that the SC-predicate and Trans<sup>0</sup> can co-occur. This is confirmed by the observation that prefix verbs can be combined with particles (see note 9). In fact, given that accusative case is assigned in SpecTrans (as was argued in section 4), we expect SpecTrans to project even if the direct object is generated as the subject of the SC. The NP-object has to move to SpecTrans in order to receive case; the requirement to realize each specifier position is then fulfilled by both links of the NP-chain.



here in more detail. In contrast to particles, however, resultatives always require the subject position of their SC to be filled. Levin & Rappaport Hovav (1995, 34) observe that “a resultative phrase may be predicated of the immediately postverbal NP, but may not be predicated of a subject or of an oblique complement”, cf. (46b):

- (46) a. Dora shouted  
 b. \*Dora shouted hoarse

If one wants to express that the resultative is predicated of an Agent, a reflexive element in object position is needed in order to establish the right semantics:

- (47) Dora shouted herself hoarse

(47) shows that resultatives, like prefixes, require direct objects. As pointed out by Levin & Rappaport Hovav (1995, 39), the following examples do not contradict this observation, since the verbs in (48) are unaccusative:

- (48) a. The bottle<sub>i</sub> broke t<sub>i</sub> open  
 b. The river<sub>i</sub> froze t<sub>i</sub> solid

The examples in (48) lack an Agent, which corresponds to the inability of the respective verbs to assign accusative case. Consequently, the Theme-NPs must be moved to a position where they can be assigned nominative case (cf. the examples (20) and (21) in section 3).

The fact that agentive resultative constructions require a direct object is interesting in light of the observation that the “subject” of a preposition is also obligatory (cf. Jacobs 1994, 291, note 23):

- (49) a. Peter schüttet Wasser aus dem Eimer  
 Peter pours water out-of the bucket  
 b. \*Peter schüttet aus dem Eimer

- (50) a. Peter sent the man across the bridge  
 b. \*Peter sent across the bridge

(49) and (50) show that the Theme-argument of a preposition can never be left implicit; there are no verb-PP-constructions which realize the Agent-subject and the landmark of the prepositional relation, but not the Theme.<sup>13</sup> The only

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<sup>13</sup> The only examples where the Theme of a preposition can be omitted are found with prepositional particles that license so-called “landmark flexibility”:

- (i) a. Peter schüttet das Wasser aus  
 Peter pours the water<sub>acc</sub> out  
 b. Peter schüttet den Eimer aus  
 Peter pours the bucket<sub>acc</sub> out

examples of combinations of verb and directional PP that do not realize direct objects are again cases where an unaccusative verb combines with a PP:

- (51) a. Peter goes to school  
b. Peter jumps into the ditch

The obligatoriness of the Theme-argument of PPs follows immediately if we analyze directional PPs and resultatives along the same lines, i.e. as SC-predicates that introduce a specifier position that must be realized by an NP. In fact, this has been proposed by Hoekstra & Mulder (1990), who also argue that the verbs in (51) are unaccusative. If their proposal is correct, then the examples in (49)-(51) can be treated on a par with those discussed in (46) and (48) above; like resultative predicates, even full PPs may function as transitivizers. As predicates of a SCs, they introduce syntactic positions to which NP-arguments must be linked.

## 8. Conclusion

Although syntactic approaches to word formation, mostly inspired by the work of Baker (1988), were quite popular in the 1980s and early 1990s, much criticism has been leveled at them in recent years. A particular objection has been that syntactic analyses of word formation phenomena do not account for observations that are not also explained by strictly morphological approaches. Generally, this rejection of theories of syntactic word formation invokes Ockham's Razor: If both a morphological and a syntactic approach explain the same thing, the morphological account, being simpler, is correct.

The objective of this paper has been to show that a syntactic approach to prefixation in German is nevertheless to be preferred over a morphological approach, because the former has more explanatory power. In particular, a syntactic approach explains why the vast majority of prefix verbs in German take obligatory internal arguments. I suggested that a prefix projects a phrase before it combines with the verb. It thereby creates a syntactic position which must obligatorily be filled with an NP. Since this NP corresponds to an (internal) argument of the prefix verb, the syntactic status of prefixes causes prefix verbs to be obligatorily transitive. The discussion has also shown that alleged problems with syntactic word formation disappear if a non-linear, non-lexicalist view about the relation between syntax and the lexicon is adopted. We can conclude that a syntactic approach to prefixation is justified, because it explains more than a morphological approach does. William of Ockham would not have objected.

## 9. References

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