

Rightward verb movement: A reappraisal

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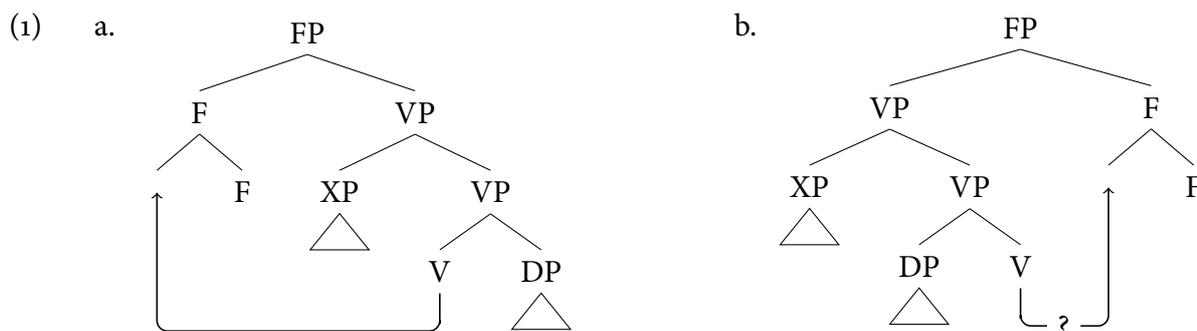
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Abstract

A well-known problem for head-final languages is diagnosing rightward head movement. For Germanic OV-languages such as German and Dutch, it has been claimed that there is no evidence for rightward movement of the verb. This paper aims to reassess this claim with a focus on German and ultimately argue in favour of head movement to the right. First, I show that the arguments raised by Haider against rightward head positions do not provide conclusive evidence against rightward verb movement. Also, I provide novel arguments for rightward verb movement, in particular based on particle verbs.

1 Introduction

Cross-linguistically, various structural positions in the clause have been proposed for finite verbs, these include functional heads such as T/Agr (Pollock 1989; Bobaljik & Thráinsson 1998), v (Larson 1988; Johnson 1991; also Adger 2003:131ff.) and C (Emonds 1976; den Besten 1983; Chomsky 1986). The main motivation for verb movement to such positions comes from visible effects on word order, whereby the moved verb comes to precede structurally higher elements such as adverbs, negation or other arguments (e.g. subject, indirect object). This evidence mainly comes from uncontroversially head-initial languages such as French and English, yet is notoriously difficult to replicate in head-final languages. This problem can be seen in the abstract representations in (1). In a head-initial language, movement of the verb to some higher functional head F can be diagnosed by a change in word order relative to the phrase XP (1a). In a head-final language, however, head movement is string-vacuous and therefore not readily observable.



Researchers working on head-final languages such as Japanese have put forward both empirical and conceptual arguments for V-to-T movement (Otani & Whitman 1991; Koisumi 2000; Miyagawa 2001; Hayashi & Fujii 2015; Sato & Hayashi 2018), however this still remains a matter of controversy. In head-final Germanic languages such as German and Dutch, this issue has received comparatively less attention. While some authors have assumed that there is string-vacuous verb movement to T (e.g. Grewendorf 1990; Sabel 1996, 2000; Zeller 2001b), the prevailing view for German (Haider 1993, 2010, 2013; Vikner 2005) and Dutch (Reuland 1990; Travis 1991; Zwart 1997) appears to be that there is no movement of the verb to a rightward head position such as T. Some have suggested that the ordinarily string-vacuous nature of such movement renders it an essentially untestable hypothesis (e.g. Vikner 1995:156; Koopman 1995:138; Rohrbacher 1999:36; Koenenman 2000:85; Hinterhölzl 2000:295f.; Koenenman & Zeijlstra 2014:604). Others have taken a firmer stance. For German in particular, Hubert Haider has repeatedly argued that not only is there no evidence for rightward verb movement in German, there are good reasons to reject it on empirical grounds (e.g. Haider 1993, 1997, 2001, 2003, 2010, 2013).

The aim of this paper is to reassess this situation for German. First, I will reconsider the three oft-repeated arguments that have been presented against rightward verb movement and show that these do not hold up to closer scrutiny and, thus, fail to provide conclusive evidence against rightward verb movement (section 3). Furthermore, this paper will develop an argument that ordinarily string-vacuous rightward verb movement does in fact become visible in certain contexts. In particular, I will focus on a small class of particle verbs which can optionally project rightward specifiers, thereby making head movement visible (section 4). Thus, the conclusion will be that not only do the putative arguments against rightward verb movement in German fail, but that it is also required for the proper analysis of certain phenomena.

2 Rightward verb movement

2.1 German clause structure

German is known to have two main positions for the verb in declarative clauses: verb-second in matrix clauses (2a,b) and verb-final in embedded clauses (2c,d).

- | | | |
|-----|---|---|
| (2) | a. Er kaufte das Buch gestern
he bought the book yesterday
'He bought the book yesterday.' | c. dass er gestern das Buch kaufte
that he yesterday the book bought
'that he bought the book yesterday' |
| | b. Das Buch kaufte er gestern
the book bought he yesterday
'The book, he bought yesterday.' | d. dass er gestern das Buch gekauft hat
that he yesterday the book bought has
'that he bought the book yesterday' |

A traditional approach to the structure of German clauses divides the linear string of a sentence into so-called 'topological fields' (i.e. *topologische Felder*; e.g. Drach 1937; Reis 1980; Höhle 1986; Askedal 1986). The basic idea is that a sentence has two basic positions for the verb, the left sentence bracket (*linke Satzklammer*) and the right sentence bracket (*rechte Satzklammer*). The finite verb in verb-initial and verb-second configurations occupies the left bracket (3a,b) with the initial constituent in

the prefield (*Vorfeld*). In verb-final clauses, the left bracket contains the complementizer and the finite verb (and any other verbal material) occupies the right bracket (3c,d).

(3)

	Vorfeld (prefield)	Linke Satzklammer (left bracket)	Mittelfeld (middle-field)	Rechte Satzklammer (right bracket)	Nachfeld (postfield)
a.	er	kaufte	das Buch gestern		
b.	das Buch	kaufte	er gestern		
c.		dass	er gestern das Buch	kaufte	
d.		dass	er gestern das Buch	gekauft hat	

Between the two sentence brackets, there is the middle-field (*Mittelfeld*) containing non-fronted objects, subjects and adverbs. The post-field (*Nachfeld*) hosts extraposed material (see section 3.2). While more descriptively-oriented, the topological field model captures an important insight about German word order, namely the complementary distribution of overt complementizers and V2 order. If the left bracket is ‘filled’ by the complementizer *dass*, there is no room for the verb. The right bracket, on the other hand, is assumed to be able to host multiple elements.

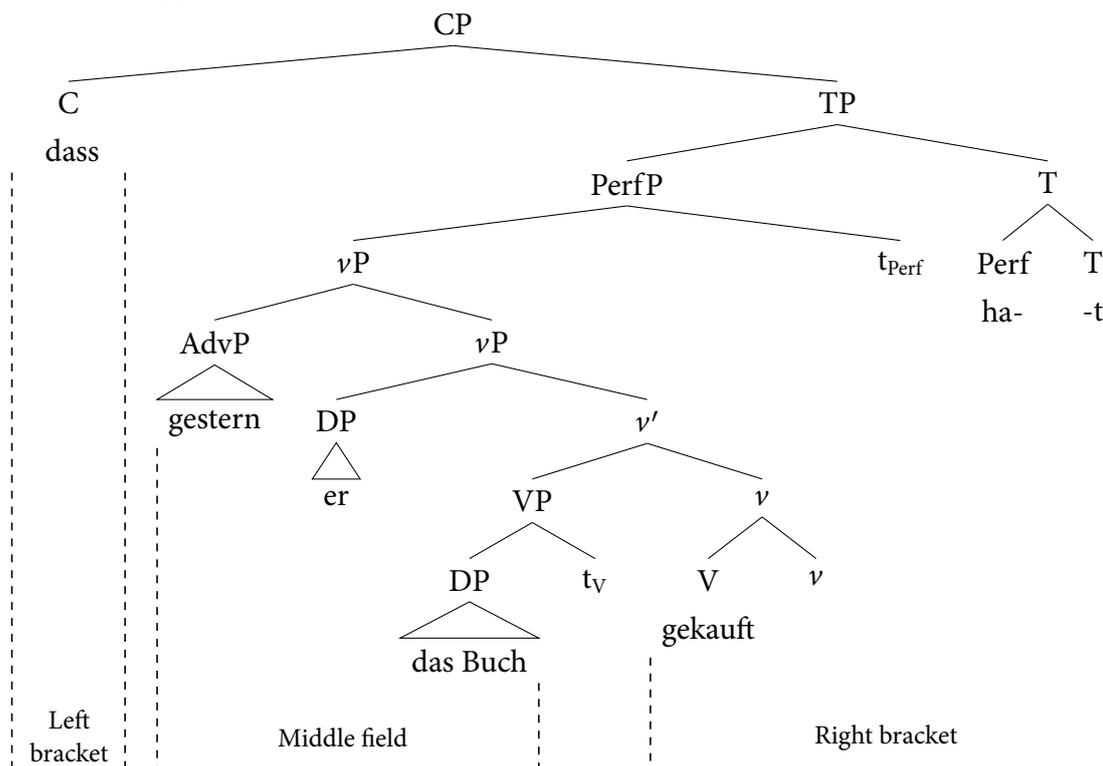
The same insight has been captured in X-bar theoretic analysis by assuming movement of the verb to C from an underlying head-final position (4) (Thiersch 1978; den Besten 1983; Grewendorf 1988; von Stechow & Sternefeld 1988; Sternefeld 2006; Bayer 2008). This provides one of the main motivations for analyzing German as an OV language.

(4) $[_{CP} \text{er}_1 [_{C'} \text{kaufte}_2 \dots [_{vP} t_1 [_{VP} \text{das Buch } t_2]]]]$

Thus, the C position therefore corresponds to the *Linke Satzklammer* (‘left sentence bracket’) in the traditional topological field model, and the *Vorfeld* to Spec-CP.

The Minimalist equivalent of the other topological fields is, however, far less clear. This holds in particular of the right bracket. If we apply the clausal architecture typically assumed for English (see e.g. Adger 2003) to German, we would arrive at something like the structure in (5). Focusing on the right bracket, the lexical verb *gekauft* moves to *v*, while the finite auxiliary *hat* would also move to T from its base position in Perf.

(5) Minimalist approach to verb-final word order in German:



While each of these movement operations are well-motivated in a head-initial language such as English by the position of the verb relative to other overt elements such as indirect objects and negation, movement to v and T in (5) is entirely string-vacuous and therefore empirically unsupported. This is one of the main movement puzzles posed by head-final languages: Is there any evidence that verbs move to a rightward head position?

2.2 Head Movement Constraint

In the absence of clear empirical evidence, one could try to make a conceptual argument for rightward head movement of the verb.¹ For example, one could reason that, since German clearly has V-to-C movement, any intervening clausal-final head positions between V and C would also have to be targeted by movement given the *Head Movement Constraint* (Travis 1984). If one can motivate such functional projections on independent grounds, then rightward head movement through these positions would follow.

This line of argumentation proves problematic, however, in light of languages such as Danish. Danish differs from German and Dutch in being VO. Like other Germanic V2-languages, it exhibits V-to-C movement (6).

(6) Danish has V-to-C movement (Sailor 2018:862):

- a. Om morgenen har₁ Peter ofte [_{AuxP} —₁ drukket kaffe]
 in the.morning has Peter often drunk coffee
 ‘Peter has often drunk coffee in the morning.’

¹That said, some authors have tried to rule out rightward verb movement (across objects) precisely for conceptual reasons (see e.g. Ross 1970:257; Kayne 1994:51; Ackema & Neeleman 2002).

- b. Om morgenen drikker₁ Peter ofte [VP —₁ kaffe]
 in the.morning drinks Peter often coffee
 ‘Peter often drinks coffee in the morning.’

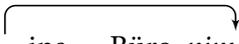
However, [Vikner \(1995\)](#) has shown that there is no clear evidence for V-to-T movement in Danish. In embedded clauses, we observe that finite verbs must follow negation (7a) and adverbs (7c), suggesting that the verb has not moved.

- (7) *No V-to-T in Danish* ([Vikner 1995:4of.](#), 145):
- a. Jeg spurgte hvorfor Peter ikke [AuxP havde læst den]
 I asked why Peter not had read it
- b. *Jeg spurgte hvorfor Peter havde₁ ikke [AuxP —₁ læst den]
 I asked why Peter had not read it
 ‘I asked why Peter had not read it.’
- c. Jeg tror ikke at Peter ofte [VP spiser tomater]
 I think not that Peter often eats tomatoes
- d. *Jeg tror ikke at Peter spiser₁ ofte [VP —₁ tomater]
 I think not that Peter eats often tomatoes
 ‘I don’t think that Peter often eats tomatoes.’

Since TP is presumably head-initial in Danish, it seems that Danish lacks V-to-T movement, whilst still clearly displaying V-to-C movement. From this one can conclude either that there is no TP in Danish, or that V-to-C does not depend on the availability of V-to-T movement. Either way, the consequence is that a conceptual argument based on the Head Movement Constraint cannot be maintained.

2.3 Is there rightward verb movement?

Thus, the current picture about rightward movement in OV Germanic languages such as German is rather unclear. While some have explicitly argued against the existence of rightward verb movement, others adopt the rather defeatist position that this question is essentially unanswerable. So far, there have, however, been very few attempts to make the case in favour of rightward head movement in Germanic languages (but see [Sabel 2000](#)). Precisely this is the goal of the remainder of this paper. First, section 3 discusses the three main arguments against rightward head movement in German put forward by [Haider \(1993, et seq.\)](#). As we will see, these arguments are either inconclusive or based on incorrect premises. Subsequently, section 4 goes on to develop an argument in favour of rightward head movement based on certain particle verbs such *mit-nehmen* (‘to take with’) that allow for a PP argument to intervene between the particle and the verb (8).

- (8) ... wenn man das Kind *mit-*  ins Büro *nimmt*
 if one the child PRT in.the office takes
 ‘... if one takes their child with them to the office’

It will be argued that this involves movement to a rightward head position across the PP in a right-

ward specifier of V. It is the idiosyncratic property of such verbs that allows for this exceptional placement of the PP. This analysis will be briefly defended in light of a potential alternative involving a complex PP structure in section 5. Finally, three further arguments for rightward verb movement will be presented in section 6.

3 Haider's arguments against rightward verb movement

Over two decades, Hubert Haider has repeatedly argued against the existence of clause-final functional heads in German, and indeed more generally (e.g. Haider 1993, 1997, 2001, 2003, 2010, 2013). The theoretical motivation for this comes from the incompatibility of head-final positions with his *Basic Branching Constraint* (9), which states that functional heads in an extended projection give rise to right-branching structures only. The absence of clause-final heads necessarily implies the impossibility of movement to such positions.

- (9) *Basic Branching Constraint* (Haider 1993:28; 1997:20; 2013:3):

The structure build-up (*merger*) of phrases (and their functional extensions) is universally *right-branching*.



The evidence that Haider presents against rightward functional heads, and thus the absence of movement to such positions, comes in the form of three empirical arguments: (i) mandatory scope of head movement, (ii) verbs that fail to undergo verb-second, (iii) extraposition. The following sections will review and discuss these arguments in detail. However, we will see that they ultimately all fail to provide a conclusive and convincing argument against verb movement to the right.

