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The optimal placement of *up* and *ab* – a comparison

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Abstract. The *particle verb construction* (PVC), also referred to in the literature as *phrasal verb* or *separable complex verb*, occurs in most if not all of the Germanic languages. The work presented here deals with a comparison of the transitive PVC in English and German. In English, the construction occurs in two alternating word orders (*They called off the concert* vs. *They called the concert off*). In German, on the other hand, only one order is possible (*Sie sagten das Konzert ab* vs. **Sie sagten ab das Konzert*; **Sie absagten das Konzert*). The central question is why this kind of word order alternation is possible in a language with otherwise relatively strict word order, such as English, but not in a related language such as German, which is otherwise freer in its constituent ordering, allowing, e.g., for scrambling. In this article, the pattern is explained in terms of (the ranking of) violable universal constraints from different modules of the grammar. I introduce a PVC-related syntactic constraint which punishes particle pied-piping. I argue that it is the rank of this constraint with respect to a number of prosodic constraints that is responsible for the variation between English and German.

0. Introduction

This article presents an Optimality Theory (OT) approach to the transitive particle verb construction (PVC), also referred to in the literature, e.g., as *phrasal verbs* or *separable complex verbs*. This construction occurs in most if not all of the Germanic languages and has been studied most intensely and controversially in the generative literature (cf. Dehé et al. 2002 and Dehé 2002 for recent analyses and the references therein for previous studies). The present analysis deals with English and German and is based on the following hypotheses:

- The well-known pattern that this construction displays can be explained in terms of (the ranking of) general violable universal constraints, along the lines that have been developed in the work on OT (cf. Prince and Smolensky 1993 and much subsequent work). It is this cross-linguistic scope that is a striking feature of OT.

- The cross-linguistic pattern can be fully explained under the assumption that the relevant constraints are not only morphosyntactic in nature but that both focus structure and prosody play a crucial role, too.
- In English, some prosodic constraints outrank some syntactic constraints, resulting in the focus sensitivity of the construction and the well-known word order alternation. In German, prosodic constraints do not have such power, resulting in only one possible word order across focus structures.

The remainder of the article is organised as follows: Section 1 serves as a brief overview of the behaviour of the PVC in the languages discussed here in some detail: English and German. In Section 2, I introduce the relevant framework, i.e., the relevant syntactic structures and the constraints that will be employed in the analysis below. In Section 3, I provide a detailed OT-analysis of PVCs in English and German, showing that the variation between the two languages with respect to word order can easily be explained in terms of a conflict of constraints of different nature and their ranking. Section 4 serves as a summary and conclusion.

1. The particle verb construction in English and German

Let us first take a brief look at the general behaviour of the construction in the two languages. In English, transitive particle verbs occur in two alternating word orders, where the particle can either precede or follow the direct object (cf. (1)). I will refer to the former word order, where the particle occurs adjacent to the verb, as the continuous order; the latter order, where the direct object separates the verb and the particle, is referred to as the discontinuous order. (The particle is bold-printed in many examples throughout the article.)

(1) English
  a. The boys drank **up** the beer. (= continuous order)
  b. The boys drank the beer **up**. (= discontinuous order)

German behaves very differently as compared to English with its alternating word orders. In German main clauses, the particle is obligatorily separated from the verb (cf. (2a, b), i.e., there is no grammatical equivalent to the continuous order that occurs in English.

(2) German
a. *Sie **ab**sagten (*sagten **ab**) das Konzert.
They off.said (said.off) the concert
'They called off the concert.'
b. Sie sagten das Konzert **ab**.
They said the concert off
'They called off the concert.'

Numerous suggestions have been made in the generative literature to account for these constructions and for the alternating word orders syntactically, many of them being language specific (cf. the Introduction in Dehé et al. 2002 for an overview).

In Dehé (2002) I show that in English, the choice of the word order is not optional, but that it is to a great extent determined by the information structure of the context in which the construction is embedded. I further argue that the fact that it is the focus-background-division of the sentence that determines the word order should be reflected in the syntactic structure of the construction, in particular in the derivation of the discontinuous word order. For languages other than English, however, there are clearly factors other than focus structure that are mainly responsible for the word order of PVCs. This seems particularly obvious for a language such as German, in which no options with respect to word order can be observed, regardless of the focus structure.

It is still an interesting question why a word order alternation such as that between the continuous order and the discontinuous order demonstrated in (1) above is possible in a language with otherwise relatively strict word order such as English, but not in a related language such as German, which is otherwise freer in its constituent ordering, allowing, e.g., for scrambling. Also, the particle in German does of course appear verb adjacent in contexts other than that given in (2); compare the infinitival construction in (3a), the main clause containing an auxiliary in (3b) and the subordinate clause in (3c) (no other word order is possible).

(3) a. Sie wollten das Konzert **ab**sagen.
They wanted the concert off.say
'They wanted to call off the concert.'
b. Sie haben das Konzert **ab**gesagt.
They have the concert off.said
'They called off the concert.'
c. . . . dass sie das Konzert **ab**sagten.
that they the concert off.said
'. . . that they called off the concert.'

It is important to note that the data in (2) cannot, as has sometimes been suggested, simply be reduced to the fact that German (but not English) is a verb second (V2) language, which means that in main clauses without auxiliaries the verb has to appear in the second position. This fact alone does not explain the ungrammaticality of examples of main clauses like (2a) above, where the complex particle verb (PV) is in fact in the second position. The phenomenon that the particle is bound to its base position but cannot accompany the verb is thus independent from the V2 nature of languages such as German.

In the analysis suggested below, syntactic, prosodic, and discourse factors are formulated as constraints in terms of an OT syntax. Language-specific patterns can then be accounted for by a language-specific ranking of these constraints. Syntactic constraints that are dominant in one language (here: German) might be outranked by pragmatic and/or prosodic constraints in another language (here: English).

2. Introducing the framework

Obviously, we are concerned here with a word order phenomenon. The 'ingredients' are the same in the languages under question: Subject, verb + particle, object, forming relatively simple sentences but with varying word orders across languages. The specific word order that can be observed for every language will follow from the interaction between familiar constraints governing phrase structure and movement, i.e., pure syntactic constraints governing phrase structure, constraints determining clitic placement, and prosodic constraints including alignment constraints which require prosodic heads to occur rightmost within their prosodic constituents. I will now briefly introduce the syntax of particle verbs as assumed in this article, the architecture of OT as relevant here, and the constraints that are crucial for the analysis below.

2.1. The syntax of particle verb constructions

First of all, note that for particle verbs in English I assume the continuous word order rather than the discontinuous one to be the unmarked one and the preferred one in context-free utterances. It thus occurs unless otherwise forced by the context in which the utterance is

embedded. This idea has been present in the literature at least since Van Dongen (1919). However, it is not completely uncontroversial. I follow the evidence that has been provided in both syntactic and empirical/experimental studies. Syntactic evidence comes from, e.g., *wh*-extraction, gapping and topicalisation contexts, the selectional requirements of particle verbs, and cleft constructions (cf. Johnson 1991; Olsen 1996, 1997; Nicol 2002; among others). Hunter and Prideaux (1983) report on an empirical study on sentence acceptability. The results of this study were such that the types of sentences in which the particle was placed immediately after the verb were judged significantly more natural and acceptable than those in which the particle was displaced from the verb. Dehé (2001a, 2002, pp. 91ff) reports on a speech production experiment that provides additional evidence for the assumption that the continuous order is the unmarked one. In a context-free experimental situation, the continuous order was produced significantly more frequently. (See also Dehé 2002, Chapter 3, for a more detailed overview and also for arguments against the opposite hypothesis, i.e., that the discontinuous order might be the unmarked one.)

It has also been shown that in English the choice of the word order is determined to a high degree by the information structure of the context in which the PVC is embedded (cf. Section 3.1 below for details).

The syntactic structure of the PVC has been controversially discussed in the literature. Ramchand and Svenonius (2002, p. 101) have recently put this problem nicely: "Whether despite the amount of ink spilled over the verb-particle construction or because of it, there is still a dramatic lack of consensus regarding its syntactic structure". In the present study, I basically follow Dehé (2002). The English particle verb originates as a complex V head, taking the nominal object as its complement (cf. Johnson 1991; Koizumi 1993; Olsen 2000). Traditional evidence for the complex head assumption comes from the behaviour of particle verbs in word formation processes, coordinated structures, and gapping constructions and from their selectional requirements. In addition, Olsen (2000) argues in favour of a complex head analysis along the lines of the scope of potential modifiers. I follow Koizumi (1993) and Lasnik (1999 and previous work), among others, in assuming a split VP structure of the form *v*P-AgrOP-VP. Within this extended projection, both the verb and the object move overtly, the verb via $AgrO^0$ to v^0, the object to AgrOP-Spec. Overt subject movement is to the specifier of a higher functional projection dominating *v*P (AgrSP; the subject is base-generated in the specifier of the upper VP layer (*v*P) and must move to a higher functional projection for Case reasons, cf. Chomsky 1995;

Lasnik 1999; among others). As far as verb movement is concerned, the particle can either pied-pipe, deriving the continuous order, or it can remain in its base position, resulting in the discontinuous order.

