ENGLISH VERB-PARTICLE CONSTRUCTIONS AND A V0-INTERNAL STRUCTURE

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The purpose of this paper is to present a syntactic and morphological analysis of English verb-particle constructions. We classify them into three types: the pure idiom type, the simple combination type, and the hybrid idiom type. For all three, we propose that V0 contains a domain where both morphological and syntactic rules can apply. In the first type, a verb and a particle form a complex verb, and the verbal portion can be overtly excorporated from within the V0-internal domain of the verb. In the second and third types, a particle can be overtly incorporated into the domain of a verb.*

Keywords: verb-particle constructions, lexical integrity, syntax and morphology, incorporation, excorporation

1. Introduction

In the literature, it has been noted that the so-called verb-particle constructions (henceforth, VPCs, for expository convenience) have some degrees of retention of the inherent properties of a verb and a particle.1 In (1), for example, the selectional property of the verb throw is retained: throw still selects an object DP, even if the particle out is added. The motional meaning of out is also retained.

* This is a revised version of the paper read at the 68th General Meeting of The English Literary Society of Japan held at Rissho University on May 25, 1996. I would like to thank Hirozo Nakano, Masachiyo Amano, Yasuo Ishii, Yoshinobu Niwa, Shosuke Haraguchi, Masayuki Ike-uchi, Tatsuya Suzuki, Kohichiro Hamasaki, Masayuki Ohkado, Hiroshi Terada, Tomoyuki Tanaka, Mitsuru Maeda, Mitsuhiro Ohmura, Eiko Mizuno, and two anonymous EL reviewers for their invaluable comments and suggestions on earlier versions of this paper. I am also grateful to Daniel Dunkley for suggesting stylistic improvements. Needless to say, all remaining inadequacies are my own.

1 For the definition of particles, I follow Bolinger (1971: 15–16, 61, 85).
(1) Climb into the hole and throw the ball out, will you?
As for the idiomatic combination give in (‘to yield’) in cases like (2),
however, the verb give never takes double objects after the idiom
formation, and the original meaning of the particle in is neglected.
(2) The two men fought until one gave in.
Furthermore, in the idiomatic combination carry out (‘to perform’) in
cases like (3), the selectional property of carry is clearly changed, but
the meaning of out itself — ‘completion’ — is retained.
(3) The gunmen carried out their threat and shot the man.
It seems to be plausible to take the idiomatic VPCs (the second and the
third types) to be specified as such in the lexicon, unlike the non-
idiotic one (the first type). In this light, an analysis of these VPCs
will require not only syntactic but also morphological considerations.
In this paper, I consider within Bowers’ (1993) theoretical framework
how the VPCs are derived by a rule system in syntax or by a word-
formation rule system in the lexical component.2,3
Beyond the present introductory section, the paper consists of four
further sections. Section 2 presents a classification of VPCs into three
types on the basis of the selectional properties of verbs and the degrees
of the meaning retention in particles. In section 3, some problems are
pointed out for certain previous analyses. In section 4, I will propose
as an alternative analysis that the head V0 contains not only a domain
in which only morphological rules can apply, but also a domain in
which both syntactic and morphological rules can. Based on this
approach, I will consider the structures and the derivations of the three
types of VPCs. Section 5 is a conclusion.

2. Types of Verb-Particle Constructions

Before entering into the concrete analysis of VPCs, it is plausible to
classify them. In view of the degrees of retention of the inherent

2 Bowers (1993) basically adopts the pre-minimalist framework. He partially
assumes the theory of morphological checking in Chomsky’s (1992) minimalist
approach (cf. Bowers (1993: 595, 641)).
3 In this paper, we use the term ‘the lexical component’ as a component which in-
cudes the morphological rule system and the lexicon, i.e. a list of lexical items with
some lexical information.
properties of verbs and particles, we propose that the classification depends upon the following: (i) whether or not particles retain their own meanings when they are combined with verbs, and (ii) whether or not the selectional properties of verbs are changed when they are combined with particles. Here we assume that the meanings of particles include not only their literal meanings, i.e. space or motion, but also completion and some derivational or figurative meanings. For example, the relevant meanings of out are listed as follows: (a) direction outward or out from (e.g. spread out), (b) removal, separation (e.g. brush out), (c) finality, completion (e.g. carry out, measure out), (d) openness, publicity (e.g. blossom out, hatch out), and (e) the ultimate conception of exhaustion or extinction (e.g. blow out ‘to extinguish,’ fade out).