3.1 Mandatory scope

The first of Haider's arguments against rightward head movement involves verbs such as *verdreifachen* ('to triple'), which he views as scope-bearing verbs (Haider 1995:253; 1997:24; 2010:64f.). While the verb can surface in clause-final position (10a), verb-second order is ungrammatical (10b).

- (10) *No verb-second with verdreifachen 'to triple'* (Haider 1997:24):

- a. Der Wert hat sich mehr als (bloß) verdreifacht
the value has REFL more than (simply) tripled
- b. *Der Wert verdreifachte₁ sich mehr als (bloß) —₁
the value tripled REFL more than (simply)
'The value has more than tripled in the last few days.'

In examples such as (10), Haider argues that the verb must stay within the scope of the comparative *mehr als (bloß)* ('more than') in order to derive the scopal relation (*more* > ×3). Haider assumes that

comparative operator is VP internal (Haider 2010:64; Haider 2013:79) and that ‘in a comparative construction, the target of comparison must be in the c-command domain of the comparative expression’ (Haider 2010:64). Thus, the explanation for the grammaticality of (10a) offered by Haider is that ‘the finite verb must be VP-internal, hence *in situ*. If it were to rise to a clause-final functional head position, it would leave the scope domain of the operator element and would be predicted to be ungrammatical’ (Haider 2013:79). Thus, failure to remain within the scope of the comparative is what rules out verb-second example in (10b).² By the same logic, if (10a) were to involve string-vacuous movement to some head-final position outside the VP, it should be equally ungrammatical (contrary to fact). He concludes that verb-final clauses in German must therefore have the structure in (11a) without string-vacuous verb movement, rather than (11b). Otherwise, we would expect verb-final clauses to behave on a par with verb-second clauses (11c).

- (11) a. [CP C [TP [VP *more than ... triple*] T]]
 b. [TP [VP *more than ... t₁ ...*] T+*triple*₁]
 c. *[CP C+*triple*₁ [(TP) [VP *more than ... t₁*] (T)]

Haider concludes from this that there is no evidence for movement to a clause-final functional head position in German.³

It has been argued, however, that these data have nothing to do with scope (Meinunger 2001, 2006). First, consider that V2-order is still not possible when we replace ‘triple’ with a verb such as *beleidigen* (‘offend’), which is not scope-bearing in the same way as *verdreifachen* (‘triple’). As (12) shows, it has the same distribution as *verdreifachen*. It can occur in final (12a), but not V2-position (12b).

- (12) a. dass er sie mehr als (nur) beleidigte
 that he her more than only offended
 b. *Er beleidigte sie mehr als (nur)
 he offended her more than only
 ‘(that) he more than just offended her’

Furthermore, Meinunger (2001) has shown that the same restriction is also found when the stranded element is not scope-bearing either, e.g. with intensifying modifiers such as *sowas von* (‘in an in-

²This scope explanation does not explain why head movement cannot reconstruct, since it seems to have this option independently (as mentioned by Haider 1997:24). For example, the modal *können* in (ia) can optionally reconstruct (given rising to ambiguity), whereas the NPI-modal *brauchen* must reconstruct (ib) (also see Lechner 2006; Iatridou & Zeijlstra 2013).

- (i) a. Man kann₁ es nicht sehen ____₁
 one can it not see
 ‘One is not able to see it/It is possible not to see it.’
 b. Man braucht es *(nicht) zu sehen
 one needs it not to see
 ‘One does not need to see it.’

Haider simply makes the *post hoc* conclusion that reconstruction must not be possible in (10b) (Haider 1997:24; 2010:65), however the reason for it remains unclear if reconstruction of verbs in second position is generally possible in German.

³However, Koopman (1995:139,fn.5) points out that absence of evidence for movement to a clause-final head does not necessarily entail that such a head position does not exist.

credible manner') (13) and *so gut wie* ('as good as/all but') (14).

(13) *Illicit stranding with sowas von* (Meinunger 2001:734):

- a. Der Besuch hat sowas von geprahlt
the guest has SOWAS VON boasted
- b. weil der Besuch sowas von prahlte
because the guest SOWAS VON boasted
- c. *Der Besuch prahlte₁ sowas von ___₁
the guest boasted SOWAS VON
'The guests were boasting in such an incredible manner.'

(14) *Illicit stranding with so gut wie* (Meinunger 2001:734):

- a. Der Angeklagte hat so gut wie gestanden
the accused has SO GUT WIE confessed
- b. weil der Angeklagte so gut wie gestand
because the accused SO GUT WIE confessed
- c. *Der Angeklagte gestand₁ so gut wie ___₁
the accused confessed SO GUT WIE
'The accused all but confessed.'

Since these cases do not plausibly involve a scope relation, Haider's account cannot explain why they seem to show the same restriction. Meinunger (2001, 2006) has instead suggested that we are dealing with an illicit stranding violation. If the modifiers in question attach to the V head directly, then verb movement would strand the modifying expression.⁴ Meinunger (2006) suggests that this stranding constraint could actually be phonological in nature. This is supported by the grammatical examples in (15), which are analogous to (13) and (14) (Meinunger 2001:735). Here, we see that the presence of overt phonological material in the form of a clause-final adverb (15a) or a verbal particle (15b) allows for the verb to appear in second position.

- (15) a. Der Angeklagte gestand so gut wie ___₁ gar nicht
the accused confessed SO GUT WIE PRT not
'The accused didn't as much as confess.'
- b. Unser Besuch gab sowas von an-___₁
our guest gave SOWAS VON on
'Our guests were boasting in such an incredible manner.'

Thus, the correct generalization seems to be that these modifiers must precede some overt material. This could be due to the fact that such modifiers act as focus-sensitive operators that must associate with some overt material following them (see e.g. Buring & Hartmann 2001). Importantly, this means that rightward movement of the verb would be possible, since it is typically string-vacuous.

⁴The assumption of a complex constituent is supported by the fact that the entire complex can appear in second position for some speakers (i).

- (i) a. ?Hans [mehr als verdreifachte] seinen Profit ___ letztes Jahr
Hans more than tripled his profit last year
'Hans more than tripled his profit last year.'

(Fanselow 2004:20)

Movement to C is blocked if it leads to such a focus-sensitive operator with nothing in its scope. In light of this, we are not dealing with a strong argument against verb movement to the right.

3.2 Extraposition

The next argument comes from what is sometimes referred to as *Haider's Puzzle* (Truckenbrodt 1995:506; Wurmbrand 2007:248). Haider (1993:61) showed that extraposition of both CPs (16) and PPs (17) cannot target a position between the VP and the finite auxiliary.

(16) *CP extraposition cannot intervene between right bracket* (Haider 2003:94):

- a. dass er [_{DP} jenen ____{CP}] etwas gegeben hat, [_{CP} die ihn darum gebeten haben]
 that he those something given has who him there.on asked have
 'that he gave something to those who asked for it.'
- b. *dass er [_{DP} jenen ____{CP}] etwas gegeben [_{CP} die ihn darum gebeten haben] hat
 that he those something given who him there.on asked have has
 'that he gave something to those who asked for it.'

(17) *PP extraposition cannot intervene between right bracket* (Haider 2013:80):

- a. dass er nicht mehr [_{VP} ____{PP} gesprochen] hat [_{PP} mit ihr]
 that he not more spoken has with her
- b. *dass er nicht mehr [_{VP} ____{PP} gesprochen] [_{PP} mit ihr] hat
 that he not more spoken with her has
 'that he hasn't spoken to her since'

However, as originally noted by Haider (1990:95), an extraposed PP be topicalized along with the VP constituent it has been adjoined to (18).

(18) *Extraposition with a fronted VP* (Haider 2013:80):

- [_{VP} [_{VP} ____{PP} Gesprochen] [_{PP} mit ihr]] hat er nicht ____{VP}
 spoken with her has he not
 'He has not spoken with her.'

Thus, Haider's Puzzle is why extraposed phrases cannot intervene between the VP edge and the finite verb, if extraposition targets the VP edge and the finite verb moves to a higher head such as T. One conclusion that has been drawn from this is that the impossibility for intervention in (16b) and (17b) must be due to the absence of rightward movement of the verb to a position outside the minimal VP (Haider 1993:60f.; Haider 2010:67f.; Haider 2013:80). Thus, this has been cast as an argument against rightward movement more generally.

There is an alternative account for the deviancy of such examples, however. As pointed out by Wurmbrand (2007:251f.), we can follow Truckenbrodt (1995) in assuming that extraposition is actually a prosodically-constrained process (also see Hartmann 2013; Féry 2015) and this is what rules out (16) and (17) (cf. Buring & Hartmann 1997:29 on a syntactic alternative).

To see this, let us first consider how prosodic structure relates to syntactic structure. It is widely assumed that there is some mapping procedure that derives the former from the latter, that is, different parts of a syntactic representation are matched with corresponding parts of the prosodic hi-

example in (22), final strengthening applies to the direct object *Linguistik*, suggesting that its accent is the rightmost on the level of the p-phrase, despite additional syntactic projections corresponding to the auxiliaries/modals. If either the auxiliary or modal were grouped in its own p-phrase, it would be subject to final strengthening, analogous to (21b).

- (22) a.
$$\begin{array}{cccccc} & & & x & &)_I \\ & & & (& x &)_\phi \\ & & & (& x &)_\omega & (& x &)_\omega & (& x &)_\omega \\ \text{dass} & \text{er} & & \text{Linguistik} & & \text{studiert} & & \text{hat} \\ \text{that} & \text{he} & & \text{linguistics} & & \text{studied} & & \text{has} \end{array}$$
- b.
$$\begin{array}{cccccccc} & & & x & & & &)_I \\ & & & (& x & & &)_\phi \\ & & & (& x &)_\omega \\ \text{dass} & \text{er} & [_{VP} & \text{Linguistik} & & \text{studiert} &] & \text{haben} & & \text{muss} \\ \text{that} & \text{he} & & \text{linguistics} & & \text{studied} & & \text{have} & & \text{must} \end{array}$$

Instead, this suggests, as Wurmbrand (2007:252) also notes, that ‘a series of clause-final verbs and auxiliaries that belong to one clausal domain is mapped onto one single prosodic phrase’. Truckenbrodt (1995) and Wurmbrand (2007) provide further evidence for this from boundary tones. We can therefore capture the uniform prosodic mapping of this domain with (23).

- (23) *Contiguity of the right sentence bracket:*

All heads in the right sentence bracket belonging to the same extended projection are mapped onto a single prosodic phrase together with the minimal *vP*.

Returning to Haider’s Puzzle, recall that extraposition of a PP argument cannot target a position between the VP and a finite auxiliary (24).

- (24) *dass niemand mehr [_{VP} —_{PP} gesprochen] [_{PP} mit ihr] hat
 that nobody more spoken with her has
 ‘that nobody has spoken to her since’

With (23) in place, this restriction can now be derived by adopting the constraint on extraposition in Truckenbrodt (1995) in (25) (also see Wurmbrand 2007).

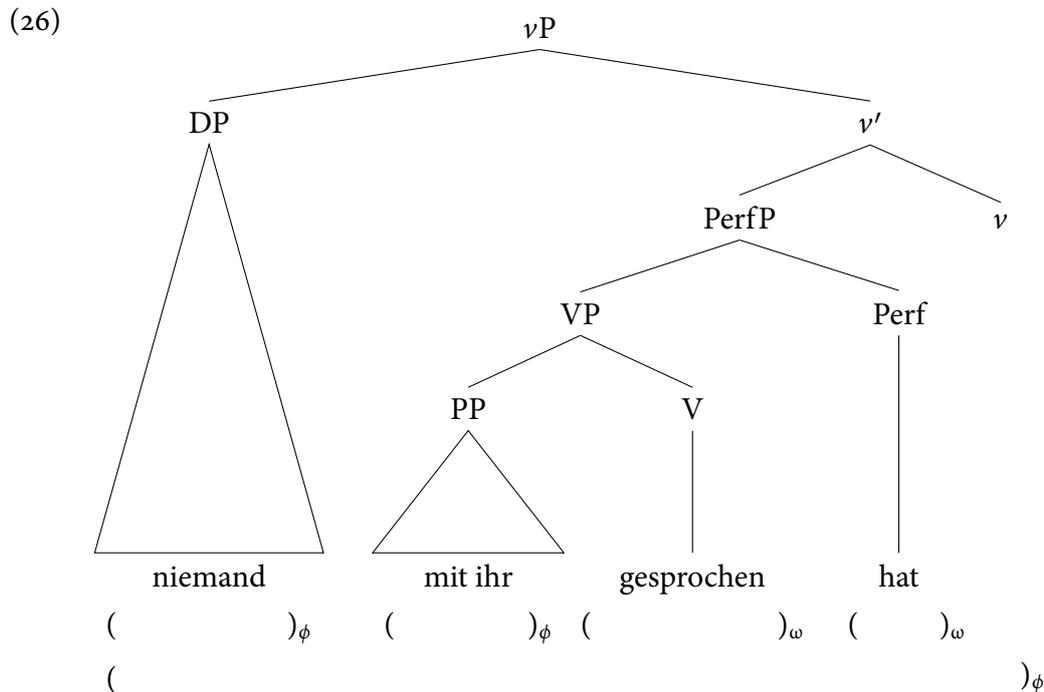
- (25) *Prosodic constraint on extraposition* (Truckenbrodt 1995:503):

Let XP be a syntactic category that is canonically mapped into the prosodic category π upon extraposition (where π is either the phonological phrase or the intonational phrase in the following). Then extraposition (from NP) will take XP as far as out of a prosodic constituent of the same category π .

$$(\dots \text{XP} \dots)_\pi \rightarrow (\dots t_i \dots)_\pi (\text{XP}_i)_\pi$$

This constraint requires that XPs (which are mapped to prosodic phrases) must at least move out of

the prosodic phrase in which they are immediately contained. Given (23), the vP domain and any clause-final auxiliaries/modals in an example such as (24) are mapped to a single prosodic phrase, as shown in a somewhat simplified form in (26).⁵



Since extraposition is constrained in such a way that it must target a position outside the prosodic phrase in which it is contained, the extraposition site must necessarily follow any clause-final verbal material in functional heads up to T (27a).⁶ The illicit cases of extraposition that constitute Haider’s Puzzle involve extraposition that is ‘too short’ in not leaving its local p-phrase (27b).

- (27) a. (... (mit ihr)_φ (gesprochen)_ω (hat)_ω)_φ → (... (gesprochen)_ω (hat)_ω)_φ (mit ihr)_φ
 b. *(... (mit ihr)_φ (gesprochen)_ω (hat)_ω)_φ → (... (gesprochen)_ω (mit ihr)_φ (hat)_ω)_φ

Further support for the importance of extended projections in the definition of (23) comes from restructuring contexts. In (28a), possibility of nominative case on the object is indicative of an optional process of restructuring/ clause-union (Aissen & Perlmutter 1983; Wurmbrand 2001) resulting in a ‘long passive’. Note that, in the absence of restructuring, an extraposed phrase can intervene

⁵Note that the inclusion of the (base position of the) external argument is important since extraposition from subjects is possible in German and must also be constrained in the same way:

- (i) *Extraposition from subject in German* (Müller 1995:216f.)
 a. dass [DP eine Frau —PP] den Raum betreten hat [PP mit blauen Augen]
 that a woman the room entered has with blue eyes
 ‘that a woman with blue eyes entered the room.’
 b. Den Wolfgang hat [DP die Tatsache —CP] interessiert, [CP dass neue Möbel kommen]
 the.ACC Wolfgang has the fact interested that new furniture come
 ‘The fact that new furniture is arriving has interested Wolfgang.’