Based on these assumptions, the syntactic structures for the continuous and discontinuous orders are as given in (4a) and (4b), respectively.

(4) a. Syntactic structure, continuous order
$_{AgrSP}$[They$_m$ $_{v}$P[t$_m$ $_{v'}$ [[drank up]$_i$ $_{AgrOP}$[the beer$_k$ $_{AgrO'}$[t$_i$ $_{VP}$[t$_i$ t$_k$]]]]]]

b. Syntactic structure, discontinuous order
$_{AgrSP}$[They$_m$ $_{v}$P[t$_m$ $_{v'}$ [drank$_i$ $_{AgrOP}$[the beer$_k$ $_{AgrO'}$[t$_i$ $_{VP}$[t$_i$ up t$_k$]]]]]]

It has been argued in previous research that pied-piping of the particle is less economical than stranding it. Why should this be? Suppose that Neeleman (2002) is right in arguing that pied-piping the particle is less economical than stranding it due to the "natural economy condition" that demands that only as little material as required for convergence is moved (Chomsky 1995, p. 262). Neeleman (2002, pp. 151–152) formulates it as follows: "That is to say, if some principle can be satisfied through movement of either A or B, and A is contained in B, then movement of B is blocked." Neeleman (2002, p. 158) further argues that, in the case of movement of the particle verb to a higher functional position, "movement takes place in order to facilitate checking. The relevant verbal features are presumably present on the verb as well as on the complex predicate, which implies that in principle either can be moved. However, [the economy condition on movement] blocks movement of the complex predicate. . ." This is to say that economy demands that the particle is stranded whenever possible. Note that for English this seems to be contrary to what the unmarked order seems to suggest: If the unmarked order is the continuous one and both the verb and the object move obligatorily within the extended VP-projection, then the particle must pied-pipe in order to derive the continuous order. For German, however, this seems to follow straightforwardly from the data above. The requirement for particles to avoid pied-piping whenever possible will be translated into a crucial constraint below and the fact that the continuous order is preferred in most contexts will follow from constraint interaction.

An often-mentioned problem of the head status of the complex PV is its separability in the syntax. For this reason, Ackema and Neeleman

(2001) argue for underspecification of particle verbs with respect to their locus of realisation so that, in principle, they can be generated in either syntax or morphology.[1] It has also been suggested that the particle verb is generated syntactically. For example, the particle has been argued to be the head of a PP in (or contained in) the complement position of the verb. I follow Olsen (2000), however, who argues convincingly against this analysis along the lines of prepositional modifiers. It seems at first sight that the small clause analysis (cf., e.g., Kayne 1985, 1998; Svenonius 1996a, b), with the particle as a small clause predicate, is a more serious competitor. However, arguments against the small clause analysis have been provided elsewhere, including empirical evidence as well as syntactic evidence in terms of binding, coordination facts, and the alleged predicational relation between the DP and the particle (cf. Jackendoff 2002 and Dehé 2002, Chapter 2, and references given there).

As for English, I assume the complex head status for particle verbs in German (cf. also Stiebels and Wunderlich 1994; McIntyre 2001; among others). I further assume that in the structures under discussion here the VP is dominated by a functional projection in whose specifier the subject is eventually situated. Note that I assume that, contrary to English, German is underlyingly SOV, i.e., the complement precedes the selecting verb. I follow Vikner (2001b) who argues that the VO/OV difference follows from the ranking of a set of constraints related to directionality.[2] Since German is also a verb-second language, the main verb moves to the second position, and thus to the dominating functional projection, in main clauses lacking auxiliaries (cf. Section 3.2 below). However, the verb remains in its (VP final) base position in main clauses with auxiliary and in subordinate clauses. The particle is bound to the base position, regardless of whether the verb appears in second position. The directionality contrast between English and German entails a further difference between the two languages: German lacks a VP shell structure. As has been argued most recently by Haider (in press), the "shell structure is a purely structural requirement for head-initial projections".[3] Since VP shell structures are not necessary for head final projections, the basic constraints on structure in OT imply that they cannot occur in the relevant languages (for related discussion see Grimshaw 2001). I will therefore assume that German has the (*v*P-less) structure given in (5).

(5) $_{CP/IP}$[$_{DP}$[Die Veranstalter]$_m$ $_{C'/I'}$[sagten$_i$ $_{VP}$[t_m $_{V'}$[das Konzert $_V$[ab t_i]]]]]

2.2. *Some relevant aspects of optimality theoretic syntax*

In OT, the competing candidates are alternative realisations of the same input. The INPUT for an extended verbal projection is defined by Grimshaw (1997, pp. 375–376) as a "lexical head plus its argument structure and an assignment of lexical heads to its arguments, plus a specification of the associated tense and aspect". The relation between input and the eventual output (OUT_{real}; cf. Prince and Smolensky 1993) is mediated by two generating mechanisms: the GENERATOR (GEN) creates a set of candidates (= potential outputs) that conform to X-bar theory (Grimshaw 1997). The EVALUATOR (EVAL) uses the language specific constraint hierarchy to select the optimal candidate. All constraints are in principle violable. Following Grimshaw and Samek-Lodovici (1995) I assume here that the discourse status of the arguments is also specified in the INPUT, i.e., which arguments are foci, which are topics, and the like.

2.3. *Morphosyntactic constraints*

NO PARTICLE PIED-PIPING (NPPP)[4]

Do not pied-pipe a verbal particle. This constraint, crucial for the analysis, corresponds to the assumptions outlined in Section 2.1 that particle pied-piping must be avoided whenever possible. The constraint is violated whenever the particle accompanies the verb to a higher head position and is satisfied when it is stranded in its base position.

In addition, we will make use of constraint OBLIGATORY HEAD (OBHD) punishing empty head positions (cf. Sections 3.1.5 and 3.2 below), as well as constraints governing the placement of pronominal clitics as suggested in the literature on second-position clitics. These constraints will be introduced at the relevant stages of the discussion.

2.4. *Focus-alignment constraints, prosodic constraints*

Notice at this stage of the discussion that, since particles in verb particle constructions are stressed, they (but not, e.g., monosyllabic prepositions or German prefixes) function as phonological heads (Nespor and Vogel 1986, p. 179). For German, Wurmbrand (1998, p. 284) illustrates this property in terms of the contrast between the particle verb *UMfahren*

('knockdown') and the prefix verb *umFAHren* ('drivearound'). Here are the constraints:

FAITHFOCUS (FAITHFOC) and FOCUSPROMINENCE (FOCP)

These constraints, borrowed from Büring (2000) and Büring and Gutiérrez-Bravo (2001), state that focus must be realised (FAITHFOCUS) and that it must be prosodically most prominent (FOCP). If the nuclear accent falls on a constituent other than the focussed one or if the focussed element does not bear the nuclear accent, the corresponding candidate is ruled out. The constraints certainly draw on the large amount of previous studies that have shown that the main accent goes on the focussed constituent. It follows from this that anaphoric material cannot bear stress. Since both FAITHFOCUS and FOCP have been argued to be undominated for the languages under discussion I will only seriously consider sentences that satisfy these constraints but will list other candidates where it seems advantageous for the argumentation.

WRAP-XP and STRESS-XP

These prosodic constraints (Truckenbrodt 1995) take care of the syntax-phonology mapping, i.e., the parsing of syntactic structures into phonological phrases, and prosodic prominence. WRAP-XP states that each lexically headed XP must be contained inside a phonological phrase (Truckenbrodt 1995, p. 50), whereas STRESS-XP states that a lexically headed XP must contain a phrasal stress (Truckenbrodt 1995, p. 137).[5] The prosodic structures favoured by these constraints are illustrated in Tableau 1. I use the case of a simple transitive PVC construction (iP= intonational phrase, phonP= phonological phrase; x indicating stress).

In Table 1, the optimal candidate in (b) satisfies both WRAP-XP and STRESS-XP. The VP containing the particle verb and the nominal object is wrapped in one phonological phrase (WRAP-XP) and the object carries phrasal stress (STRESS-XP). In (a), WRAP-XP is violated by VP since there is a phonological boundary between the complex verb and its complement. A violation of STRESS-XP is illustrated in (c) where the DP object does not carry phrasal stress. Note once again that the particle serves as a phonological head.