In the case of particles with spatial or motional meanings (and derivational meanings), we further assume with Visser (1963: 597), Bolinger (1971: 85) and Tenny (1994: 148) that they also have the meaning ‘terminus or result.’ In other words, they can be seen as referring to the state or condition of the person or thing denoted by the object after or in consequence of the action.

On the basis of the criteria (i) and (ii) above, we classify VPCs into the following three types:4

(4) i) simple combination type: Particles retain their own meanings, and the selectional properties of verbs are not changed.

ii) pure idiom type: Particles lose their own meanings, and the selectional properties of verbs are changed.

iii) hybrid idiom type: Particles retain their own meanings, and the selectional properties of verbs are changed.

As an illustration, let us see to which type the following examples belong.

(5) a. He cut the branches off.

b. He cut off the branches.

4 There are no cases where particles lose their own meanings, and the selectional properties of verbs are not changed. If such cases were allowed, the latter situation would require the particles not to form idioms with the verbs but to add their own clear meanings to the verbs. But in fact such addition is impossible, since the meanings are lost (the former situation).
(6)  a. The store keepers took the students in.
b. The store keepers took in the students.

(7)  a. I’ll look the information up.
b. I’ll look up the information.

Clearly, the examples in (5) fall under (4i). In these examples, the particle off retains its own meanings ‘separation’ and ‘a terminus or a result state, i.e. the branches being away from a tree.’ The selectional property of the verb cut is not changed: the verb selects a theme DP, whether the particle is added or not. The cases in (6) are of type (4ii). The verb take (>took) and the particle in form an idiom which means ‘to deceive.’ The particle does not retain its own meanings, i.e. motion and terminus or result. The selectional property of the verb is changed; the verb ceases to take inanimate things as its object in normal cases, once in is combined with it. The sentences in (7) fall under type (4iii). Here, the verb look and the particle up form an idiom, the meaning of which is ‘to examine.’ The selectional property of look is changed: the single verb look cannot take DP as a direct argument, but if up is combined with it, it can. Note that up retains its own meaning ‘completion, temporal end point,’ though it is part of the idiom.

According to Tenny (1994: 148), this type of particles has the semantic property of imposing delimitedness on the event described by a verb phrase or a sentence.

Here it is worth noting that adding an intensifier such as right to the particle enables us to confirm whether the meaning of a particle is retained or not: the particle which cannot be modified by the intensifier loses its own meaning, while the one which can be modified retains it. Quirk et al. (1985: 1152–1154) and Konishi (1989: 1569) observe that when a particle carries its own clear meaning, the particle can be modified by such an intensifier; when the meaning of the particle is thin, the acceptability of a sentence with such a modification is low in general. In the cases of the simple combination type in (8), for example, the meanings of the particles are clearly retained, and thus they are acceptable with the intensifiers. But the cases of the pure idiom type in (9) are unacceptable because the meanings of the particles are lost.

(8)  a. He put the toys right back. (Emonds (1972: 552))
b. John brought the bottles right down. (ibid.)
c. Drink right up. (Quirk et al. (1985: 1152))

(9)  a. *John put his vacation right off until Christmas. (put off= postpone) (Emonds (1972: 552))
b. *Bill should take his friends right up on their offer.
   \(\text{(take up=accept)}\) (ibid.)

c. *The store keepers took the students right in.
   \(\text{(take in=deceive)}\) (ibid.)

In the hybrid idiom type, the meaning of a particle is retained. Thus an intensifier can modify a particle, as shown in (10).

(10) a. I’ll look the information right up.  \(\text{(Fraser (1974a: 25))}\)
    b. The student figured the problem right out. \(\text{(ibid.)}\)
    c. The plane took right off. \(\text{(ibid.)}\)

Each of the particles \textit{up} in (10a) and \textit{out} in (10b) retains its own meaning ‘perfective or completive.’ In (10c), \textit{off} has the clear meaning ‘separation from (the ground).’