⁶Given the prosodic nature of the constraint in (25), Truckenbrodt (1995) assumes that extraposition must be a PF process. Wurmbrand (2007) argues that this same insight can still be captured if extraposition is syntactic movement. The constraint in (25) would then be a restriction on copy pronunciation, rather than PF movement itself. For the purposes of the present paper, either of these views can be adopted.

between the embedded verb *einzuwerfen* and the matrix verb *vergessen* (28b). In a restructuring context (indicated by nominative on the object), this extraposition site is ungrammatical (28c). In both cases, extraposing the CP past the final verb is grammatical (28d).

(28) *Compactness of complex predicates* (Haider 2010:334):

- a. weil [DP de{-r/-n} Brief [CP der hier liegt]] ein-zu-werfen vergessen wurde
because the{-NOM/-ACC} letter that here lies in-to-throw forgotten was
'since it was forgotten to post the letter that is lying here'
- b. weil [DP den Brief ___CP] ein-zu-werfen, [CP der hier liegt], vergessen wurde
because the.ACC letter in-to-throw that here lies forgotten was
- c. *weil [DP der Brief ___CP] ein-zu-werfen, [CP der hier liegt], vergessen wurde
because the.NOM letter in-to-throw that here lies forgotten was
- d. weil [DP de{-r/-n} Brief ___CP] ein-zu-werfen vergessen wurde, [CP der hier liegt]
because the{-NOM/-ACC} letter in-to-throw forgotten was that here
lies

This follows if restructuring involves both the embedded and matrix verbs forming a single extended projection (i.e. a complex predicate), however this is achieved technically (see e.g. Roberts 1997; Wurmbrand 2001, 2004, 2015; Bobaljik & Wurmbrand 2005; Keine & Bhatt 2016). Given the contiguity condition in (23), both of the verbs in (28c) would be mapped to a single prosodic phrase that the extraposed relative clause must move out of. In (28b), the minimal p-phrase containing the target of extraposition would only contain the embedded verb *einzuwerfen* and thus allows for short extraposition of the CP to a position immediately following it.

The consequence of this view of extraposition is that we have an independent explanation for why extraposition cannot target a position between the VP and the finite verb. This solution to Haider's Puzzle is independent of whether there is movement to a clause-final functional head position. As such, this putative argument against rightward verb movement loses any force.

As a final note, there are some putative exceptions to Haider's Puzzle discussed by Sabel (2000), in which it seems that a so-called R-pronoun PP (van Riemsdijk 1978) can intervene between the VP and the finite verb (29).

(29) *'Intervention' by pronominal adverbs* (Sabel 2000:88):

- a. dass viele Menschen heutzutage ___PP bedroht [PP da-von] sind
that many people nowadays threatened there-of are
'that many people are threatened by it nowadays'
- b. dass niemand ___PP überzeugt [PP da-von] war
that nobody convinced there-of was
'that nobody was convinced of it'

Sabel (2000:89) notes that one could view this as support for a phonological approach to extraposition, since it seems that phonologically-lighter PPs are more acceptable in a position intervening in the right sentence bracket (perhaps because they are only prosodic words). However, it seems that cases such as (29) have been wrongly analyzed as instances of extraposition. The confound here is

that the examples in (29) are structurally ambiguous and can also be viewed as adjectival/stative passives as the complement of an ordinary copula verb (see e.g. Rapp 1996; Kratzer 2000; Gehrke 2013; Alexiadou et al. 2014; Bruening 2014). In (29), *überzeugt* and *bedroht* would be analyzed as predicative adjectives, which always take their complements to their right (30). On this view, the PP is not an extraposed *by*-phrase of passivized verb, but in fact the complement of a head-initial adjective phrase.

- (30) a. dass viele Menschen heutzutage [VP [AP bedroht [PP davon]]] sind]
 that many people nowadays threatened there.of are
 ‘that many people are threatened by it nowadays’
 b. dass niemand [VP [AP überzeugt [PP davon]]] war]
 that nobody convinced there.of was
 ‘that nobody was convinced of it’

This view is supported by the fact that examples such as (30) seem to be unacceptable with the auxiliary *werden* (‘to become’) that is used in true verbal passives (31).⁷

- (31) a. *dass viele Menschen heutzutage ___PP bedroht [PP davon] werden
 that many people nowadays threatened there.of become
 b. *dass niemand ___PP überzeugt [PP davon] wurde
 that nobody convinced there.of became

It therefore seems that pronominal adverbs such as *davon* are equally subject to the constraint on extraposition in (25).

3.3 Verbs that fail to undergo V2

A final (and arguably more prominent) argument against rightward head movement comes from verbs with multiple prefixes. This was originally identified as a problem for rightward verb movement by Höhle (1991/2018a) and was further discussed by Haider (1993:62; 2010:58ff.; 2013:76f.) for German, Koopman (1995) for Dutch and Vikner (2005) for other Germanic languages. There are particle verbs such as *ur-auf-führen* (‘to perform for the first time’) (32), which contain a separable prefix *auf* and an inseparable prefix *ur-*. While such multiply-prefixed verbs can occur clause-finally (32a), movement to second position is impossible either with stranding of the prefix(es) (32b,c) or without (32d).

⁷ Sabel (2000) provides the following example which he judges as ‘?’. However, the speakers I have consulted do not find it grammatical (also see Haider 2010:62 for the same sentiment).

- (i) *dass niemand viel ___PP gelernt [PP dafür] hat
 that nobody much studied there.for has
 ‘that nobody studied much for it’

Zeller (1997:299) presents examples such as (ii), whose status also seems similarly controversial.

- (ii) (?)dass Peter sich da₁ ganz gut aus [PP t₁ mit] kannte
 that Peter REFL there quite good PRT with knew
 ‘that Peter was quite knowledgeable about it.’

- (32) a. dass sie das Stück *ur-auf*-führen
 that they the piece PRT-PRT-lead
 ‘that they are performing the piece for the first time.’
- b. *Sie führen₁ das Stück *ur-auf*- ____₁
 they lead the piece PRT-PRT-
 ‘They are performing the piece for the first time.’
- c. *Sie *auf*-führen₁ das Stück *ur*- ____₁
 they PRT-lead the piece PRT-
 ‘They are performing the piece for the first time.’
- d. *Sie *ur-auf*-führen₁ das Stück ____₁
 they PRT-PRT-lead the piece
 ‘They are performing the piece for the first time.’

This can also be seen with another apparently multiply-prefixed verb *vor-an-melden* (‘to pre-announce’), which consists of the separable prefix *an-* and the inseparable variant of *vor-*. As with *ur-auf-führen*, this verb can occur in clause-final position (33a). However, its prefix cannot be stranded (33b,c), nor can it occur in second position (33d).

- (33) a. dass sie ihre Bestellung *vor-an*-meldeten
 that they their reservation PRT-PRT-announced
 ‘that they announced their reservation in advance’
- b. *Sie meldeten₁ ihre Bestellung *vor-an*- ____₁
 they announced their reservation PRT-PRT-
- c. *Sie *an*-meldeten₁ ihre Bestellung *vor*- ____₁
 they PRT-announced their reservation PRT-
- d. *Sie *vor-an*-meldeten₁ ihre Bestellung ____₁
 they PRT-PRT-announced their reservation
 ‘They announced their reservation in advance.’

Koopman (1995) also shows that the same pattern holds for Dutch verbs such as *her-uit-geven* (‘to re-publish’) that has a separable prefix *uit-* and an inseparable prefix *her-* (‘re-’). This particle verb cannot be split (34b) and also cannot undergo V2 (34c).

- (34) *No verb-second of multiply prefixed verbs in Dutch* (Koopman 1995:140):
- a. omdat deze uitgeverij zulke boeken vandaag de dag niet *her-uit*-geeft
 because this editor such books today not PRT-PRT-gives
 ‘because this company does not presently republish such books’
- b. *Vandaag geven₁ ze het *her-uit*- ____₁
 today give they it PRT-PRT-
- c. *Vandaag *her-uit*-geven₁ ze het ____₁
 today PRT-PRT-give they it
 ‘They are republishing it again today.’

Haider’s argument is that the immobility of these verbs results from the conflicting requirements imposed by the two particles (also see Koopman 1995 for similar arguments). For example, with *ur-auf-führen*, the inseparable prefix *ur-* cannot be stranded under V-to-C movement. The separable

particle *auf-*, on the other hand, must be stranded in V2 contexts. As such, there is no way the demands of the two particles can be satisfied simultaneously. Haider (2013:77) therefore concludes that ‘the conflicting structural requirements – *strand the particle* and simultaneously *do not strand* – can be avoided only if the trigger of the conflict, namely movement, is avoided’. If correct, this would mean that a verb in clause-final position could not have undergone string-vacuous rightward movement, since this would also be subject to the same stranding paradox.

This account for the immobility of multiply-prefixed verbs is not satisfactory, however. For one thing, there are comparable multiply-prefixed such as *be-ein-drücken* (‘to impress’) and *be-auf-tragen* (‘to commission’) in German, which consist of an inseparable prefix *be-* and a separable prefix *ein-/auf-* (Vikner 2005:105). Such verbs can readily undergo V2 in German, despite having prefixes with the same apparently conflicting requirements as verbs like *ur-auf-führen*. What is more, Vikner (2005) shows that multiply-prefixed verbs in Danish consisting of separable *op-* (‘up’) and inseparable *gen-* (‘re-’) also resist stranding (35a,b), but differ from their Dutch counterparts in being able to undergo V2 (35c).

(35) *Multiply-prefixed verbs can undergo verb-second in Danish* (Vikner 2001:115; 2005:111):

- a. *I maj blussede, stridighederne *gen-op-* ___₁ met fornyet styrke
in May kindled hostilities re-up- with renewed force
- b. *I maj *op-*blussede₁ stridighederne *gen-*___₁ met fornyet styrke
in May up-kindled hostilities re- with renewed force
- c. I maj *gen-op-*blussede₁ stridighederne ___₁ met fornyet styrke
in May re-up-kindled hostilities with renewed force
‘In May, the hostilities broke out again with renewed force.’

It has been repeatedly argued in the literature that what is really at stake with ‘verbs that fail to undergo V2’ is that they are derived by a morphological process of backformation (see Stiebels & Wunderlich 1994; Stiebels 1996; Zifonun 1999; Sabel 2000; McIntyre 2001; Zeller 2001b; Vikner 2005; Fortmann 2007; Freywald & Simon 2007). Vikner (2005) argues that multiply-prefixed verbs in Danish can undergo V2 since they are not formed by backformation, unlike their Dutch and German equivalents. One reason to believe that it is backformation, and not multiple prefixation, which results in the impossibility of V2 with some verbs is that we find a similar aversion to V2 with backformed verbs that do not involve multiple prefixes, such as *schutz-impfen* (‘to vaccinate’, Lit. ‘protection-inoculate’), *berg-steigen* (Lit. ‘mountain-climb’) and *bau-sparen* (‘to save with a building society’, Lit. ‘build-save’) (see Vikner 2005:88ff. and Eisenberg 2013:326 for comprehensive lists of such verbs). These are verbs that are formed by reanalysis (i.e. backformation) from nominal compounds such as *Berg-steig-er* (‘mountain-climb-er’) and *Schutz-impf-ung* (‘protection-innoculate-NMLZ’).

Some more representative examples of such verbs showing their inability to undergo V2 are given in (36). The verb *wett-rennen* (‘to run competitively’) is backformed from the compound *Wett-rennen* (‘foot race’ Lit. ‘bet-run’). This verb is similar to multiply-prefixed verbs of the *uraufführen*-type in being able to occur in V-final clauses (36a), but not in V2-clauses (36b). Furthermore, even the verb *rück-bilden* (‘to back-form’) is itself a backformation and shows the same aversion to V2

(36d).

(36) *Backformed verbs cannot undergo V2* (Fortmann 2007:6, 10):

- a. Wenn Eberhardt *wett-rennt*, verliert er in der Regel
when Eberhardt bet-race loses her in the rule
'When Eberhardt races, he usually loses.'
- b. *Eberhardt *wett-rennt*, um stets nur zu verlieren
Eberhardt bet-race PRT always just to lose
'Eberhardt races just go to and lose.'
- c. Wenn man ein Nomen *rück-bildet*, erhält man ein Verb
if one a noun back-forms gets one a verb
'If you backform a noun, you get a verb.'
- d. *Wir *rück-bilden* Nomen, um Verben zu erhalten
we back-form nouns PRT verbs to get
'We backform nouns in order to get verbs.'

Backformation is a morphological rebracketing operation that 're-analyses' parts of complex nominal. This is shown in (37) for some of the verbs discussed above. In (37a), for example, the nominal prefix *Ur-* (meaning 'original/for the first time') can attach to the nominalized particle verb *Auf-führung* ('performance'). Consequently, *Ur-aufführung* is reanalyzed as a verb *urauf-führen* meaning 'to perform for the first time'. A similar process applies to a nominal compounds such as *Wett-rennen* ('foot race'), consisting of nouns *Wett(e)* ('bet') and *Rennen* ('race') (37c). The backformed verb is then reanalyzed as an inseparable particle verb where *rennen* is a verb and *wett-* now forms a prefix. The same is true of *rück-bilden* ('to backform') (37d).

(37) *Backformation of particle verbs:*

- a. [N *Ur-* [N [V *auf-führ*] -ung]] → [V [V [PFX *urauf-*] [V *führ*]] -en]
- b. [N *Vor-* [N [V *anmeld*] -ung]] → [V [V [PFX *voran-*] [V *meld*]] -en]
- c. [N [N *Wett(e)*] [N *rennen*]] → [V [V [PFX *wett-*] [V *renn*]] -en]
- d. [N *Rück* [N [V *bild*] -ung]] → [V [V [PFX *rück-*] [V *bild*]] -en]

If the verbs that fail to undergo V2 are uniformly derived by backformation, we could conclude that it is some idiosyncrasy of this process that results in their inability to appear in second position, and not a principled paradox posed by multiply-prefixed verbs. We will return to what exactly this idiosyncrasy could be momentarily. At this point, we could still ask ourselves whether Haider's basic argument against rightward verb movement still holds, even if he was not correct about why these verbs fail to undergo V2. If a verb is immobile for movement to C by virtue of being a backformation, should this not also be equally true for movement to potential clause-final heads such as T? The fact that such verbs can occur in clause-final position (36a,c) could still be viewed as an argument against rightward verb movement, as intended by Haider.

This answer to this of course depends on how we diagnose head movement of the verb to a clause-final position. Due to its often string-vacuous nature, this is not always a straightforward task. That said, it has been argued that movement to a right-peripheral functional head is required for morphological reasons. For example, the placement of the infinitival marker *zu* ('to') has been

claimed to be due to movement to T (Grewendorf 1990:103f.; Grewendorf & Sabel 1994:268; Sabel 2000; Zeller 2001b:72; but see Salzmann 2019 on verb clusters). With some particle verbs, we observe that *zu* is placed between the prefix and the verb, e.g. with *ab-schließen* ('to lock').