These constraints related to phonological phrasing are complemented by alignment constraints which require prosodic heads to occur rightmost within their prosodic constituents (cf. Truckenbrodt 1995, 1999; Samek-Lodovici 2002). The constraints are illustrated along the lines of simple sentences with transitive particle verbs in Table 2 below. They

Table 1. WRAP-XP and STRESS-XP

$_{VP}$[drank up the beer]	WRAP-XP	STRESS-XP
a. (x) iP (x) (x) phonP $_{VP}$[drank up the beer]	*!	
b. ☞ optimal candidate (x) iP (x) phonP $_{VP}$[drank up the beer]		
c. (x) iP (x) phonP $_{VP}$[drank up the beer]		*!

Table 2. Alignment constraints H-P and H-I

	H-P	H-I
a. ☞ optimal candidate (x) iP (x) (x) phonP [The boys [drank up the BEER]]		
b. (x –) iP (x) (x) phonP [The BOYS [drank up the beer]]		*!
c. (x) iP (x) (x –) phonP [The boys [drank the BEER up]]	*!	

are gradient, i.e., they are violated once for every potential head position that occurs between the head and the right edge of its phrase.[6]

HEAD-P (H-P): Align (phonP, R, Head(phonP),R)

Align the right boundary of every phonological phrase (phonP) with its head.

HEAD-I (H-I): Align (iP, R, Head(iP),R)

Align the right boundary of every intonational phrase (iP) with its head.

In Table 2, the optimal candidate in (a) satisfies both H-P and H-I. The right boundaries of all phonological phrases and of the intonational phrase are aligned with their heads. Candidate (b) violates H-I since the right boundary of iP is not aligned with its head, which is *boys*. (Note

that H-I is only violated once since the head of phonP projects to iP, rendering *up* a potential head of phonP, but not of iP.) Candidate (c) violates H-P since the particle is a potential prosodic head between the real head *beer* and the right edge of its phrase. (Note that here, similar to what was said about candidate (b), the head of phonP projects to iP. *Up* is a potential head of phonP, but not iP, which is why H-I is not violated.)

The constraints employed here are summarised in (6) below:

(6)
a. NPPP: Do not pied-pipe a verbal particle.
b. ObHd: V^0 may not be empty (cf. Section 3.1.5 below).
c. FaithFocus: Focus must be realised.
d. FocP: Focus must be prosodically most prominent.
e. Wrap-XP: Each lexically headed XP must be contained inside a phonological phrase.
f. Stress-XP: Each lexically headed XP must contain a phrasal stress.
g. H-P: Align the right boundary of every phonological phrase (phonP) with its head.
h. H-I: Align the right boundary of every intonational phrase (iP) with its head.

Let us now look at the ranking of these constraints in the two languages under consideration. It has been argued in previous research (Szendrői 2001) that prosodic and syntactic constraints should be ranked as constraint blocks with respect to each other. Szendrői argues that syntax outranks prosody in English. If this were generally true, then we would expect a ranking along the lines of (7) for the constraints employed here, where the syntactic constraints ObHd and NPPP outrank all prosodic constraints (internal ranking of prosodic constraints from Samek-Lodovici 2002):

(7) (ObHd, NPPP)≫ (Stress-XP, H-P ≫ H-I, Wrap-XP)

Samek-Lodovici (2002), however, argues that the assumption that constraints must generally be ranked as blocks according to their type is incorrect. He shows for Italian and French that the rankings ultimately responsible for the analysed focus patterns require intermingling of prosodic and syntactic constraints. In particular, for the analysis of Italian it appears necessary to rank Stress-XP, H-P, and H-I above the syntactic constraint Stay, which in turn outranks Wrap-XP. For the

analysis of French, syntactic SUBJECT must outrank STRESS-XP, H-P, H-I, and WRAP-XP, which in turn outrank STAY.[7]

The present discussion of the PVC will show that an intermingling of prosodic and syntactic constraints is necessary for English, too. Crucially, WRAP-XP, H-P, and STRESS-XP must all outrank NPPP but are dominated by OBHD. The resulting ranking for English is given in (8) below and will be further motivated in Section 3.1 below.

(8) OBHD $\gg$ H-P, STRESS-XP, WRAP-XP $\gg$ **NPPP** $\gg$ H-I

In contrast, German does not require intermingling of the prosodic and syntactic constraints considered here. As will become obvious from the analysis of the German pattern, it is crucial that both OBHD and NPPP outrank all prosodic constraints. The resulting ranking is given in (9) below, argued for in Section 3.2 below.

(9) OBHD $\gg$ **NPPP** $\gg$ STRESS-XP $\gg$ H-P

We are now in the position to look at the particle verb construction in the two languages. Throughout the article, I indicate focus structure by using question-answer-pairs that make the focus position controllable. Thereby it can be assured that we are dealing with the same kind of focus structure in the languages under investigation. This has become a common method in related work (e.g., Grimshaw and Samek-Lodovici 1995; Büring 2000; Büring and Gutiérrez-Bravo 2001; Samek-Lodovici 2002). Moreover, I only consider candidates that include all elements given in the input, thus satisfying PARSE of Grimshaw and Samek-Lodovici (1998, p. 194), which holds that input constituents must be parsed and which is violated for every unparsed element in the input.[8]

3. An OT-account for particle verb constructions

3.1. English

The familiar word order alternation that is possible with PVCs in English was given in (1) above and is repeated in (10) below. It is a well-known fact that if the nominal object is realised as an unstressed pronoun the discontinuous order is obligatory (cf. (11)), but that the continuous order is allowed if the pronominal object is focussed/stressed

as in (12). The location of the nuclear accent is indicated by capital letters.

(10) a. The boys drank **up** the beer.
b. The boys drank the beer **up**.

(11) a. *The boys drank up *it*.
a′. *Weight Watchers signed up *her*.
b. The boys drank *that*/*it* up.
b′. Weight Watchers signed *her* up.

(12) a. The boys drank up THAT.
b. Weight Watchers signed up HER (not him).

The choice of the word order with full DP objects seems to be optional at first sight. However, it has been shown in the literature (Erades 1961; Bolinger 1971; Chen 1986; Dehé 2002) that the choice of word order is to a high degree determined by the focus structure of the context in which the relevant construction is embedded. The relevant data are given in (13) through (17) below.

(13) Wide focus:
(Q: What happened?)
A: [The boys drank up the BEER]$_{\text{Foc}}$

(14) VP-focus:
(Q: What did the boys do?)
A: They [drank up the BEER]$_{\text{Foc}}$

(15) Minimal object focus:
(Q: What did the boys drink up?)
A: They drank up [the BEER]$_{\text{Foc}}$

(16) Subject focus:
(Q: Who drank up the beer?)
A: [The BOYS]$_{\text{Foc}}$ drank up the beer.
A2: [The BOYS]$_{\text{Foc}}$ drank it up.

(17) V-focus:
(Q: What happened to the beer? What did the boys do with it?)
A1: They [drank]$_{\text{Foc}}$ the beer [UP]$_{\text{Foc}}$.
A2: They [drank]$_{\text{Foc}}$ it [UP]$_{\text{Foc}}$.

First, recall from Section 2.1 that the continuous word order rather than the discontinuous one is the unmarked order. In (13), the whole sentence is under focus. The continuous order is thus the preferred one in this context. The nuclear accent falls on the nominal object (i.e., on *beer*) with a prenuclear accent on the subject (Gussenhoven 1999). In (14) we have an example of VP focus, i.e., the information conveyed by the subject is given, but the complete VP presents new information. Similarly, in the case of minimal focus on the nominal object in (15) the continuous order is preferred, and accent placement is on the object noun. As opposed to (13) and (14), only the DP-object presents new information in (15). If the focus is on the subject alone as indicated in (16), once again the continuous order is preferred with full DPs as nominal objects. When a pronominal object is chosen the discontinuous order is obligatory. The nuclear accent falls on the subject, whereas the object becomes deaccented. If the focus falls on the complex verb only (cf. (17)), the discontinuous order is preferred regardless of whether or not the nominal object is a pronoun. The nuclear accent in this case falls on the particle. Note that the accent patterns corresponding to the distribution of the focus in (14), (15), and (17) have been confirmed by experimental work on accent placement in PVCs in Dehé (2001b, 2002, pp. 163ff).

Keeping this pattern and the syntactic structures as outlined in Section 2.1 in mind, let us now take a look at how the pattern in (13) through (17) and in particular the alternating word orders follow from the constraints introduced above and their ranking.

3.1.1. Wide focus

Let us first consider the case of sentence focus as given in (13) and repeated here for convenience as (18). The answer sentence in (18) is a felicitous answer to the question *What happened*?

(18) Wide focus (= Sentence Focus):
(Q: What happened?)
A: [The boys drank up the BEER]$_{\text{Foc}}$

The discontinuous alternate is given in (19).

(19) (The boys drank the BEER up)$_{\text{Foc}}$

Following previous work on phonological phrasing and WRAP-XP, I assume the phrasing as given in (20) and (21) for the continuous and discontinuous order, respectively.

(20) (x) iP
(x) (x) phonP
[The boys drank up the BEER]$_{FOC}$

(21) (x) iP
(x) (x –) phonP
[The boys drank the BEER up]$_{Foc}$

The complex verb and the nominal object are phrased within one phonological phrase (phonP) satisfying WRAP-XP. The subject forms its own phonological phrase. The two phonological phrases are then combined in a single intonational phrase (iP).

Why should the speaker prefer (18) over (19) (or (20) over (21))? The two candidates are compared in Table 3. They differ only in their performance on H-P and NPPP. Candidate (b) (= discontinuous order) violates H-P since the head of the phonP (*beer*) is not aligned with the right edge of the phonological phrase, being followed within the phonP by the particle as a potential prosodic head. Candidate (a) satisfies H-P but violates NPPP due to pied-piping of the particle. However, if NPPP is outranked by H-P, this violation does not prevent candidate (a) from being optimal. The optimal but not the suboptimal candidate in Tableau 3 violates NPPP, which means that under a ranking of the kind NPPP $\gg$ H-P the suboptimal candidate would win. This example thus provides the first piece of evidence that in English, NPPP is outranked by the prosodic constraint H-P. Further evidence comes from the examples discussed below. (Note that so far, the rank of STRESS-XP with respect to NPPP is unclear: see below.[9])

How can we make sure that the nuclear accent is placed on the object noun rather than, e.g., the verb, particle, or subject, which all belong to

Table 3. Sentence focus

	H-P	STRESS-XP	NPPP	H-I
a. ☞ optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER			*	
b. suboptimal candidate (x) iP (x) (x –) phonP The boys drank the BEER up	*!			

the focus? Consider the candidates in (22), where the nuclear accent is placed on the subject, and the candidates in (23) and (24), where the nuclear accent is placed on the verb/particle. The candidates are compared for convenience in Table 4.

(22) a. (x –) iP
(x) (x) phonP
(The BOYS) (drank up the beer.)

b. (x –) iP
(x) (x –) phonP
(The BOYS) (drank the beer up.)

(23) a. (x) iP
(x) (x – –) phonP
(The boys) (DRANK up the beer.)

b. (x) iP
(x) (x –) phonP
(The boys) (drank UP the beer.)

(24) a. (x) iP
(x) (x – –) phonP
(The boys) (DRANK the beer up)

b. (x) iP
(x) (– x) phonP
(The boys) (drank the beer UP.)

Candidates (a) and (b) in Table 4 correspond to the candidates in Table 3. Candidate (c) ∉(22a)) is harmonically bounded by the optimal candidate (a) due to its violation of H-I in addition to the NPPP violation. It can thus never be a serious competitor of (a).[10] Due to its additional violation of H-I, candidate (d) (=(22b)) is harmonically bounded by the already suboptimal candidate (b) and deserves no further discussion. Candidates (e) and (f) (=(23)) are harmonically bounded by the optimal candidate (a) as well as the suboptimal (b) and are thus predicted to be impossible across languages. (The violation of STRESS-XP is due to the absence of phrasal stress on DP *the beer*. In addition, both candidates violate H-P.) Candidate (g) (=(24a)) is the discontinuous alternate of candidate (e) (=(23a)). It is harmonically bounded by candidates (b) and (h).

This leaves us with only one interesting candidate: candidate (h) (=(24b)). H-P is satisfied: the right edge of the phonological phrase is

Table 4. Sentence focus

	H-P	STRESS-XP	NPPP	H-I
a. ☞ optimal candidate The boys drank up the BEER			*	
b. The boys drank the BEER up	*!			
c. (= (22a)) The BOYS drank up the beer			*	*!
d. (= (22b)) The BOYS drank the beer up	*!			*
e. (= (23a)) The boys DRANK up the beer	*!*	*	*	
f. (= (23b)) The boys drank UP the beer	*!	*	*	
g. (= (24a)) The boys DRANK the beer up	*!*	*		
h. (= (24b)) The boys drank the beer UP		*!		

aligned with its head. NPPP is also satisfied since the particle remains in its base position. There is a violation of STRESS-XP since *the beer* fails to receive phrasal stress. This example serves as evidence for the claim that in English, the prosodic constraint STRESS-XP must outrank the syntactic constraint NPPP. Suppose for the sake of argumentation that NPPP dominates STRESS-XP, a ranking that would follow from the hypothesis that (the complete set of) syntactic constraints must outrank (the complete set of) prosodic constraints, as suggested in Szendrői's (2001) work. Under such a ranking, candidate (h) would be the optimal candidate. I illustrate this situation in Table 5 below.

Crucially and uncontroversially, (24b) is not a felicitous answer in the given wide focus context:

(25) Q: What happened?/What's new?
A: *The boys drank the beer UP.

The problem is immediately solved if STRESS-XP outranks NPPP. It seems then that, similar to H-P, STRESS-XP must outrank NPPP in English.

Let us use this example to determine the exact rank of another prosodic constraint: that of WRAP-XP. In order to do so, we need to look at

Table 5. Sentence focus

	NPPP	STRESS-XP
a. desired optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER	*!	
h. (= (24b)) (x) iP (x) (– x) phonP The boys drank the beer UP.		*

a candidate that violates WRAP-XP but satisfies NPPP such as candidate (i) in Table 6.

Like the optimal candidate (a), candidate (i) satisfies H-P and STRESS-XP, and in addition it satisfies NPPP. It violates WRAP-XP due to the phonological boundary between the nominal object and the particle: the VP is not wrapped in one phonological phrase. With NPPP outranking WRAP-XP, candidate (i) would be optimal. However, we already know from the discussion above that the discontinuous order and nuclear accent placement on the particle is infelicitous in the given context. (Furthermore, no evidence for a prosodic boundary between the noun and the particle in the discontinuous order was found in previous studies on the intonation of the English PVC; cf. Dehé 2002). This problem is immediately solved if WRAP-XP, like STRESS-XP, outranks NPPP. Having established this ranking, candidates in all further discussions satisfy WRAP-XP.

The constraint ranking as anticipated in (8) above and repeated in (26) below is thus confirmed for English. This then confirms Samek-Lodovici's (2002) result that in order to explain focus patterns in

Table 6. Sentence focus

	H-P	STRESS-XP	NPPP	WRAP-XP
a. desired optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER			*	
i. (x) iP (x) (x)(x) phonP The boys drank the beer UP.				*

Table 7. Sentence focus

	H-P	Stress-XP	Wrap-XP	NPPP	H-I
a. ☞ optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER				*	
h. (x) iP (x) (– x) phonP The boys drank the beer UP.		*!			
i. (x) iP (x) (x) (x) phonP The boys drank the beer UP.			*!		

some languages, we must assume intermingling of constraints of different types rather than order them in blocks. The present analysis adds English to the languages in question. The crucial candidates are once again given in Table 7 under the right ranking.

(26) H-P ≫ Stress-XP, Wrap-XP, NPPP ≫ H-I

3.1.2. VP-focus

The case of VP focus (cf. (14) above, repeated here as (27)) is similar to that of sentence focus, except that all candidates with nuclear accent on the subject are ruled out by FocP. The candidates we are considering here all satisfy FocP and Wrap-XP. They are given in (28), (28a) being the optimal candidate (Table 8).

(27) VP-focus:
(Q: What did the boys do?)
A: They [drank up the BEER]$_{Foc}$

(28) VP-focus:
(Q: What did the boys do?)
a. ☞ (The boys/they) (drank up the BEER)
b. (The boys/they) (drank the BEER up)
c. (The boys/they) (DRANK up the beer)
d. (The boys/they) (DRANK the beer up)
e. (The boys/they) (drank UP the beer)
f. (The boys/they) (drank the beer UP)

Table 8. VP focus

	H-P	STRESS-XP	NPPP	H-I
a. ☞ optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER			*	
b. (x) iP (x) (x –) phonP The boys drank the BEER up.	*!			
c. (x) iP (x) (x – –) phonP The boys DRANK up the beer.	*!*	*	*	
d. (x) iP (x) (x – –) phonP The boys DRANK the beer up.	*!*	*		
e. (x) iP (x) (x –) phonP The boys drank UP the beer.	*!	*	*	
f. (x) iP (x) (x) phonP The boys drank the beer UP.		*!		

Contrary to candidates (b), (d), and (f), the optimal candidate in (a) violates NPPP. However, candidates (b) and (d) are ruled out by their violation of the higher-ranked H-P, which (d) violates twice. Additionally, candidate (d) violates STRESS-XP. Candidate (f) is ruled out due to the performance on STRESS-XP. Due to their violations of H-P and STRESS-XP in addition to NPPP, candidates (c) and (e) are harmonically bounded by candidate (a), i.e., predicted to be universally impossible.