- (38) Peter versucht, die Tür *ab-zu-schließ-en*
 Peter tries the door PRT-to-close-INF
 'Peter tries to lock the door' (Zeller 2001b:72)

This placement of *zu* correlates reliably with whether a particle verb is separable or not. Thus, separable verbs such as *ab-schließen* ('to lock') have *zu* between the particle and the verb (38), whereas *zu* must precede inseparable verbs such as *be-schließen* ('to decide').

- (39) Die Regierung versucht, ein Gesetz zu *be-schließen*
 the government tries a law to PRT-close
 'The government is trying to pass a law.'

The correlation between separability and the placement of infinitive-*zu* is elegantly captured if the placement of the infinitival marker is derived by movement of verb, stranding its prefix when possible. We could assume, for example, that strandable particles are actually complements to the verb, rather part of a complex head (Grewendorf 1990; Wurmbrand 1998:283; Zeller 2001b:53). In the analysis of (38) proposed by Zeller (2001b:72), verb *schließen* undergoes rightward movement to T, where the infinitival morphology is located (40).

- (40) [_{TP} PRO [_{T'} [_{VP} die Tür [_{V'} [_{PP} ab] t_i]] [_{T⁰} zu [_{V⁰} schließen_i]]]]
 PRT the door PRT to close

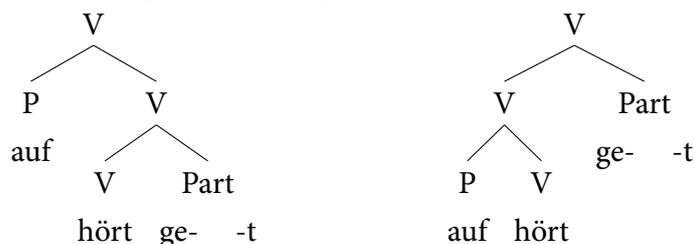
Another morphological argument for rightward movement comes from participial formation. In German, participles are derived by a circumfix *ge-* *-t* that attaches to the verbal root (41a). With separable particle verbs such as *auf-hören* ('to stop'), however, this circumfix seems to just attach the verbal root (41b).

- (41) a. Peter hat das Lied *ge-hör-t*
 Peter has the song PART-hear-PART
 'Peter has sung the song.'
 b. Peter hat mit dem Rauchen *auf-ge-hör-t*
 Peter has with the smoking up-PART-hear-PART
 'Peter has stopped smoking.'

This presents us with an apparent bracketing paradox (Lüdeling 2001; Müller 2003), since we have good reasons to believe that the circumfix takes scope over the entire particle verb, despite the particle appearing to be outside of it.⁸ This means both of the structures in (42) are motivated, the left one by form and the right one by meaning.

⁸ As Müller (2003) points out, this can be seen particularly clearly with the nominalizing circumfix *Ge-* *-e*. A particle verb like *herum-rennen* ('to run around', Lit. around-run) is nominalized as *Herum-ge-renn-e* ('repeated instances of aimless running around'). Here, it must be the case that the nominalizing circumfix takes scope over the entire particle verb.

(42) ‘Bracketing paradox’ with particle verbs:



Arguably, the simplest way of resolving the bracketing paradox is with movement (Zeller 2001b:73; Bruening 2018:e69f.; but see Geilfuß-Wolfgang 1998, Müller 2003 and Newell 2005 for possible alternatives). Movement naturally gives rise to two conflicting representations, a base-generated one and a derived one (also see Pesetsky 1985). As with the infinitival marker *zu*, we can therefore assume that the verb moves rightwards to combine with the *ge -t*-circumfix in Part (43).⁹

(43) [PartP [VP mit dem Rauchen [V' [PP auf] t₁]] [Part⁰ ge- [V⁰ hör₁] -t]]

Assuming that both pre- and post-movement representations are accessible at the interfaces (i.e. via reconstruction), then the problem of conflicting representations in (42) does not arise.

This is relevant for the discussion of verbs derived by backformation because such verbs do allow for placement of *zu* and intervention by the circumfix (to varying degrees). For example, the backformed particle verb *urauf-führen* (‘to perform for the first time’) can be split by both infinitive-*zu* (44a) and the participial circumfix (44b).

- (44) a. Sie versuchen, das Stück *urauf-zu-führen*
they try the play URAUF-to-lead
‘They are trying to perform the play for the first time.’
b. Sie haben das Stück *urauf-ge-führ-t*
they have the play URAUF-PART-lead-PART
‘They have performed the play for the first time.’

Haider (2010:61) points to this fact as a problem for a rightward movement account of infinitive-*zu*, since these immobile verbs do not allow for movement to C, so should therefore also equally disallow movement to T. The same argument would also in principle apply to movement to Part. The facts are actually more subtle, however. There is actually a high degree of variation in the morphological

⁹ Anke Himmelreich (p.c.) points out another piece of evidence for rightward verb movement in participle formation. In (i), the arguments of the ditransitive idiom *den Bock zum Gärtner machen* (‘to put the fox in charge of the henhouse’) are fronted without the associated participle *gemacht*.

(i) [VP Den Bock zum Gärtner t₁] hat offensichtlich ein privater Wachdienst _____{VP} gemacht₁
the ram to.the gardener has clearly a private guard made
‘Clearly, a private guard put the fox in charge of the henhouse.’

(Io4/JAN.02318 Tiroler Tageszeitung, 13.01.2004, S. 11; Langfinger beim Wachdienst tätig)

Multiple prefield constructions such (i) are typically analyzed movement of a verb phrase with a silent verb (Fanselow 1991, 1993; G. Müller 1998, 2018; S. Müller 2005). A common analysis involves the verb vacating the VP by head movement. However, since the auxiliary *hat* occupies C in (i), the only possible head position for the lexical verb would be a rightward one such as Part⁰.

flexibility of backformed particle verbs. (see e.g. Stiebels & Wunderlich 1994:946; Sabel 2000:90; Vikner 2005:99ff.). As (45) shows, there are some V2-incompatible backformations such as *urauf-führen* and *not-laden* which can be split by *zu* or the *ge- -t*-circumfix. However, there are also many others such as *wett-rennen*, which also resist *zu*-placement and participial formation.

(45) *Flexibility of backformed particle verbs:*

urauf-führen	urauf-zu-führen	urauf-ge-führ-t	‘perform for the first time’
not-landen	not-zu-landen	not-ge-land-et	‘to emergency land’
wett-rennen	??wett-zu-rennen	*wett-ge-rann-t	‘run competitively’
sonnen-baden	*sonnen-zu-baden	*sonnen-ge-bade-t	‘to sunbathe’

The latter kind are actually what we expect if rightward movement is involved in the morphological formation of particles and infinitives, since movement to both C and clause-final heads such as T is constrained in the same way. As we might expect, some backformed particle verbs are completely regular and do not seem to exhibit any of the above restrictions. Relevant examples of these include *probe-turnen* (‘practise gymnastics’), *korrektur-lesen* (‘to proof-read’) and *rad-fahren* (‘to ride a bike’), which are actually separable under V2 despite being clear instances of backformation:

(46) Gereon fährt täglich Rad
 Gereon drives daily bike
 ‘Gereon rides a bike every day.’

The question now is how to account for cases such as *urauf-führen* in (44), which show an apparent asymmetry between rightward and leftward movement. We can attribute this to the idiosyncrasy in the backformation process. To be precise, we can posit at the least three degrees of morphosyntactic transparency of backformations in (47) (also see Stiebels & Wunderlich 1994:946).

(47) *Three degrees of backformation:*

- a. No restrictions
- b. The verb and particle must be in the same minimal prosodic phrase
- c. The verb and particle must be string adjacent

Some backformed verbs, such as *rad-fahren* (46), are subject to no particular restrictions (47a) and can move both leftward and rightward. Backformations of the *wett-rennen* type in (45) come with an additional strict phonological adjacency requirement (47c), as suggested by Zeller (2001b:78), which prohibits both V2 and morphologically-motivated movement to a clause-final head, since each of these destroy adjacency between the particle and the verb. For final *uraufführen*-type, I propose that they are subject to the slightly weaker phonological requirement in (47b) that the particle and the verb be in the same minimal prosodic phrase, but not necessarily adjacent. This restriction will allow them to undergo rightward, but not leftward head movement.

To see this, recall from (23) in section 3.2, repeated as (48), that there is independent evidence from both stress and extraposition that all heads in the right sentence bracket are mapped to the same prosodic phrase.

(48) *Contiguity of the right sentence bracket:*

All heads in the right sentence bracket belonging to the same extended projection are mapped onto a single prosodic phrase together with the minimal ν P.

If this is the case, then movement to a head-final position for infinitive-*zu* (49a) or participial formation (49b) will not violate the weaker phonological constraint on backformations in (47b), since the particle and the verb are still within the same minimal ϕ -phrase, albeit not adjacent. Movement of the verb to second position (i.e. to the C head), however, will take the verb out of this minimal prosodic domain and thereby violate the aforementioned constraint (49c).

- (49) a. Sie versuchen $\left(\left[\text{TP} \left[\text{VP} \text{ das Stück } \left[\text{V}' \text{ urauf- } t_1 \right] \right] \left[\text{T}^0 \text{ zu } \left[\text{V}^0 \text{ führen}_1 \right] \right] \right] \right)_{\phi}$
 they try the play URAUF- to lead
 ‘They are trying to perform the play for the first time.’
- b. Sie haben $\left(\left[\text{TP} \left[\text{PartP} \left[\text{VP} \text{ das Stück } \left[\text{V}' \text{ urauf- } t_1 \right] \right] \left[\text{Part}^0 \text{ ge- } \left[\text{V}^0 \text{ führ}_1 \right] \text{-t} \right] \right] \left[\text{T}^0 \right] \right] \right)_{\phi}$
 they have the play URAUF- PART- lead -PART
 ‘They have performed the play for the first time.’
- c. *Sie $\left(\left[\text{TP} \left[\text{VP} \text{ das Stück } \left[\text{V}' \text{ urauf- } t_1 \right] \right] \left[\text{T}^0 \right] \right] \right)_{\phi}$
 they lead the play URAUF-
 ‘They are performing the play for the first time.’

On this view, the impossibility of some backformed verbs to undergo V2 does not provide an argument in rightward movement in general, since it is apparent that there is a high degree of variation and idiosyncrasy involved the process of backformation. Positing two degrees of phonological dependency with certain types of backformed verbs, (i) strict adjacency and (ii) co-occurrence in the same minimal p-phrase, can account for why verbs of the *uraufführen*-type can seemingly undergo rightward, but not leftward movement.

3.4 Interim summary

In this section, we have revisited Haider’s arguments against rightward head movement. However, we have seen that none of them are conclusive or convincing arguments against movement of the verb to the right. The first argument based on an apparent scopal interaction between movement and a comparative operator turns out to have nothing to do with scope, and instead results from the inability to strand certain elements, as shown by Meinunger (2001). The second argument came from extraposition (‘Haider’s puzzle’) and can also be shown to be the result of a prosodic constraint on extraposition (Truckenbrodt 1995), and is thus equally uninformative about the existence rightward verb movement. The third argument we discussed involved verbs that fail to undergo V2. It was argued that there is ample reason to believe that the relevant restrictions are due to the idiosyncrasy of backformation and, as such, cannot be used to argue against rightward movement more generally.

With much of the force of the prominent arguments against rightward verb movement lost, the

remainder of this paper will present an argument in favour of it. This argument comes from a pattern shown by a particular class of particle verbs, which make ordinarily string-vacuous rightward verb movement visible.

4 Rightward verb movement: Evidence from particle verbs

In this section, I will present a new argument in favour of rightward movement based on particle verbs. This involves a particular alternation found with certain particle verbs that take a (directional) PP complement. In (50a), the particle verb *mit-nehmen* ('to take (with oneself)') occurs in final position, preceded by its DP and PP complements, respectively.¹⁰ However, (50a) shows that it is also possible for the verb and its particle to be split up by its complement PP *ins Büro* ('to this office').

- (50) a. ... wenn man das Kind ins Büro *mit-nimmt*
 if one the child in.the office PRT-takes
 b. ... wenn man das Kind *mit* ins Büro *nimmt*
 if one the child PRT in.the office takes
 '... if one takes their child with them to the office'

It will be argued that the word order in (50b) should be analyzed as particle stranding under rightward movement, as shown in (51).

¹⁰ It should be noted that these are not instances of 'adverbial *mit*' (Zifonun 1996, 1997, 1999; Bückler 2012; Bücking 2019). The particle *mit* does seem to be sometimes used a phrasal adverb. Stiebels & Wunderlich (1994:926) dismiss cases such as (i), which bear a striking similarity to the examples in (48), as instances of an adverbial usage of *mit*, presumably adjoined to VP, rather than a particle verb.

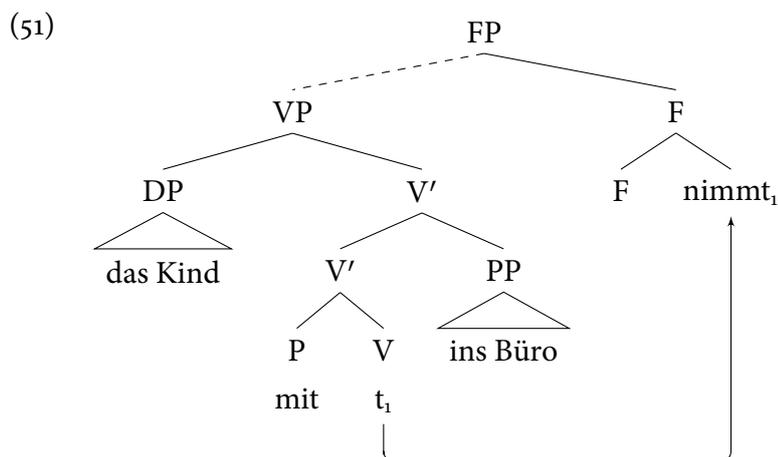
- (i) weil er *mit* in die Oper fuhr
 because he PRT in the opera travelled
 'because he went with (someone) to the opera.'

For the relevant examples at hand, it is possible to disambiguate particle *mit* from adverbial *mit*. For example, the position of adverbial *mit* is much more restricted. While particle *mit* can follow the complement(s) of the verb, this is not always possible adverbial *mit* in (iib).

- (ii) *Restrictions on the position of adverbial mit* (Zifonun 1996:220):
 a. weil er *mit* auf den letzten Gast wartete
 because he PRT on the last guest waited
 b. *weil er auf den letzten Gast *mit* wartete
 because he on the last guest PRT waited
 'because he was also waiting for the last guest.'

Another, somewhat simpler, diagnostic here is whether or not *mit* is obligatory. Adverbial *mit* should, by virtue of being an adverb, be optional (iiia). This contrasts with the cases at hand, such as the verb *mit-nehmen*, where *mit* is obligatory.

- (iii) a. weil er (*mit*) in die Oper fuhr
 because he (PRT) in the opera travelled
 'because he went (with someone) to the opera.'
 b. wenn man das Kind *(*mit*) ins Büro *nimmt*
 if one the child *(PRT) in.the office takes
 'if one takes their child with them to the office'



While rightward movement, as previously noted, normally suffers from the problem of being string-vacuous, we will see that a particular class of particle verbs can project their directional PP complements in a rightward specifier. This has the result that rightward movement is no longer string-vacuous. We will see that the verbs with this property form a homogeneous class of particle verbs with a directional PP complement.