Note that under the assumption that there are additional candidates treating the whole clause as one phonological phrase, which seems perfectly possible, in particular if the subject is a pronoun, the continuous order is still optimal. The corresponding discontinuous candidate with main stress on the object – $((\text{They drank the BEER up})_{\text{phonP}})_{\text{iP}}$ – loses on H-P, the discontinuous candidate with stress on the particle loses on STRESS-XP. Both constraints outrank NPPP. Naturally, this also holds for minimal object focus.

3.1.3. Minimal object focus

Suppose now that the focus is on the object-DP as shown in (29). Is there any crucial difference as compared to the case of VP focus?

Table 9. Minimal object focus

	H-P	STRESS-XP	NPPP	H-I
a. ☞ optimal candidate (x) iP (x) (x) phonP The boys drank up the BEER			*	
b. (x) iP (x) (x –) phonP The boys drank the BEER up.	*!			

(29) Minimal object focus:
(Q: What did the boys drink up?)
A: They drank up [the BEER]$_{Foc}$

Object focus differs from the previous cases in that all candidates that do not realise the nuclear accent on the nominal object fail to satisfy FocP and are thus ruled out. This leaves us with only two critical candidates, i.e., the continuous order with accent placement on *beer* as in (29) and the corresponding discontinuous order. The two candidates are compared in Table 9. Crucially, candidate (b) violates H-P since it fails to align the right boundary of the phonological phrase with its head. The phonological head is *beer,* which is followed within the phonological phrase by another potential head: the particle *up*.

3.1.4. Subject focus

Now consider the case of subject focus as repeated in (30). We will address two options. In the first case, the nominal object is realised by a full DP (cf. (30a)) and occurs in the continuous order; in the second case, we have an object pronoun (cf. (30b)) and the discontinuous order is obligatory.

(30) Subject focus:
(Q: Who drank up the beer?)
a. [The BOYS]$_{Foc}$ drank up the beer.
b. [The BOYS]$_{Foc}$ drank it up.

In the first case, the analysis is straightforward. All candidates that display nuclear accent placement on any other element than the subject violate FocP and are thus ruled out. This leaves us with the three candidates given in Table 10 below, candidate (a) being optimal.

Table 10. Subject focus, full DP object

	H-P	STRESS-XP	NPPP	H-I
a. ☞ optimal candidate (x –) iP (x) (x) phonP The BOYS drank up the beer			*	*
b. (x –) iP (x) (x –) phonP The BOYS drank the beer up.	*!			*
c. (x –) iP (x) (x) phonP The BOYS drank the beer up.		*!		*

All candidates violate H-I since the head of iP fails to be aligned with its right edge. Candidate (a) violates NPPP. However, each of the remaining candidates crucially violates one of the higher-ranked prosodic constraints. Candidate (b) violates H-P since the right edge of the phonological phrase and its head are separated by the particle. Candidate (c) is outperformed on STRESS-XP, which it violates since the object DP fails to receive phrasal stress.

The case of the pronominal object requires more attention. It has been argued in the literature that object pronouns in English must be analysed as clitics, just as their Romance counterparts (cf., e.g., Chomsky 1995, p. 338; Ladd 1996, pp. 180, 226f; Uriagereka 1998, p. 219). Therefore, it was argued in Dehé (2002, pp. 268ff) that object pronouns in English particle verb constructions such as *it* in (30b) above are cliticised to the preceding verb. The clitic host must be the simplex rather than the complex verb, an assumption that Dehé (2002) based on subtleties of the analysis of the internal structure of the complex verb. As a matter of fact, pronominal objects obligatorily occur between the verb and the particle in English unless they are focussed. In the case of subject focus, this yields a difference in word order between the structure involving a full DP object and that displaying a pronominal object. However, under the assumption that the pronominal object is a clitic, its placement between the verb and the particle follows straightforwardly, given the following constraints that have been suggested for clitic placement (cf., e.g., Anderson 1996, 2000; Legendre 2000; and related work).[11]

EDGEMOST (e, E, D), NON-INITIAL (e, D)

EDGEMOST (e, E, D) states that element e should appear as close to the edge E (left or right) of a domain D as possible. EDGEMOST is gradient in that it is violated once for every single element that occurs between the relevant element (e.g., the clitic) and the specified edge of the relevant domain. The conflicting constraint is NON-INITIAL (e, D), which demands that element e does not occur at the edge of domain D. There is an interaction between the two constraints such that the following holds: if EDGEMOST dominates NON-INITIAL for a given domain, then the relevant element (e.g., a clitic) may occur right at the defined edge of that domain. If NON-INITIAL dominates EDGEMOST, however, then the relevant element will not occur right at the edge of the given domain but will be preceded by (an)other syntactic element(s).

Returning to the discussion of pronoun placement in PVCs, three critical candidates will be compared. (31a) shows the optimal candidate with the pronominal object positioned between verb and particle. In (31b) the ungrammatical word order is given: a non-focussed pronominal object is not allowed in the position following the complex verb. In ungrammatical (31c) the clitic occurs as close to the relevant edge as possible.

(31) Subject focus:
(Q: Who drank up the beer?)
a. ☞ [The BOYS]$_{Foc}$ drank it up.
b. *[The BOYS]$_{Foc}$ drank up it.
c. *[The BOYS]$_{Foc}$ it drank up.

Let us take a look at how we can account for the placement of the pronoun. The situation is illustrated in Table 11. For the moment, we neglect the prosodic constraints and concentrate instead on the constraints governing clitic placement.

The ranking as suggested by Anderson and Legendre is given in Table 11. NON-INITIAL outranks EDGEMOST. Suppose that the crucial edge here is VP since in English, object clitics do not attach to higher constituents. In order to satisfy NON-INITIAL, the clitic will not precede the verb (cf. candidate (c)). However, we know that the particle verb in English can be separated by a nominal object. Moreover, the particle itself is a potential prosodic head. In this sense, the particle verb does not function as an inseparable (prosodic) unit – a fact that distinguishes PVCs, e.g., from prefix verbs where the prefix cannot function as a prosodic head and where prefix and verb thus cannot be separated by another element. Crucially then, the ungrammatical continuous

Table 11. Subject focus, pronominal object

	NON-INITIAL	$\text{EDGEMOST}_{\text{CL,VP, L}}$
a. ☞ optimal candidate The BOYS drank it up.		*
b. *The BOYS drank up it.		**!
c. *The BOYS it drank up.	*!	

candidate (b) in Table 11 violates EDGEMOST twice, once by the verb *drank*, which precedes the clitic, and, more important, by the particle, which also occurs before the clitic pronoun. The optimal candidate (a), on the other hand, violates EDGEMOST only once in order to satisfy NON-INITIAL. Only the verb but not the particle occurs between the left edge of the relevant domain (VP) and the clitic *it*.

Crucially, the desired result also follows naturally from the constraint interaction that we employed in the previous sections. Consider Table 12 below for illustration.

As regards the phonological pattern, the pronominal object is phonologically weak, i.e., it cannot serve as a potential prosodic head. If we can neglect the pronoun for this reason, then it does not play any role for the prosodic constraints, which means that the two candidates perform alike on both H-P and STRESS-XP (and also on H-I). Crucially then, candidate (a) outperforms candidate (b) on NPPP, which punishes candidate (b) for particle pied-piping. It therefore follows quite straightforwardly and without additional assumptions from the constraints introduced above that unfocused pronominal objects must occur in the discontinuous order.

It also follows immediately that a focussed – and thus unreduced – pronoun appears in the continuous order just like any other focussed DP (*The school threw out ME, not HIM*) but appears to be marked according to my informants in the discontinuous order (*The school threw ME out, not HIM*).[12]

Table 12. Subject focus, pronominal object

	H-P	STRESS-XP	NPPP
a. ☞ optimal candidate The BOYS drank it up.			
b. The BOYS drank up it.			*!

3.1.5. V-focus

Now consider the pattern in (32). If the verb, but neither subject nor object is focussed, we typically get the discontinuous construction with the particle occurring in the final position and bearing the nuclear accent (whereas the main accent goes on the verb in the case of simplex verbs).

(32) V-focus:
(Q: What happened to the beer? What did the boys do with it?)
A1: They [drank]$_{\text{Foc}}$ the beer [UP]$_{\text{Foc}}$
A2: They [drank]$_{\text{Foc}}$ it [UP]$_{\text{Foc}}$
A3: They [DRANK]$_{\text{Foc}}$ the beer
A4: They [DRANK]$_{\text{Foc}}$ it

Let me first look at A1, i.e., the particle verb construction with a full DP object. I will compare four candidates, which are given in (33).

(33) (Q: What happened to the beer? What did the boys do with it?)
a. ☞ They [drank]$_{\text{Foc}}$ the beer [UP]$_{\text{Foc}}$
b. They [drank UP]$_{\text{Foc}}$ the beer
c. They [DRANK]$_{\text{Foc}}$ the beer [up]$_{\text{Foc}}$
d. They [DRANK up]$_{\text{Foc}}$ the beer

The four candidates are compared in Table 13 below. Candidates with accent placement on any other element are ruled out immediately by FocP. Notice that this includes all candidates satisfying STRESS-XP. All remaining candidates violate STRESS-XP since the DP *the beer* is deaccented due to the given focus structure. Crucially, candidates (b), (c), and (d) are all harmonically bounded by the optimal candidate and need not be discussed further.[13]

The status of (32A2) as the optimal candidate with pronominal object follows immediately, as seen in Table 14. Here, none of the candidates violate STRESS-XP because the pronoun does not function as a potential prosodic head. However, the particle does, so that accent placement on *drank* results in a violation of H-P. In addition, the continuous order violates NPPP. Candidate (a) will be optimal under any ranking.

The reader can easily verify that the optimal status of candidate (a) in Table 14 also follows from the ranking of the constraints governing clitic placement, for reasons similar to what has been argued for (31) above.

This leaves us with the simplex verbs in (32A3) (*They* DRANK *the beer*) and (32A4) (*They* DRANK *it*). Why should we be bothered with these simple sentences in a study on particle verbs? (32A3) and (32A4), as

Table 13. V-focus, full DP

	H-P	STRESS-XP	NPPP
a. ☞ optimal candidate They drank the beer UP		*	
b. They drank UP the beer	*!	*	*
c. They DRANK the beer up	*!*	*	
d. They DRANK up the beer	*!*	*	*

Table 14. V-focus, pronominal object

	H-P	STRESS-XP	NPPP
a. ☞ optimal candidate They drank it UP			
b. They drank UP it			*!
c. They DRANK it up	*!		
d. They DRANK up it	*!		*

felicitous answers in the given context are interesting, because here, but not in the case of the PVC, the verb (*drank*) carries the main accent. We saw above that accent placement on the verb was ruled out in the case of the particle verb. Why should (32A3) and (32A4) then be the optimal candidates in the case of simplex verbs? The obvious answer seems to be ''because there is no particle that can be stressed''. This is of course true. However, both (32A3) and (32A4) do violate H-P (and (32A3) violates STRESS-XP), so there must be a higher ranked constraint that is responsible for the pattern found here that has so far been ignored. Consider the candidates in (34) and the corresponding comparisons in Tables 15 and 16. Due to the lack of a particle, NPPP is vacuously satisfied in all sentences.

(34) V-focus, simplex verb:
(Q: What happened to the beer? What did the boys do with it?)
a. ☞ They $[\text{DRANK}]_{\text{Foc}}$ the beer/it.
b. They $[\text{drank}]_{\text{Foc}}$ the BEER.
c. They the beer $[\text{DRANK}]_{\text{Foc}}$
d. They the BEER $[\text{drank}]_{\text{Foc}}$

Table 15. V-focus, simplex V, full DP, constraints considered so far

	FocP	H-P	Stress-XP
a. desired optimal candidate They DRANK the beer		*	*
c. They the beer DRANK			*

As before, all candidates displaying accent on the object noun are immediately ruled out by FocP which leaves us with candidates (a) and (c).

In Table 15, it seems as if candidate (c) rather than candidate (a) is optimal. As it stands, candidate (a) is harmonically bounded by candidate (c). They both violate Stress-XP, but in addition, candidate (a) also violates H-P due to the position of the potential phonological head *beer* between the real head *drank* and the edge of its phrase. Candidate (c) satisfies this constraint since the head *drank* is positioned at the edge of its phrase. Therefore, candidate (a) is not even a serious competitor but should be considered universally impossible under the given constraints.

However, candidate (c) is clearly ungrammatical, as is any simple sentence in which the object precedes the verb. This is due to a violation of the higher ranking phrase structure constraint Obligatory Heads (ObHd). I follow Vikner's (2001a, pp. 430, 432) version of this constraint (but cf. also Grimshaw 1997). ObHd states that an X^0 may not be empty, where empty means that X^0 either has only abstract features or is radically empty. A head containing a trace is thus not empty. Vikner (2001a, p. 432) further notes that X-bar theory forces the existence of a head whenever the relevant specifier position is filled. For example, since the subject must move to the specifier of a functional projection for Case reasons, the corresponding projection must have a head that, according to ObHd, must be filled by either a trace or a lexical head. Note that, if the relevant head is not adequately filled, this does not mean that its projection does not conform to X-bar theory since the head does contain abstract features (e.g., Case-assigning features).

Let us now return to the ungrammatical candidate (c) (cf. Table 16). The nominal object *the beer* has undergone movement across the verb, whereas the verb remains in its base position. Under the assumptions outlined in Sections 2.1 and 2.3 above, this results in a structure with two empty head positions within the extended VP: $AgrO^0$ and v^0. ObHd

Table 16. V-focus, simplex V, full DP

	ObHd	H-P	StressXP
a. ☞optimal candidate x –)phonP They $_{vP}$[t_{Subj} DRANK $_{AgrOP}$[the beer t_{verb} $_{vP}$[t_V t_{Obj}]]]		*	*
c. x)phonP They$_I$ $_{vP}$[t_I **e** $_{AgrOP}$[the beer$_k$ **e** $_{vP}$[DRANK t_k]]]	*!*		*

is thus violated twice. As regards candidate (a), the verb moves to v^0, thus satisfying ObHd.

A similar result is obtained if we replace the full DP object with a pronominal object. The difference between the particle verb and the simplex verb with respect to accent placement thus follows straightforwardly and without additional assumptions from the familiar constraints and their ranking.

To sum up this section on English, we can say that the focus sensitivity of transitive PVCs in English and the resulting word order alternation, as well as the specific status that PVCs have as opposed to simplex verbs, can be explained in terms of the interaction between syntactic and prosodic constraints and their ranking. In particular, the pattern is possible due to the intermingling of prosodic and syntactic constraints as opposed to a strict hierarchy between constraint types, and in particular the relative power of some prosodic constraints in relation to the syntactic constraint NPPP. Let us now move on to German, which displays stricter word order that follows from the higher rank of NPPP, on top of the prosodic constraints considered here.

3.2. German

For German, we will be mainly concerned with finite main clauses. Recall from Section 1 that in finite main clauses lacking an auxiliary, the main verb raises from its clause-final position to the position preceding the direct object, stranding the particle in the final position. Verb raising in these examples is due to the fact that German is a V2 language, which means that in main clauses without auxiliaries, the finite verb is preceded by exactly one phrase, which is the subject in our examples. In OT analyses of this phenomenon, movement of the finite verb to the second position has been argued to be due to the power of the constraint ObHd (e.g., Vikner 2001a). However,

although the particle starts off as part of the complex verb, it is obligatorily separated from the finite verb and is bound to its position (cf. (2) above and (35) below).

(35) German
a. *Sie **ab**sagten das Konzert.
They off.said the concert
b. Sie sagten das Konzert **ab**.
They said the concert off.
c. $_{CP/IP}$[Sie$_m$ $_{C'/I'}$[sagten$_i$ $_{VP}$[t$_m$ $_{V'}$[das Konzert $_V$[**ab** t$_i$]]]]]
'They called off the concert.'

Why should this happen, i.e., why is it impossible for the particle to accompany the verb? Let me first illustrate the focus structures parallel to those given for English in (13) through (17) above:

(36) Wide focus:
(Q: Was ist passiert? 'What happened?')
A: [Die Veranstalter sagten das KonZERT ab.]$_{Foc}$
The organisers said the concert off
'The organisers called off the concert.'

(37) VP-focus:
(Q: Was haben die Veranstalter gemacht? 'What did the organisers do?')
A: Die Veranstalter/Sie [sagten das KonZERT ab.]$_{Foc}$
The organisers/they said the concert off

(38) Minimal focus:
(Q: Was haben die Veranstalter abgesagt? 'What did the organisers call off?')
A: Sie sagten [das KonZERT]$_{Foc}$ ab.
They said the concert off

(39) Subject focus:
(Q: Wer hat das Konzert abgesagt? 'Who called off the concert?')
A: [Die VerANstalter]$_{Foc}$ sagten das Konzert/es ab.
The organisers said the concert/it off

(40) V-focus:
(Q: Wieso findet das Konzert nicht statt? Was haben die Veranstalter gemacht? 'Why doesn't the concert take place? What did the organisers do?')
A: Die Veranstalter/Sie [sagten]$_{Foc}$ das Konzert/es [AB]$_{Foc}$
The organisers/they said the concert off

The nuclear accent is on the nominal object in the cases of wide focus, VP-focus, and minimal object focus, on the subject noun in the case of subject focus, and on the particle in the case of V-focus. Following Truckenbrodt (1995) and Samek-Lodovici (2002), I assume the following phonological phrasing for the case of wide focus in (36) (and accordingly for the cases of VP-focus and minimal focus), thus satisfying WRAP-XP and STRESS-XP:

(41) (x) iP
(x) (x –) phonP
Die Veranstalter sagten das KonZERT ab.
The organisers said the concert off
'The organisers called off the concert.'