4.1 Stranding with directional particle verbs

The following online-attested examples illustrate that the placement of a PP between a verb and its particle is possible with a number of other verbs. These seem to belong to the same broad class of verbs with ‘directional’ particles such as *hinein-* (‘into’), *(he)raus-* (‘out of’) and *hinauf-* (‘onto’).

(52) *etw. PP_{DIR} mit-nehmen* (‘to take something somewhere’):

- a. Wer seinen Hund **mit** ins Büro **nimmt**, sollte ihn gut im Auge behalten
 who his dog PRT in.the office takes should him good in.the eye hold
 ‘Whoever takes his dog to the office should keep an eye on him.’

(<http://www.stadthunde.com/magazin/lifestyle/hunde-mit-jobs/hunde-im-buero-special.html>)

- b. Aber ist es erlaubt, das Baby **mit** zum Wählen zu **nehmen**?
 but is it allowed the baby PRT to.the voting to take
 ‘But is it allowed to take your baby with you when you vote?’

(<http://www.fr.de/frankfurt/gute-frage-zur-wahl-duerfen-kinder-mit-in-die-wahlkabine-a-1355603>)

(53) *etw. aus etw. raus-holen* (‘to take something out of somewhere’):

- Bei Sonnenbrand oder Verdacht auf Sonnenbrand sollte das Baby sofort **raus** aus
 with sunburn or suspicion on sunburn should the baby immediately PRT out
 der Sonne **geholt** werden
 the sun taken become
 ‘In case of sunburn or suspicion of sunburn, the baby should be moved out of the sun immediately.’

(<https://www.gmonate.de/baby-kind/gesundheit-entwicklung/sonnenbrand-beim-baby-id146935.html>)

(54) *aus etw. raus-kommen* (‘to get out of something’):

- DAS kannst du tun um **raus** aus der Friend Zone zu **kommen**
 this can you do in.order PRT out the friend zone to come

‘This is what you can do to get out of the friend zone.’

(<http://www.virtualnights.com/magazin/das-kannst-du-tun-um-raus-aus-der-friend-zone-zu-kommen.45940>)

(55) *in etw. rein-springen* (‘to jump into something’):

Am Steg bin ich immer mit Anlauf und Spucke mit dem Fahrrad drüber gesaust und
on.the jetty am I always with run.up and spit with the bicycle over sped and
rein in den See **gesprungen**
PRT in the lake jumped
‘I always rode my bike across the jetty with a decent run-up and jumped into the lake.’

<http://sz-designs.de/news.html>

(56) *jmd. in etw. hinein-ziehen* (‘to pull somebody into something’):

... gelingt es Lewinsky von Beginn an spielerisch leicht, den Leser mitten **hinein** in
succeeds it Lewinsky from beginning on playfully easily the reader middle PRT in
diese Schweizer Welt zu **ziehen**
this Swiss word to pull
‘From the very beginning Lewinsky manages with playful ease to draw the reader into this
Swiss world.’

<http://www.amazon.de/Wille-Volkes-Kriminalroman-Charles-Lewinsky-ebook/dp/Bo714GFPSY>

(57) *in etw. hinein-rutschen* (‘to slide into something’):

Der 36-Jährige war im Herbst 2014 immer weiter tief **hinein** in den Wahn **gerutscht**
the 36-year.old was in autumn 2014 always further deep PRT in the delusion slid
‘In autumn 2014, the 36 year-old began to slide deeper and deeper into delusion.’

<http://www.aachener-zeitung.de/lokales/region/eltern-erschlagen-samurai-taeter-muss-in-die-psychiatrie-1.1123065>

(58) *sich in etw. hinein-graben* (‘to delve into sth.’):

und ihn immer wieder da-zu einlädt, sich **hinein** in ihre Tiefenstrukturen zu **graben**
and him always again R-to invites REFL PRT in its deep.structures to dig
‘and invites him again and again to delve into its deep structures.’

(<http://www.ioco.de/tag/orchester/page/330/>)

(59) *in etw. hinein-flitzen* (‘to dash into something’):

und dann im Schleichschritt direkt **hinein** in das Gebäude zu **flitzen**
and then in sneak.step directly PRT in the building to dash
‘and then to dash into the building directly while crouching.’

(<http://www.eurogamer.de/articles/2012-10-11-dishonored-loesung-und-tipps-alle-runen-knochenartefakte-sokolov-gemaelde-und-geist?page=13>)

(60) *auf etw. hinauf-steigen* (‘to climb up to something’):

wie der Mönch, der einmal aus dem Kloster in den Sümpfen zu Maria's Hof
like the monk who once out the monastery in the swamps to Maria's courtyard
herüber-gekommen, **hinauf** aufs Dach **gestiegen** war, und einen halben Tag lang wie ein
over-come PRT onto roof climbed was and a half day long like a

Hahn gekräht hatte.

rooster crowed had

'like the monk who once came from the monastery across the swamps to Maria's courtyard, climbed onto the roof and crowed like a rooster for half of the day.'

(Kai Meyer, *Herrin der Lüge* via Google Books)

(61) *zu etw. hinüber-gehen* ('to go across to something'):

Es lohnt sich die paar Schritte **hinüber** zu dem kleinen See zu **gehen**

it rewards REFL the few steps PRT to the small lake to go

'It is worth going to the few steps over to the small lake.'

(<http://www.alpentourer.de/reiseberichte/graubuenden1/graubuenden2/graubuenden2.html>)

(62) *von etw. weg-rennen* ('to run away from something'):

Vielleicht wäre sie nicht **weg** von uns **gerannt**, sondern hätte sich bei uns versteckt

maybe would she not PRT from us ran but had REFL by us hidden

'Maybe then she wouldn't have run away from us but would have instead hidden'

(<https://www.canesance.de/blog/31-training-nach-cumcane.html>)

Not all separable particle verbs allow for this kind of PP placement, however. The following examples show that separable particle verbs with PP complements such as *mit etw. an-fangen* ('to start something') (63) and *etw. in etw. um-wandeln* ('to turn something into something') (64) do not allow for intervening placement of the PP.

(63) a. weil bloß einer [_{PP} mit den Aufgaben] *an-fing*
because only one with the exercises PRT-caught

b. *weil bloß einer *an* [_{PP} mit den Aufgaben] *fing*
because only one PRT with the exercises caught
'because only one started the exercises.'

(cf. Haider 2010:64)

(64) a. dass er den Frosch [_{PP} in einen Prinz] *um-wandelt*
that he the frog in a prince PRT-changes

b. *dass er den Frosch *um* [_{PP} in einen Prinz] *wandelt*
that he the frog PRT in a prince changes
'that he changes the frog into a prince.'

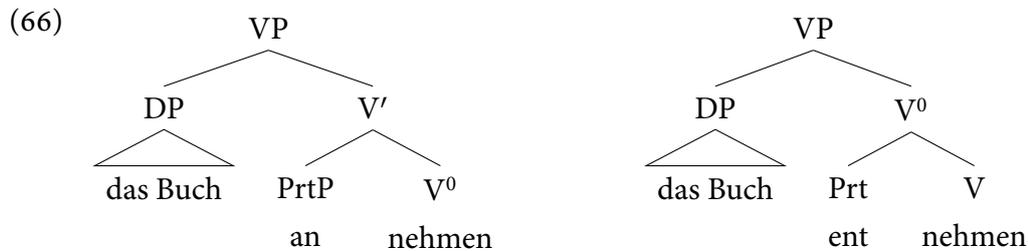
(65) a. dass ich die Tasche [_{PP} in den Schrank] *ein-schließe*
that I the bag in the cupboard PRT-close
'that I locked the laptop away in the cupboard'

b. *dass ich die Tasche *ein* [_{PP} in den Schrank] *schließe*
that I the bag PRT in the cupboard close
'that I locked the laptop away in the cupboard'

Thus, it seems that we can distinguish two classes of separable particle verbs. The former type of 'directional' particle verbs allow for this placement, while the other set of particle verbs do not. It seems reasonable, therefore, to conclude that placing the PP after the particle is a particular idiosyncrasy of this relatively small class of directional particle verbs. The following section will discuss how this can be analyzed.

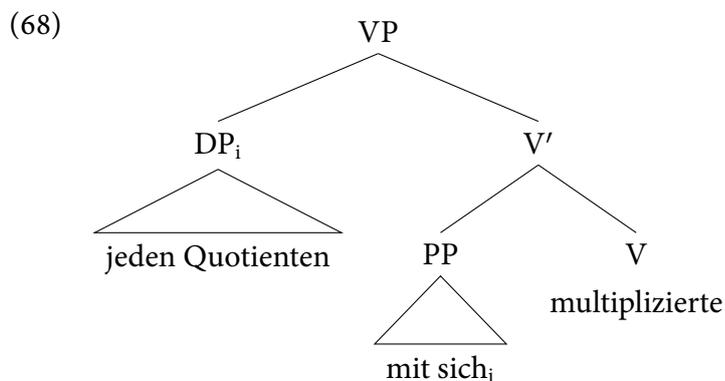
4.2 Deriving particle stranding

I follow previous proposals in assuming that separable particle verbs take the particle as a complement, whereas inseparable prefixes form a complex V head with the verb (Wurmbrand 1998; Zeller 2001b; Vikner 2005). As (66) shows, this means that the verb movement will target just the verb *nehmen* in separable *an-nehmen*, whereas the V⁰ constituent containing the prefix *ent-* must be moved, if excorporation from a complex head is prohibited (see Baker 1988; Roberts 1991).

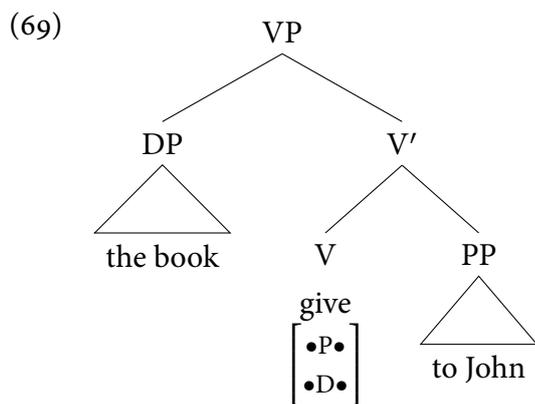


Motivated by the binding facts in (67), we adopt the binary branching structure in (68) for ditransitive verbs, where the direct object c-commands the PP complement (see Bruening 2001, 2010 for a similar proposal about English prepositional dative constructions).

- (67) dass er [_{DP} jeden_i Quotienten] [_{PP} mit sich_i] multiplizierte
 that he each quotient with REFL multiplied
 ‘that he multiplied each quotient by itself.’



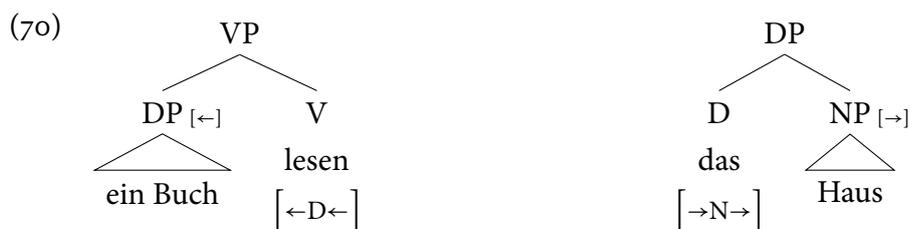
The final assumption regards the nature of Merge. Following much previous work (e.g. Georgi & Müller 2010; Müller 2010, 2011a; Manetta 2011; Georgi 2014; Martinović 2015; Heck & Himmelreich 2017), I assume that structure-building subcategorization features [**•F•**] are ordered on a stack. This is necessary, for example, to capture the fact that a prepositional dative construction requires merging the PP argument as the first complement and the DP as the second. As (69) shows, this can be ensured by placing [**•P•**] on the top of the stack. This feature must therefore be checked before the selectional feature for the DP, which will be introduced as the second argument (i.e. the specifier) of V.



Additionally, let us assume that linear relations between heads and their complements are at least partially encoded in syntax (see Sheehan 2013; Richards 2016). This is necessary to account for the *headedness* of a given phrase. For concreteness sake, let us assume that categorial features come with a diacritic encoding the directionality of the phrase it projects. This diacritic, which I will notate as $X_{[\leftrightarrow]}$, can be viewed as a second-order feature of the categorial feature (in the sense of Adger & Svenonius 2011), which is then also projected to the maximal projection of that head. This feature acts an instruction to PF about how this phrase should be linearized relative to its sister.

Following Hoekstra (1992), we can identify three possible instantiations of this feature: $[\rightarrow]$ on an XP means that the phrase is linearized to right of its sister, $[\leftarrow]$ means that the phrase is linearized to the left (preceding its sister), and $[\leftrightarrow]$ instructs PF that the phrase can be linearized either before or after its sister, leading to word order optionality as in many non-configurational languages (see e.g. É. Kiss 2008). While the directionality specification of the categorial feature is potentially free, the headedness of a given phrase will be determined by the c-selectional features we saw above (i.e. $[\bullet F \bullet]$). Let us assume that, in addition to category, subcategorization features are also sensitive to the directionality specification of the phrase they select. I introduce the notation $[\rightarrow F \rightarrow]$, for example, for a head that selects phrase of category type F that is specified as to be linearized to the right of its sister. This how the various settings of the traditional *Head-Directionality Parameter* can be implemented (see e.g. Baker 2001:68).

To see why this is necessary, let us consider a concrete example. German is known to be a ‘mixed-headed’ language. While VP is head-final (e.g. Bach 1962; Koster 1975; Bayer 2000), other phrases such as DP and CP are clearly head-initial. Examples of a head-final VP *ein Buch lesen* (‘read a book’) and a head-initial DP *das Haus* (‘the house’) are given in (70).



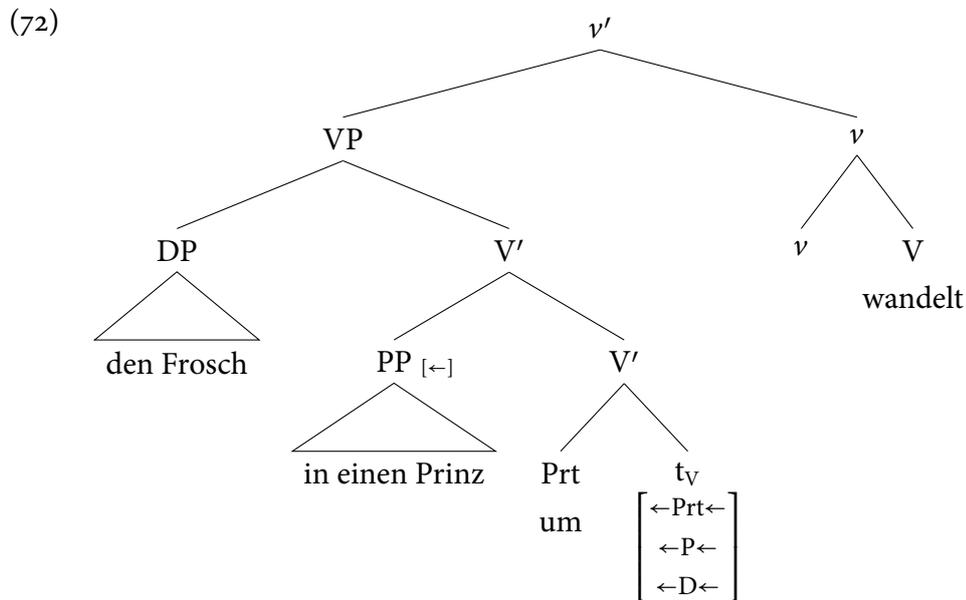
Since the directionality of the phrases in question is arbitrary, it must be stated as an idiosyncratic lexical property of the heads in question. For example, the verb *lesen* bears a selectional feature for

phrases with the category $D_{[\leftarrow]}$ and will therefore form a head-final phrase. Since DP is head-initial, its must select rightward complements with the categorial feature $N_{[\rightarrow]}$.

As outlined above (66), we assume that separable particle verbs take the particle as the first complement and the other two arguments as specifiers. The arguments are ordered on the feature stack accordingly. Furthermore, since the VP is head-final, it selects for phrases which are linearized before their sisters ($[\leftarrow]$). To see this, consider (64), repeated below as (71).

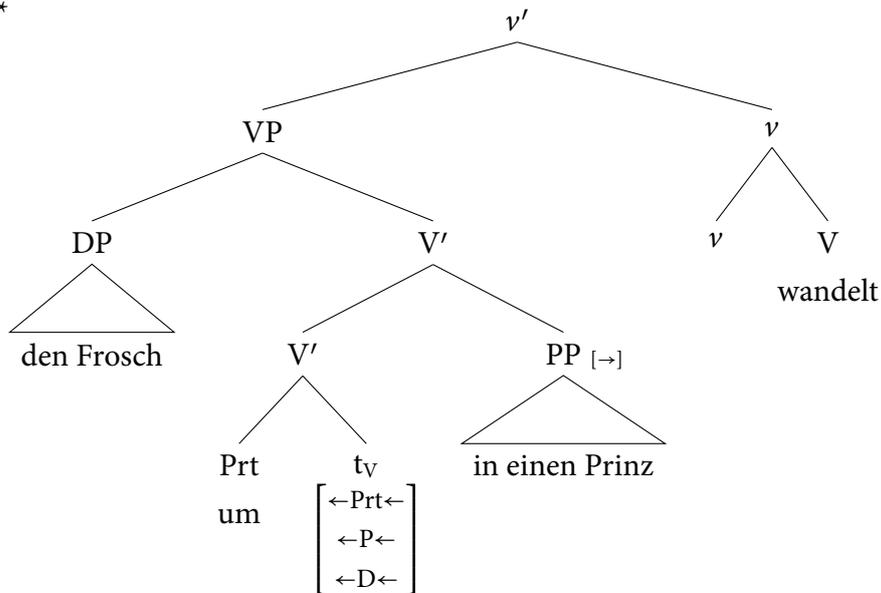
- (71) a. dass er den Frosch [PP in einen Prinz] *um-wandelt*
 that he the frog in a prince PRT-changes
 b. *dass er den Frosch *um* [PP in einen Prinz] *wandelt*
 that he the frog PRT in a prince changes
 ‘that he changes the frog into a prince.’

The feature stack on V leads to the right-branching structure in (72), where all of its complements are linearized as leftward complements and specifiers.



We assume that this is the normal state of affairs for particle verbs and ditransitive verbs, i.e. heads are normally specified to select phrases with the same directionality. This prevents the verb from combining with a PP linearized in a rightward specifier (73), since this would require the c-selectional feature $[\rightarrow P \rightarrow]$ which is not present on these verbs.

(73) *

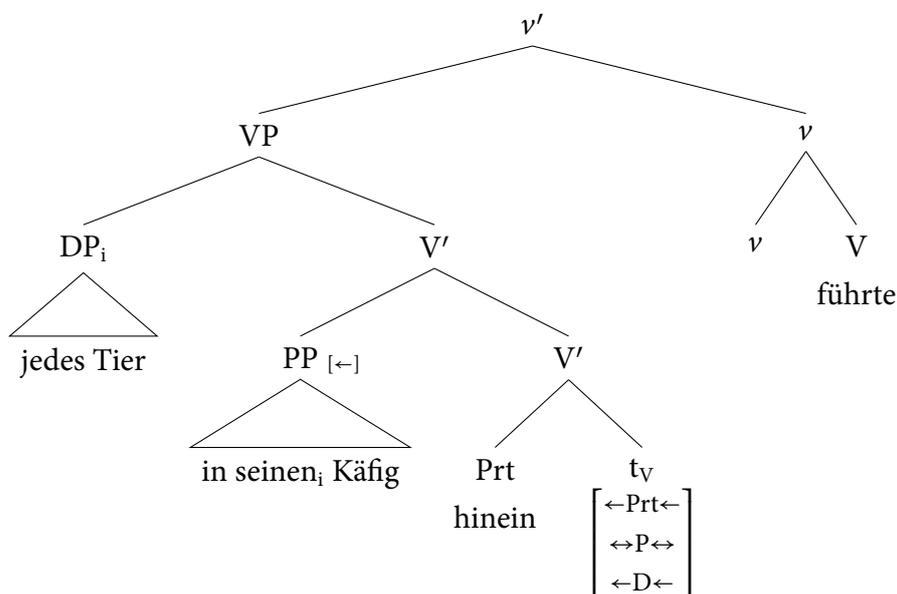


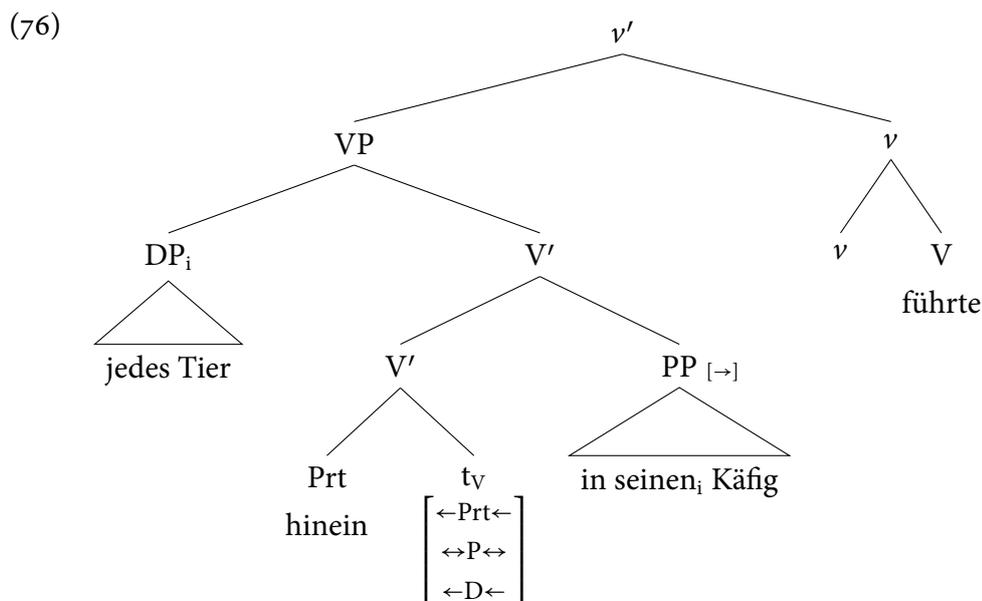
However, as we have seen, there is a small set of particle verbs identified in section 4.1 that do seem to allow for linearization of their PP argument in a rightward specifier. Directional particle verbs such as *hinein-führen* in (74) belong to this class.

- (74) a. dass sie jedes_i Tier in seinen_i Käfig *hinein-führte*
 that she every animal in its cage PRT-lead
 b. dass sie jedes_i Tier *hinein* in seinen_i Käfig *führte*
 that sie every animal PRT in its cage lead
 'that she led every animal into its cage'

We can account for this by assuming that these verbs have, as an idiosyncratic lexical property, a selectional feature [$\leftrightarrow P \leftrightarrow$] that does not specify the directionality of the PP it selects. For this reason, the second PP argument of the verb can be projected as either a rightward (75) or a leftward specifier (76).

(75)





Thus, while movement of the verb to a rightward head position such as v or T is normally string-vacuous, and therefore difficult to detect, there is a small class of verbs that can exceptionally project an argument in a rightward specifier. This renders rightward verb movement no longer string-vacuous and thus acts as a diagnostic for the relative height of the verb.

Other particle verbs do not allow for this placement. The only other way to have the PP in this intervening position would be through rightward extraposition of the PP, adjoining it to VP. This would also be the case with PP adjuncts as in (77).

- (77) *dass Peter ---_{PP} das Heu *ab* [PP mit der Heugabel] *lädt*
 that Peter the hay PRT with the pitchfork loads
 ‘that Peter loads down the hay with a pitchfork’ (Zeller 2001b:81)

As shown in Section 3.2, this kind of extraposition is not possible due to a prosodic constraint requiring that extraposed items vacate the minimal prosodic phrase that they are immediately contained in.

5 Against an alternative: Extended projections of P

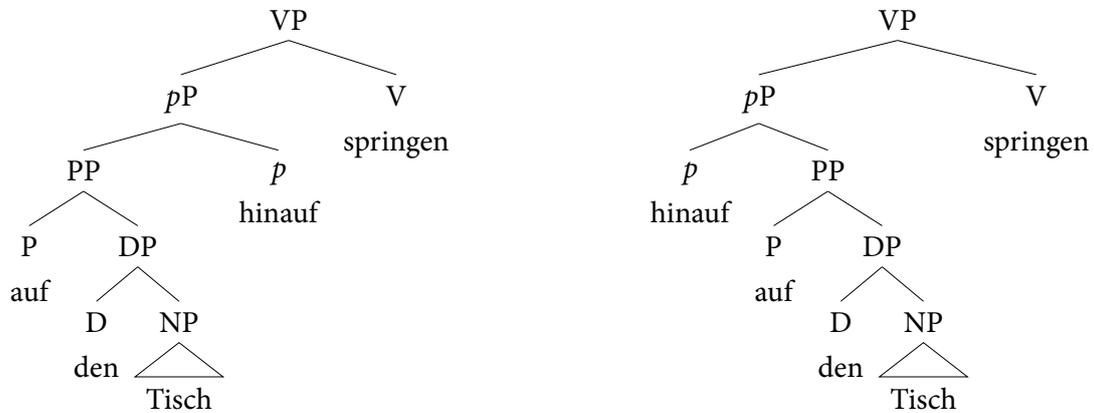
This section will address, and ultimately dismiss, a potential alternative analysis for some of the cases discussed in this previous section. What we treated as verbal particles such as *hinauf*, *hinein* have also been analyzed as postpositions belonging to a complex adpositional phrase (e.g. van Riemsdijk 1990, 1998; Olsen 1999; Koopman 2000; Zeller 2001a,b; McIntyre 2001; van Riemsdijk & Huijbregts 2007). Consider an example such as (78) where the directional particle *hinauf* can be placed either before or after the prepositional phrase.

- (78) dass die Katze (hinauf) auf d-en Tisch (hinauf) gesprungen ist
 that the cat (PRT) on the-ACC table (PRT) jumped is
 ‘that the cat jumped up onto the table’

While the preceding section argued that this pre-PP placement is the result of rightward verb move-

ment across a rightward specifier, [van Riemsdijk \(1990\)](#) in particular has argued that such cases involve a complex PP with *hinauf* as the head of little *p* projection (also see [Svenonius 2003, 2010](#)). Thus, one could try to account for the word order variation in (78) as PP-internal, with *p* being optionally head-initial as in (79).

(79) *Extended projection of P:*



Although this view is relatively widely espoused, it is not clear that it is the correct analysis of such particles. In what follows, I will point out some reasons to be skeptical about such an analysis.

5.1 Extraposition

In German, prepositional phrases can undergo extraposition, as (80b) shows. Under the assumption that *p* is part of the universal extended projection of P, then we must conclude *p*Ps can be extraposed.

- (80) a. dass er [_{pP} [_{PP} ins Haus]] gegangen ist
 that he in.the house gone is
 b. dass er —_{pP} gegangen ist [_{pP} [_{PP} ins Haus]]
 that he gone is in.the house
 ‘that he went into the house’

However, the putative *p*P constituents containing a directional particle such as *hinein* robustly resist extraposition, as can be seen in (81b,d) ([Biberauer 2017:198f.](#) reports the same restriction for similar putative postpositional phrases in Afrikaans).

(81) *No extraposition of complex pPs:*

- a. dass er [_{pP} [_{PP} ins Haus] hinein] gegangen ist
 that he in.the house PRT gone is
 b. *dass er —_{pP} gegangen ist [_{pP} ins Haus hinein]
 that he gone ist in.the house PRT
 c. dass er [_{pP} hinein [_{PP} ins Haus]] gegangen ist
 that he PRT in.the house gone is
 d. *dass er —_{pP} gegangen ist [_{pP} hinein ins Haus]
 that he gone is PRT in.the house
 ‘that we went into the house’

All else being equal, we would expect *pP* constituents to show uniform behaviour. However, the data in (81) suggest that the particle *hinein* does not form a constituent with the PP. On the view that *hinein* is a verbal particle, on the other hand, the impossibility of extraposition of a non-constituent is expected.

5.2 Extraction

Another discrepancy is found with sub-extraction. In general, German does not allow stranding of either prepositions or postpositions, with the latter shown in (82).

(82) *No postposition stranding* (Haider 2010:94):

- a. *Des Geldes₁ hat er sie [_{pP} t₁ wegen] nicht geheiratet
 the money.GEN has er she because not married
 ‘He didn’t marry her because of money.’
- b. *Dem Freund₁ hat er es [_{pP} t₁ zuliebe] nicht erwähnt
 the friend has he it ZULIEBE not mentioned
 ‘He didn’t mention it for his friend’s sake.’

Against this background, it is surprising that the putative complex *pP* constituent under discussion does allow for sub-extraction of the PP, both leftward (83a) and rightward (83b).

- (83) a. [_{PP} In welches Haus] ist er [_{pP} —_{PP} hinein] gegangen ?
 in which house is he PRT gone
 ‘Which house did he go into?’
- b. dass er [_{pP} —_{PP} hinein] gegangen ist [_{PP} ins Haus]
 that he PRT gone is in.the house
 ‘that he went into the house’

Following Abels (2003, 2012), we can assume that the ban on stranding comes from the phasehood of PP combined with an Anti-Locality constraint on movement. There are at least two distinct types of Anti-Locality constraints: (i) *Comp-to-Spec Anti-Locality* (e.g. Abels 2003; Grohmann 2003), (ii) *Spec-to-Spec Anti-Locality* (Erlewine 2016, 2017). Both of these types of Anti-Locality constraints can be subsumed under a more general condition that movement must cross the maximal projection of the phrase in which it is immediately contained (84).

(84) *Generalized Spec-to-Spec Anti-Locality*:

Movement of a phase from the complement or specifier of XP must cross a maximal projection other than XP.

Assuming that *p* is the phase head, this rules out both movement of PP to the phase edge (85a) as well as movement of the complement P (85b). In each case, these only cross the maximal projection they are immediately contained in.

- (85) a. [_{pP} PP [_{p'} —_{PP} p]]

- b. $[_{pP} DP [_{p'} [_{PP} P \text{---} DP] p]]$

With this in mind, it is unexpected that the complement of the putative *p* head *hinein* can be stranded in examples such as (83). If we treat *hinein* as a particle belonging to the verb *gehen*, on the hand, the mobility of the PP is entirely unsurprising due its status as a complement of the verb.

A further example of this potential miscategorization of verbal particles as postpositions comes from *entlang* ('along'). According to Wunderlich (1984), *entlang* can be a preposition assigning genitive case (86a) or a postposition assigning accusative (86b).