Crucially, the different focus structures do not induce a change in word order. This fact seems to indicate that the prosodic alignment constraints, H-P in particular, must be lower ranked than in English, since the relative power of the prosodic constraints was responsible for the choice of the word order in English, where we observed alternating particle positions depending on the focus structure and corresponding accent patterns. Consider the cases of VP-focus and V-focus as an illustration. In English, the element bearing the nuclear accent as the focus exponent is aligned with the right edge of its phonological phrase. This is true for the nominal object in the case of VP-focus, inducing the continuous word order, and for the particle in the case of V-focus, inducing the discontinuous word order. German word order, on the other hand, is not sensitive to focus structures (cf. (37) and (40)) and related accent patterns. The location of the focus is thus indicated by the placement of the accent alone, rather than by means of particle or object position, which also means that the main accent is not necessarily rightmost in the relevant domain. This pattern suggests that in German the syntactic constraints examined here outrank prosodic constraints such as H-P (but note that the winning candidate must satisfy FOCP).

Consider now the critical candidates in Tables 17 and 18 below, corresponding to the examples of VP-focus and V-focus in (37) and (40),

respectively; additional candidates considered. The ranking given here for the prosodic constraints corresponds to that suggested by Samek-Lodovici (2002) in his analysis of the complement/adjunct-asymmetry in German. As will become clear directly, it is confirmed by the PVC. It will also be directly obvious that NPPP must outrank all prosodic constraints in German.

Crucially, the optimal candidate (a) in Table 17 outperforms candidate (b) on NPPP, which (b) violates due to particle pied-piping. In the optimal candidate, the main verb moves alone to the higher head position, whereas the particle is stranded in the base position in order to satisfy NPPP. Candidate (c) satisfies NPPP since the complex verb remains in the position following the object; thus neither of the parts move. However, this candidate is harmonically bounded by the optimal candidate. (The violation of ObHd is due to the following situation: Under the common assumption that the VP is dominated by a functional projection in whose specifier the subject is eventually situated, the head position of this projection must be filled by a trace or a lexical head in order to satisfy ObHd (cf. Section 3.1.5 above). In candidates (a) and (b), this position is filled by the verb; in (c) it is empty.) Candidate (d) is included here since it satisfies both the syntactic constraints ObHd and NPPP and since the main accent is within the focus domain, which is VP. However, Stress-XP is violated, confirming that Stress-XP outranks H-P in German. As opposed to English, NPPP must clearly outrank the prosodic constraints. Were it outranked by H-P as in

Table 17. VP-focus, finite main clause

	ObHd	NPPP	Stress-XP	H-P
a. ☞ optimal candidate (x) (x) (x) Die Veranstalter sagten das KonZERT ab.				*
b. (x) (x) (x) Die Veranstalter absagten das KonZERT.		*!		
c. (x) (x) (x) Die Veranstalter das KonZERT absagten.	*!			*
d. (x) (x) (x) Die Veranstalter sagten das Konzert AB.			*!	

Table 18. V-focus, finite main clause

	ObHd	NPPP	Stress-XP	H-P
a. ☞ optimal candidate (x) (x)(x) Die Veranstalter sagten das Konzert AB.			*	
b. (x) (x) (x –) Die Veranstalter ABsagten das Konzert.		*!	*	*
c. (x) (x) (x) Die Veranstalter das Konzert ABsagten.	*!		*	

English, the clearly ungrammatical candidate (b) (*Die Veranstalter absagten das KonZERT*) favouring particle pied-piping would be optimal.

Now consider the case of V-focus in Table 18. All candidates considered here have their main accent on the particle as the focus exponent. Recall from Section 2.4 that the particle always functions as the phonological head of the complex PV. Candidates with accent placement on any other constituent than the particle (verb) are outperformed on FocP.

Crucially, candidates (b) and (c) are harmonically bounded by the optimal candidate. All candidates violate Stress-XP since the nominal object does not receive phrasal stress. However, candidate (b) also violates NPPP due to particle pied-piping and H-P. Candidate (c) violates ObHd. What we can see from these data is that in German, as opposed to English, the prosodic constraints do not play any crucial role as far as word order is concerned. The word order is determined solely by the syntactic constraints. The prosodic constraints, FocP and Stress-XP in particular, serve to control the location of the nuclear accent.

A brief look at minimal object focus (as in (38)) and subject focus (cf. (39)) reveals no surprises. The case of minimal object focus behaves pretty much in the same way as VP-focus, with only candidates with accent placement on the object noun satisfying FocP. The optimal candidate (*Sie sagten das KonZERT ab*) violates only the low-ranked H-P due to the unstressed particle at the right edge of the phonological phrase. The optimal candidate in the case of subject focus (*Die VerANstalter sagten das Konzert/es ab*) violates H-I, due to potential phonological heads between the right edge of the intonational phrase and its head, and also H-P, since the particle receives no stress, but satisfies the higher ranked syntactic constraints NPPP and ObHd.

In sentences containing an auxiliary, the particle appears in its prefix-like position (cf. (42) and (43) below for VP-focus and V-focus, respectively).

(42) VP-focus:
(Q: Was haben die Veranstalter gemacht? 'What did the organisers do?')
a. Die Veranstalter [haben das KonZERT abgesagt.]$_{Foc}$
b. *Die Veranstalter [haben das Konzert ABgesagt.]$_{Foc}$
The organisers have the concert off.said

(43) V-focus:
(Q: Wieso findet das Konzert nicht statt? Was haben die Veranstalter gemacht?)
A: Die Veranstalter/Sie haben das Konzert/es [ABgesagt]$_{Foc}$
The organisers/they have the concert/it off.said

Once again the word order is insensitive to focus structure (this is also true for wide focus, minimal object focus, and subject focus). The location of the focus is, as above, indicated by the placement of the accent alone. Also as above, the accent falls on the object noun (*Konzert*) in the case of VP-focus (and wide focus, object focus) and on the particle in the case of V-focus. In terms of constraints, accent placement follows the same pattern as in Tables 17 and 18 above. Both the main verb and the particle stay in the base position within the VP. OBHD is satisfied by all candidates by the auxiliary *haben* 'have', which surfaces in the head position of the functional layer. NPPP is satisfied for all relevant candidates because there is no verb-movement in the first place and thus no pied-piping of the particle. In the case of VP-focus, accent placement on the particle (verb) is ruled out by STRESS-XP, which dominates H-P (cf. (42b) above).

Crucially, the differences between German and English with regard to the placement of the particle in relation to the object can thus be explained by the constraint NPPP that punishes particle pied-piping and its rank in relation to prosodic constraints governing the position of the nuclear accent.

4. Summary and conclusion

In the preceding sections I have presented an OT analysis of the transitive PVC that accounts for the variation between English and German. English allows both the word order in which the particle is adjacent to

the verb (continuous order) and the discontinuous order in which the particle follows the nominal object. The choice of the order is dependent on the focus structure of the sentence, favoring the continuous order whenever possible, i.e., in all cases except verb focus and in cases involving an unstressed pronominal object. In German, on the other hand, the particle can never follow the verb to the position preceding the nominal object, regardless of the focus structure at hand. I have shown that this difference in behaviour is independent of the fact that German but not English is a V2 language. Rather, it can be explained in terms of the interaction of syntactic and prosodic constraints and their ranking. NoParticlePiedPiping (NPPP) was introduced as the crucial constraint governing particle placement. It is violated whenever the particle leaves its base position to follow the verb to a higher position. Crucially, in English NPPP is outranked by some of the prosodic constraints under discussion. In order to satisfy H-P and Stress-XP and to realise rightmost stress the particle is forced to pied-pipe. Only if the complex verb alone is under focus can the particle remain in its base position, once again due to the power of the prosodic constraints favoring rightmost stress. Due to this ranking, the English PVC is sensitive to focus structure as related to stress placement.

This outcome is related to Reinhart's (1995) results with respect to scrambling: word order is determined by prosody in the sense that focused elements are generated in positions to which stress is assigned, whereas unfocused, anaphoric constituents occur in positions that do not receive stress. As opposed to English, German must strand the particle whenever the verb moves due to the high rank of NPPP above all prosodic constraints considered here. Focus structure is thus realised by accent placement alone, the syntactic structure remains the same across focus patterns. For the PVC, it is thus the rank of the constraint NPPP with respect to the prosodic constraints discussed here that determines whether or not a given language allows for word order variation according to focus structure. The language-specific rankings account for the fact that the English, but not the German, PVC displays word order alternation. In other words, the impact of the prosodic constraints and the relative weakness of NPPP account for the alternation in English, whereas in German the fact that NPPP outranks both Stress-XP and H-P accounts for the absence of alternation. As follows from the analysis, the choice of the actual word order is by no means optional, as has often been claimed in the literature on the English PVC. The syntax of the English PVC is sensitive to focus patterns, whereas it holds for the German PVC that focus cannot influence word order.

Notice that the constraint NPPP and its relative impact also follow from Grimshaw's (2001) work on the economy of structure. Grimshaw (2001, p. 1) argues that "any projection in which movement occurs violates at least one more constraint than the otherwise identical projection with an unfilled position". Syntactic movement is thus punished and therefore only possible if required by further constraints. NPPP fits into this theory. It punishes movement of the particle, which is therefore only possible if required by some higher ranked constraint. In English, requirements of the given prosodic constraints can force particle movement, whereas this is impossible in German. In other words, English but not German favors some extra structure in order to fulfil prosodic requirements.

The present account of the word order alternation possible in English is superior to previous analyses in the Government and Binding or minimalist framework in that it can do without additional assumptions and/or constraint modification that previous approaches have been forced to assume due to the fact that constraints in these frameworks are inviolable. An example of corrective work in this sense is the *Condition on Focus Domains* (Dehé 2002, Chapter 5.3.2), which holds that within a focus domain, a positively specified focus feature ([+F]) must be bound by "some kind of verbal affix" iff there is a mismatch with regard to focus feature specification within the relevant domain. [+F] can be bound by the particle in PVCs, or by a silent affix in the case of simplex verbs. Other attempts to explain the alternation are forced to make use of optional categorial feature specification of the particle ([+N] or [+V] (Nicol 2002), optional feature strength (Koizumi 1993), and the like. By contrast, in the analysis of the PVC suggested here, the word order pattern and also the difference between particle verbs and simplex verbs as regards accent placement follow naturally from the given constraints, the intermingling of constraints of different nature, and their ranking.

The OT analysis presented here furthermore supports the hypothesis put forward by Samek-Lodovici (2002) that, in order to account for focus patterns, intermingling of prosodic and syntactic constraints is necessary in certain languages. It challenges the idea presented by Szendrői (2001) that constraints are organised in blocks according to their nature and that complete modules of the grammar must be ranked with respect to each other. Remember that Szendrői suggested that in English syntax outranks prosody.

In this respect, a remark is due concerning the issue of modularity. Constraint intermingling of the kind suggested here seems to challenge

modularity and the autonomy of syntax. However, I argue that this is not the case. All candidates are created in GEN on purely syntactic grounds according to X-bar theory before they are evaluated in terms of both syntactic and prosodic constraints. More important, modularity applies to the very nature of the constraints which are either purely phonological or purely syntactic. No constraint can ever combine principles or conditions from more than one module. Modularity is thus a property of constraint definitions rather than a property of constraint hierarchies. Intermingling of constraints of different nature does, however, imply a certain mutual relationship between the modules of syntax and phonology as compared to a one way relationship which maps syntactic structures onto phonological structures, but this idea has also been argued for in previous work on the syntax phonology interface (e.g., Zec and Inkelas 1990). There is strong evidence from the phenomenon investigated above and also from the work on French and Italian presented by Samek-Lodovici (2002) that constraint intermingling is indeed necessary and that disallowing this kind of interaction eliminates solutions that otherwise follow naturally. Modularity as such is however not affected by this assumption.

One final note: As regards the PVC, the present approach is promising with respect to the development of a universal analysis to the construction challenging the high number of language specific suggestions that have been made in the literature on the topic so far. If the differences between English and German can be reduced to the ranking of a set of given constraints, and in particular to the rank of NPPP, then the analysis can also be extended to other Germanic languages displaying particle verbs. Since the crucial syntactic constraint in this respect, NPPP, is motivated independently, the analysis should not interfere with matters related to the V2 nature of many languages displaying particle verbs.

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Notes

[1] Cf. also Zeller (2002), who suggests that particle verbs can occur as either syntactic verb + complement projections or morphological V^0 structures, the latter structure being derived from the former by reanalysis.

[2] Vikner (2001b) argues that three constraints related to directionality are relevant to derive the difference between VO/OV: (i) X^0-LEFT is violated by any head that is to the right of its XP-sister; (ii) PRED(ICATE)-RIGHT is violated by any V^0 or A^0 that is to the left of its XP-sister; (iii) X^0-RIGHT is violated by any head that is to the left of its XP-sister. Crucially here, the difference between English as VO and German as OV is due to the different ranking between X^0-LEFT and PRED-RIGHT. Under a ranking where X^0-LEFT dominates PRED-RIGHT, VO order is favored. The opposite ranking derives the OV order. These constraints are outranked by OBLIGATORY HEAD (which requires a head position to be filled; see below), which is why in German main clauses the finite verb precedes its complement. All tableaux below presuppose the language-specific ranking of the directionality constraints. Vikner (2001b) further assumes that only lexical heads have this option as to their position with respect to their complements. All functional heads are universally to the left of their complements.

[3] Haider (in press and previous work) argues that VP shell structures are an ''immediate corollary'' of three axioms: (i) projections are endocentric, (ii) heads license their complements directionally, and (iii) projections are universally right branching. In a left-headed structure, directional merger of X′ with a second complement would result in a left-branching structure, violating the third axiom. Therefore, the VP shell structure is required. In a right-headed projection such as the German VP, on the other hand, a VP shell structure is not required since licensing or merger to the left is consistent with (iii).

[4] Originally, I had STAY (Grimshaw 1997) in mind. However, it turned out to be problematic. I am grateful to Sten Vikner (at the ZAS Workshop, May 2003) and an anonymous reviewer of an earlier version of this article for discussion and comments that led to the assumption of NO PARTICLE PIED-PIPING instead of STAY.

[5] The formal definition of WRAP-XP (from Truckenbrodt 1995, p. 50) is: WRAP-XP: For every XP, XP a projection of a lexical category, there is a phonological phrase Ø such that all terminal elements that are dominated by XP are also dominated by Ø.

[6] The third constraint in this list is HEAD-U, which states that the right boundary of every utterance phrase (U) is aligned with its head. In the analysis below, however, I do not consider utterances that contain more than one intonational phrase.

[7] SUBJECT requires that the Spec of IP or any relevant functional subject position must be filled (Grimshaw and Samek-Lodovici 1995; Grimshaw 1997; Samek-Lodovici 2001, 2002). STAY (''No traces'') punishes each step of movement (Grimshaw 1997).

[8] Note that all candidates under consideration also satisfy SUBJECT since the grammars of the languages considered here all require an overt subject. SUBJECT must therefore be highly ranked.

[9] The reader may wonder whether VP violates STRESS-XP because unstressed *up* is the only remaining element within VP. Note, however, that here and throughout the discussion, I consider *v*P (the extended projection of VP), rather than VP alone the relevant XP in terms of STRESS-XP (and also WRAP-XP). STRESS-XP is thus satisfied whenever there is a phrasal stress within the immediate *v*P (WRAP-XP is satisfied whenever *v*P is wrapped in one phonological phrase). This seems reasonable since there is no other lexical head within *v*P.

[10] *Harmonic bounding:* A candidate C1 is harmonically bounded (h-bounded) by another candidate C2 when C1 performs alike or worse than C2 on every constraint and strictly worse on at least one constraint. C1 can then never be optimal under any ranking. In the example above, candidate (c) is h-bounded by candidate (a) since they behave alike on H-P, STRESS-XP, and NPPP, but candidate (c) behaves worse on H-I. It violates H-I since the intonational phrase is left-aligned rather than right-aligned with its head. (On *Harmonic Bounding*, cf. Prince and Smolensky 1993 and also McCarthy 2002, p. 23.)

[11] The work mentioned here draws on the treatment of clitics as suggested in Anderson's (1992 and subsequent) work. The positioning of clitics is investigated for languages such as Bulgarian and Serbo-Croatian, among others.

[12] It remains to be seen whether this explanation of pronoun placement applies to Scandinavian object shift too. Object shift displays a number of striking similarities to the phenomenon at hand, e.g., (i) a pronominal object raises obligatorily unless it is focussed; (ii) raising of a full DP object is syntactically optional but requires a presuppositional interpretation of the shifted phrase; and (iii) heavy/focussed DPs are preferred in the rightmost position (Svenonius 1996b, p. 62). It has also been shown, however, that the preposing of the object in discontinuous PVCs in English is not a type of object shift (Svenonius 1996b; Olsen 1997; Dehé 2002, pp. 231ff).

[13] A reviewer notes that V-focus relies on the premise that the particle is part of the verbal head, since otherwise (e.g., if it was head of a separate PP) the optimal candidate could not put stress solely on the particle (rather than the verb and the particle) and still satisfy FAITHFOC. I take this as further evidence for the complex head approach rather than a serious challenge, based on the facts (i) that there are convincing syntactic arguments against the PP-analysis (cf. Olsen 2000) and (ii) that it has been shown that stress can indeed be placed on the particle alone under this focus structure (cf. Dehé 2002 for experimental evidence and references given there).

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