- (86) a. $[_{PP} \text{entlang de-s Fluss-es}]$
 along the.GEN river-GEN
 b. $[_{PP} \text{de-n Fluss entlang}]$
 the-ACC river along

However, despite the general impossibility of adposition stranding in German, the putative postpositional variant in (86b) does allow its complement to be extracted (87a), whereas its prepositional counterpart does not (87b). This makes sense if *entlang* in (86b) is actually a verbal particle with the accusative DP as the complement of the verb (87). Thus, only (87b) is a genuine case of adposition stranding.¹¹

(87) No 'postposition' stranding with *entlang* (Wunderlich 1984:90):

- a. $\text{Den Kanal}_i \text{ ging-en wir } [_{VP} t_i \text{ entlang-}t_V]$
 the.ACC canal went-3PL we ENTLANG
 'We walked along the canal.'
 b. $*\text{Des Kanal-s}_i \text{ steh-en die Bootshäuser } [_{VP} [_{PP} \text{ entlang } t_i] t_V]$
 the.GEN canal-GEN stand-3PL the boat.houses ENTLANG
 'The boathouses stand along the canal.'

Although directional particles in particular as frequently analyzed as part of a complex PP, however asymmetries with extraction strongly suggest that they are actually in many cases verbal particles.

¹¹ A similar ambiguity also arises with relativization. van Riemsdijk (1990:235) discusses the following asymmetry where it seems that the PP *am Fluss* ('on the river') in *am Fluss entlang* ('along the river') can be pied-piped under relativization with the verb *bauen* (ia), but not with the verb *gehen* (ib).

- (i) a. $\text{der Fluss, } [_{PP} \text{ an dem entlang}] \text{ ein Fusspfad gebaut werden wird}$
 the river at which along a footpath built be will
 'the river along which a footpath is going to be built'
 b. $*\text{?der Fluss, } [_{PP} \text{ an dem entlang}] \text{ er ging}$
 the river at which along he went
 c. $\text{der Fluss, } [_{PP} \text{ an dem}] \text{ er entlang ging}$
 the river at which he along went
 'the river he went along'

Again, this follows if *entlang* (ib) is actually a verbal particle. In other words, *entlang-gehen* is a particle verb, whereas **entlang-bauen* is not.

5.3 Fragment answers

Another diagnostic that suggests that verbal particles are not adpositions comes from fragment answers. By now, the standard analysis of fragment answers is that they involve clausal ellipsis following movement of the remnant (e.g. Merchant 2004; Temmerman 2012; Griffiths & Lipták 2014; Weir 2014). As demonstrated by (Merchant 2001, 2004), this analysis accounts for why languages which do not tolerate preposition stranding also do not allow preposition omission in fragment answers. This is shown for German in (88) (Merchant 2004:686).

- (88) A: Mit wem hat Anna gesprochen?
with who.DAT has Anna spoken
‘Who has Anna talked to?’
B: *(Mit) dem Hans.
*(with) the.DAT Hans
‘With Hans.’

Equally, postpositions such as *zuliebe* cannot be stranded either (89).

- (89) A: [_{PP} Wem zuliebe] hat Peter das Zimmer auf-geräumt?
who.DAT ZULIEBE has Peter the room PRT-cleaned
‘For whose sake did Peter clean the room?’
B: Mir *(zuliebe).
me.DAT *(ZULIEBE)
‘For me.’

Directional particles such as *hinauf* in (90) differ from adpositions in this regard. They cannot felicitously occur in fragment answers.

- (90) A: Wo ist die Katze hinauf gesprungen?
where is the cat PRT jumped
‘What did the cat jump up onto?’
B: (*Hinauf) auf den Tisch (*hinauf).
(*PRT) on the table (*PRT)
‘On the table.’

If these were adpositions, then this is another asymmetry that would be unaccounted for. The view that these are verbal particles, on the other hand, predicts that these particles must be elided as part of the given material belonging to the verb.

5.4 Particle incorporation

van Riemsdijk & Huijbregts (2007) argue that examples such as (91b) show that a postposition can incorporate into a verb cluster (also see Wunderlich 1984:91). Furthermore, the fact that only the postposition *hinauf*, but not the preposition *auf* (91c), can incorporate is expected if it is the higher of two heads, given considerations of Minimality.

(91) *Particle incorporation in verb clusters* (van Riemsdijk & Huijbregts 2007:360):

- a. weil er [_{PP} [_{PP} auf das Dach] *hinüber*] [hätte springen können]
 because he on the roof across had jump could
- b. weil er [_{PP} [_{PP} auf das Dach] —] [hätte *hinüber* springen können]
 because he on the roof had across jump could
- c. *weil er [_{PP} [_{PP} — das Dach] *hinüber*] [hätte *auf* springen können]
 because he the roof across had on jump could
 ‘because he could have jumped across the roof.’

Again, we notice an asymmetry with genuine postpositional phrases. Unlike *hinüber* in (91), a postposition like *zuliebe* (‘for the sake of’) cannot appear inside a verb cluster (92b).

(92) *No incorporation of postpositions into the verb cluster:*

- a. dass Maria [_{PP} dem Peter *zuliebe*] hätte gehen müssen
 that Maria the.DAT Peter ZULIEBE had leave must
- b. *dass Maria [_{PP} dem Peter —₁] hätte *zuliebe*₁ gehen müssen
 that Maria the.DAT Peter had ZULIEBE leave must
 ‘that Maria should have left for the sake of Peter.’

Thus, it is unclear what exactly particle incorporation as a diagnostic is supposed to show. While incorporation into the verb cluster is assumed by van Riemsdijk & Huijbregts (2007) to involve head movement, the kind of 1-3-2 clusters in (91) can also include phrasal material (93), suggesting a potential alternative derivation in terms of rightward VP movement (cf. Verb Projection Raising; Haegeman & van Riemsdijk 1986).

(93) *Phrasal material in verb clusters:*

- a. dass er das Buch — [hätte *genau* durchsehen sollen]
 that he the book had exactly look.through should
 ‘that he should have looked through the book carefully’ (Zwart 1996:237)
- b. ob sie — [hätt *d* *Prüeffig* besto chöne]
 whether she had the exam pass can
 ‘whether she would have been able to pass the exam’ (Wurmbrand 2017:4646)
- c. dass Peter — [hätte *ins* *Schwimmbad* gehen sollen]
 that Peter had in.the swimming.pool go should
 ‘that Peter should have gone to the swimming pool’ (Martin Salzmann, p.c.)

If this is the case, then examples such as (91b) would have to involve prior evacuation of the PP with remnant VP movement to the right. This is again another incarnation of the stranding problem discussed in section 5.2.

The situation is confounded even further by the often-held assumption that putative postpositions such as *hinauf* can optionally incorporate into the verb to form a particle verb. For example, van Riemsdijk (1990:234) claims that ‘the postpositional element may sometimes be or become a verbal particle, perhaps through some process of incorporation’ (also see Pretorius 2017 and Biberauer 2017 on Afrikaans). As we have seen above, even such particles appear to precede the relevant PPs, they do not behave as they were suddenly prepositions rather than verbal particles. In fact,

there is no compelling evidence for their status as adpositions, and some to the contrary.¹² For this reason, we can simply assume that these are inherently verbal particles, as maintained by the analysis in the preceding section, and not first generated as postpositions.¹³

6 Further evidence for rightward movement

6.1 Complex prefields

A supporting argument for the analysis of rightward verb movement in particle stranding comes from complex prefield constructions such as (94). Here, it would appear that more than one element occupies the prefield (*Vorfeld*) or Spec-CP position, in violation of the verb-second requirement.

(94) *Complex prefield V₃ construction* (Fanselow 1993:70):

[_{DP} Einen Brief]	[_{PP} nach Hamburg]	hat er	Anette	öfter	— _{DP}	— _{PP}	geschickt
a letter	to Hamburg	has he	Anette	often			sent
‘He has often sent a letter to Anette in Hamburg’							

The consensus in the literature is that what is actually fronted is a single VP constituent with a silent head (Fanselow 1991, 1993; G. Müller 1998, 2018; S. Müller 2005). In transformational approaches, this is remnant VP movement, with prior evacuating movement of the verb (also see footnote 9).

¹² van Riemsdijk (1990:234) cites the fact that these PPs can be ‘complements to N’ (ia) and [PP with NP] constructions (ib) as evidence for the status of particles are genuine postpositions.

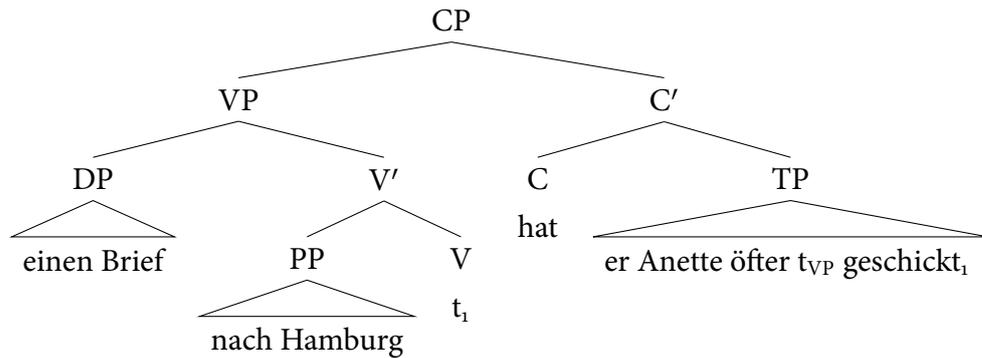
- (i) a. der Weg [_{PP} ins Tal hinunter]
the way in.the valley down
‘the way down to the valley’
b. [_{PP} den Berg hinauf] mit euch!
the mountain up with you.PL
‘Up the mountain with you’

However, nominalizations such as (ia) could easily be viewed as derived from the particle verb *hinunter-gehen*, e.g. by movement to *n* (e.g. Marantz 1997; Alexiadou 2001; Bruening 2013) and with allomorphy of *geh-* as *Weg*. So-called ‘verbless directives’ such as (ib) have been shown by Müller (2011b) to involve a silent verb, of which *hinauf* would be the associated verbal particle.

¹³This is not to say that there are not any locative circumpositional phrases in German. Examples such as *vom DP aus* (ia) and *unter DP durch* (ib) seem like promising candidates. Here, it is important to note that they do not ever allow strings in which the postposition precedes the PP, which distinguishes them from the directional particles we have focused on here.

- (i) a. vom Fenster aus / *aus vom Fenster
from.the window out out from.the window
b. unter der Brücke durch / *durch unter der Brücke
under the bridge through through under the bridge

(95)



Supporting evidence for this view comes from the fact that the fronted elements are subject to a clausemate restriction, i.e. they must be arguments of the same verb (96).

(96) *Clausemate condition on complex prefields* (Fanselow 1993:66):

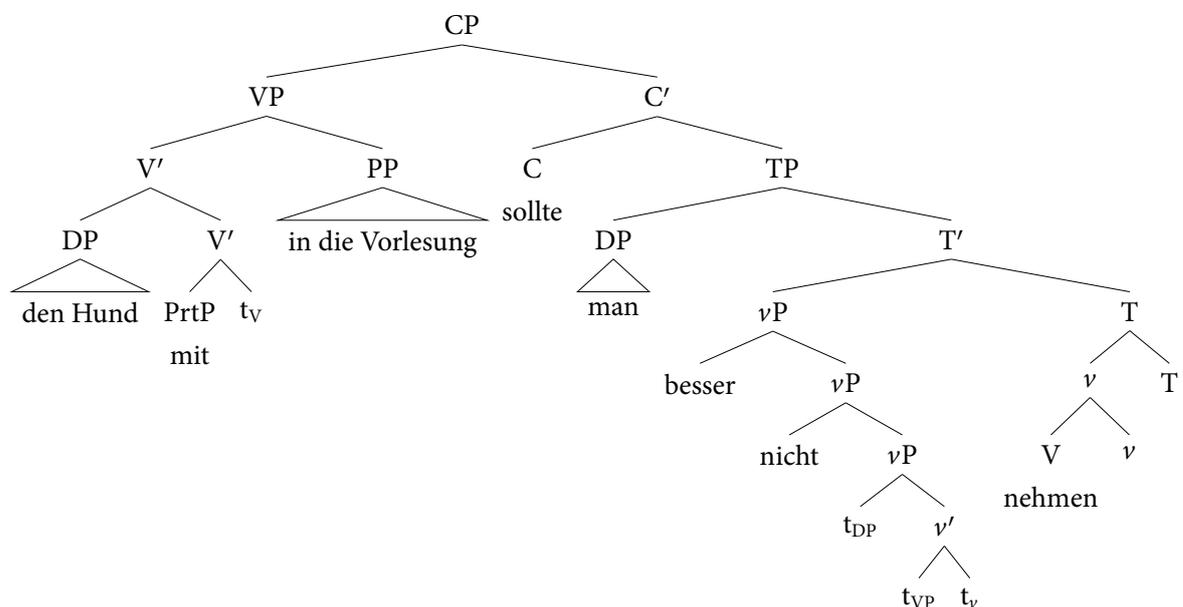
- a. Ich glaube dem Linguisten nicht [einen Nobelpreis gewonnen zu haben]
 I believe the.DAT linguist not a.ACC nobel.prize won to have
- b. *Dem Linguisten₁ einen Nobelpreis₂ glaube ich ___₁ nicht [___₂ gewonnen zu haben]
 the.DAT linguist a-ACC nobel.prize believe I not won to have
 'I don't believe the linguist to have won a nobel prize.'

With this in mind, consider the example in (97). Here, we have a complex prefield constituent containing the internal argument DP and PP of the verb *mit-nehmen*, as well the verbal particle *mit* itself.

- (97) [Den Hund mit in die Vorlesung] sollte man besser nicht nehmen
 the dog prt in the lecture should one better not take
 'It is better not to take your dog with you to the lecture'

Given the structure proposed in section 4.2, this is what we would expect to find. The verb moves out of the minimal VP to a rightward head position stranding its separable particle. Subsequently, the remnant VP created by this movement is moved to the prefield position in Spec-CP (98).

(98)



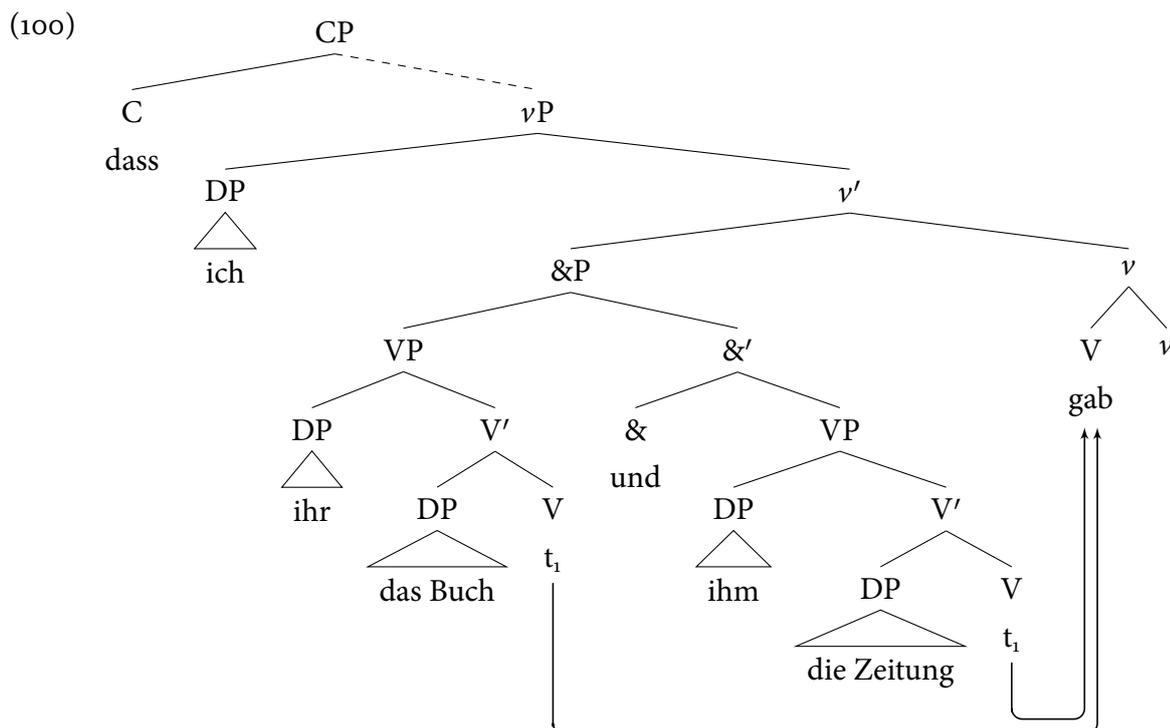
Thus, the complex prefield construction provides evidence for the kind of remnant VP constituent created by rightward movement that was argued for in section 4.2.

6.2 Backward gapping

Another potential argument for rightward movement comes from what I will refer to as ‘backward gapping’. Going back to Ross (1970), it is known that some head-final languages permit deletion of the verb in the first conjunct of a coordinate structure. One way of deriving the effect of deletion is by means of low coordination and ATB-movement, as Johnson (2009) does for English. Koisumi (2000) argues that backward gapping in Japanese provides evidence for rightward movement. In the example in (99a) from Koisumi (2000:229), the verb in the first conjunct is not realized. Similar structures can be found in German (99b) (Eisenberg 1973:417f.).

- (99) a. Mary-ga [VP suupaa-de piza-o 2-mai katta] to [VP sakaya-de
 Mary-NOM supermarket-at pizza-ACC 2-CL and liquor.store-at
 wain-o 3-bon katta] katta (koto)
 wine-ACC 3-CL bought (fact)
 ‘Mary bought two pizzas at a supermarket and three bottles of wine at a liquor store.’
- b. dass ich [VP ihr das Buch gab] und [VP ihm die Zeitung gab] gab
 that I her.DAT the book and him.DAT the newspaper gave
 ‘that I gave her the book and him the newspaper’

This can be analyzed, as suggested by Koisumi (2000) for Japanese, as low coordination of VPs and rightward ATB-movement (100). If movement to *v* is obligatory, then both verbs must move in order not to violate the *Coordinate Structure Constraint* (Ross 1967). Although movement of the second verb is string-vacuous, movement from the first conjunct gives the impression of deletion of the verb.



A potential advantage of this view of backward gapping is that explains why it is only possible in verb-final clauses. Examples such as (101) involve what (Höhle 1983/2018b) called SLF-coordination (=Subjektücke in finiten Sätzen ‘subject gap in finite clauses’) and is typically assumed to involve high clausal-level coordination with a subject gap in Spec-CP (e.g. Höhle 1990; Büring & Hartmann 1998; Barnickel 2017; but cf. Johnson 2002).

- (101) a. [_{CP} Ich gab ihr das Buch] und [_{CP} — gab ihm die Zeitung]
 I gave her the book and him the newspaper
 b. * [_{CP} Ich gab ihr das Buch] und [_{CP} — gab ihm die Zeitung]
 I her the book and gave him the newspaper
 ‘I gave her the book and him the newspaper.’

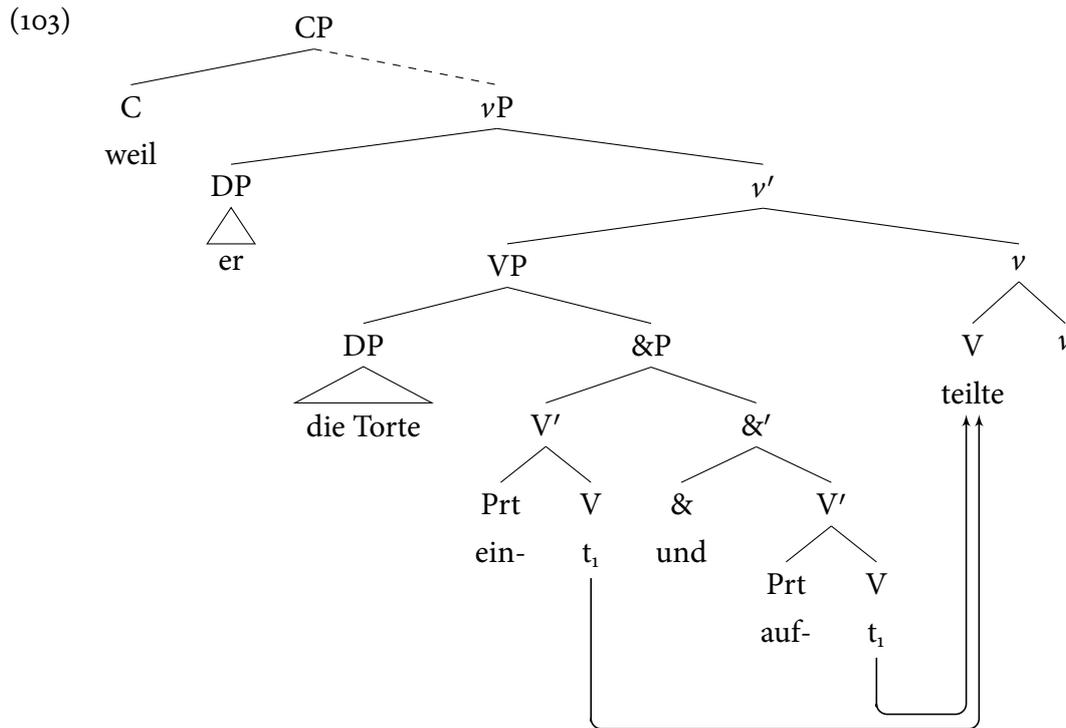
If backward gapping in the first conjunct requires rightward ATB-movement, then the height of coordination in (101) will render this impossible.

The logic of this argument can also be extended to particle verbs too. For example, Wurmbrand (1998) notes that backward gapping is possible with separable particle verbs such as *ein-teilen* (102a), but not with inseparable prefix verbs like *zer-teilen* (102b).

(102) *Backward gapping tracks separability* (Wurmbrand 1998:292):

- a. weil er die Torte gerecht *ein*-teilte und *auf*-teilte
 because he the cake fairly PRT-divided and PRT-divided
 ‘because he divided and split the cake fairly’
 b. ??weil er die Torte gerecht *zer*-teilte und *ver*-teilte
 because he the cake fairly PRT-divided and PRT-divided
 ‘because he split and distributed the cake fairly’

Again, if we assume low coordination and rightward ATB-movement, only separable verbs will be able to undergo ATB-movement while satisfying the identity requirement on ATB movement (see e.g. Munn 1999; Citko 2006).



In separable verbs will not be able to separate the identical part, that is *teilte* in (102b), from the prefix *und* and thus will not be able to undergo ATB-movement to v in low coordination configurations.

6.3 Dialectal variation: V-to- v movement in Mòcheno

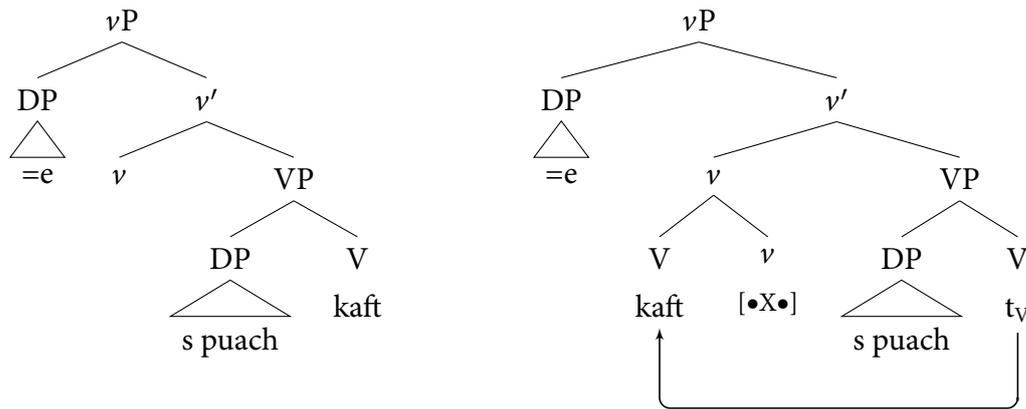
Finally, the issue of string-vacuous movement to a head-final position may be informed by looking at variation. In other words, we might find dialects of a particular head-final language where the head in question is not final, but in fact initial. I will suggest that this could well be what we find with the German dialect Mòcheno spoken in Trentino in Northern Italy (Cognola 2008, 2013, 2015). In Mòcheno, basic declarative clauses can display either VO or OV order (104).

(104) VO/OV order in Mòcheno (Cognola 2008:81):

- a. Gester hòn=e s puach kaft
yesterday have=I the book bought
- b. Gester hòn=e kaft s puach
yesterday have=I bought the book
'I bought the book yesterday.'

A reasonable hypothesis to account for this variation would be that the optionality in VO/OV order is derived by optional movement to a head-initial v position. In (105), this movement is driven by the head movement triggering feature [$\bullet X \bullet$], following Georgi & Müller (2010).

(105)



Thus, this variety of German would differ from standard German in having non-string vacuous movement to an initial v head. Further evidence for this comes from the fact that movement to v becomes obligatory if a phrase is extracted from vP . If the indirect object is extracted as in (106), then OV order inside the VP is ungrammatical (106b). Instead, the verb must precede the other internal argument, giving rise to VO order (106c).

(106) *Inversion under extraction in Mòcheno* (Cognola 2013:64; Cognola 2015:27):

- a. Er hòt gester s puach en de Maria kaft
 he has yesterday the book to the Maria bought
 ‘He bought Maria a book yesterday.’
- b. *En bem₁ hòt=se de zaitung —₁ kaft ?
 to whom has=she the newspaper bought
- c. En bem₁ hòt=se kaft de zaitung —₁ —] ?
 to whom has=she bought the newspaper
 ‘Whom did she buy the newspaper?’

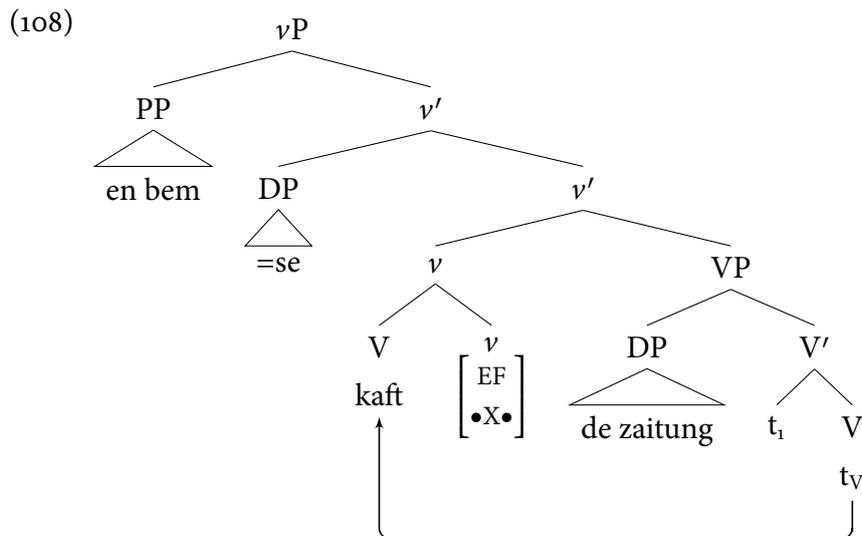
As discussed by van Urk (2015:19of.), this appears to be an instance of movement-triggered inversion at the vP edge. Inversion under extraction is a well-known phenomenon at the CP-level for German (also see Kayne & Pollock 1978 on French, Torrego 1984 on Spanish, Henry 1995 on Belfast English and van Urk 2015 on Dinka). In particular, extraction from V2 clauses in German gives rise to obligatory subject-auxiliary inversion, i.e. T-to-C movement (107).

(107) *Obligatory T-to-C movement under extraction* (Reis 1995:50):

- a. Wo₁ glaubt er [CP —₁ [C' [C⁰ wohnt] [TP sie —₁ jetzt]]] ?
 where believes he lives she now
- b. *Wo₁ glaubt er [CP —₁ [C' [C⁰ Ø] [TP sie wohnt —₁ jetzt]]] ?
 where believes he she lives now
 ‘Where does he believe she lives now?’

Inversion with successive-cyclic movement is analyzed by Georgi (2014) by insertion of a head-movement probe [$\bullet X \bullet$] on a head that bears an edge feature responsible for movement of the operator to its specifier. While Georgi (2014) disusses this in the context of T-to-C, it can be equally applied to V-to- v movement for the examples in (106). As (108) shows, the obligatory presence of

[•X•] with an edge feature ([EF]) means that verb-object inversion will be obligatory.



The data from Mòcheno are therefore strongly suggestive of the fact that v is head-initial in this dialect. The consequence of this is that the kind of V-to- v movement that is normally string-vacuous in the standard variety becomes visible in Mòcheno.

7 Conclusion

This paper sought to reassess the status of rightward head movement in head-final Germanic languages such as German. The prevailing views that has emerged in the literature were either that the string-vacuous nature of such movement makes it an untestable hypothesis, or the stronger position that there are good empirical reasons to reject the hypothesis completely.

In this first part of the paper, I revisited the arguments advanced by Haider (1993, et seq.) against rightward head movement based on scope, extraposition and verbs that fail to undergo V2. It was shown that the first two arguments are based on faulty premises, and are therefore simply irrelevant to the question of rightward movement. The third argument based on verbs that do not undergo V2 was shown not only to be an inconclusive argument, but actually that it can be turned into an argument in favour of rightward movement if we assume that certain morphological processes require head movement.

With the frequent objections to rightward verb movement dismissed, the second part of the paper aimed to provide a new argument for rightward movement based on particle verbs. It was shown that there is a class of particle verbs which allow for a PP argument to intervene between the particle and its associated verb. This was argued to follow from the assumption that such verbs exceptionally allow for the PP to occupy a rightward specifier of V. The result of this is that ordinarily string-vacuous movement to v , for example, now overtly crosses this PP. Finally, some further novel arguments for rightward verb movement were presented based on complex prefields, backward gapping and dialectal variation.

In sum, this paper has shown that not only is the skepticism about rightward movement in German misplaced, but that it is indeed a desirable solution to a previously unnoticed problem involving

particle verbs. The consequence is therefore that rightward movement can be assumed, even if it more often than not happens to be string-vacuous. While this conclusion speaks in favour of rightward movement of the verb to *some* clausal-final position, it still remains rather difficult to diagnose the exact height of movement. In other words, the continued search for relevant phenomena and diagnostic tools will hopefully lead to further insights about whether the verb moves to *v*, T or some position in between.

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