Some instances of other verb-particle combinations of the three types are presented as follows:

(11) simple combination type ... bring back, throw in, heave up,
     push away, hammer out, measure out, clean up, drink up,
     etc.

(12) pure idiom type ... break in ‘to wear, or use,’ bring up ‘to
     scold,’ let on ‘to pretend,’ turn in ‘abandon,’ etc.

(13) hybrid idiom type ... do up ‘to fasten,’ make off ‘to depart,
     work out ‘to solve,’ run up ‘to raise,’ etc.

3. Problems with Previous Analyses

In the recent literature, VPCs have, in general, been analyzed mainly in two ways. One is the small clause analysis (cf. Kayne (1985), Hoekstra (1988), den Dikken (1995), etc.), and the other is the complex verb analysis (cf. Johnson (1991), Koizumi (1993), etc.). However, there seem to be some serious problems with both approaches.

3.1. The Small Clause Analysis

Kayne (1985), Hoekstra (1988), and den Dikken (1995) analyze the sequence of an object and a particle as a small clause in which the particle serves as a predicate, as schematically represented in (14).

(14) a. \[\text{VP } [\text{V} \text{ V \{DP prt\}}]\]
    b. \[\text{VP } [\text{V} \text{ V \{DP \theta \ e\} [PP \text{ prt DP}}]\]

These are D-structure representations. (14a) is proposed by Kayne and Hoekstra, and (14b) by den Dikken. Given (14a), the surface order ‘object DP—particle’ in cases like the (a) examples of (5)–(7)
directly follows. In cases such as their (b) examples with the order ‘particle—object DP,’ the object DP undergoes a process similar to Heavy NP Shift, and it is adjoined to the right of V’.

(15) \[VP \[V' V [SC t; \text{prt}] \text{DP}_i]\]

(14b) involves what den Dikken calls an ergative particle. If the DP is moved to the subject θ’ position of the small clause in overt syntax, then the order ‘object DP—particle’ directly follows. If it is not, then the order ‘particle—object DP’ is derived.

It seems that these analyses succeed in yielding cases with the two types of orders such as (5)–(7), but in fact they face two problems. The first problem concerns θ-role assignment to an object. Clearly, an object in VPCs of the simple combination type receives a θ-role from a matrix verb. In each of (16a, b), for instance, the DP the branches must be assigned the Theme role by the verb cut.

(16)  
   a. He \[VP \[V' \text{cut [SC the branches off]}\]\]  
   b. He \[VP \[V' \text{cut [SC [DPθ' e] [PP off the branches]]}\]\]  

The structures in (16) force the verb to assign the θ-role across certain boundaries, although the DP is not directly selected by the verb. The offending boundaries are SC in (16a), and SC and PP in (16b). Such θ-role assignment is dubious under the generally agreed assumption that it is based on sisterhood.

The second problem is that the structures in (14) are not appropriate for the pure idiom type. If (14a) and (14b) were assumed for this type, the D-structure representations of (6) would be shown in (17a) and (17b), respectively.

(17)  
   a. The store keepers \[VP \[V' \text{took [SC the students in]}\]\]  
   b. The store keepers \[VP \[V' \text{took [SC [DPθ' e] [PP in [DP the students]]]}\]\]  

It is generally agreed that a predicate in a small clause assigns a θ-role to its subject. But in (17a) it is quite difficult to allow the predicate in to θ-mark the DP the students, since the particle is part of the idiom took in and does not carry its own independent meaning. In (17b), it is still difficult for the predicate to θ-mark its complement DP, for the same reason. The discussions above lead us to conclude that the small clause analysis is untenable for the two types of VPCs.

3.2. The Complex Verb Analysis

In this analysis, the sequence ‘verb—particle’ is considered to form a single lexical item as a complex verb, as shown in (18).
To yield the (a) examples of (5)-(7) on the basis of (18), Johnson (1991) and Koizumi (1993) propose that only the verbal portion of the complex verb is raised to a higher functional head in overt syntax. The DP object is also overtly raised to a higher specifier position. In Johnson’s approach, this derivation is schematically represented in (19).

\[ \mu + V_i [v_p DP_j [v [v e_i] prt t_j]] \]

To derive the (b) examples of (5)-(7), it is assumed that the whole complex verb is overtly moved out of VP, as shown in (20).

\[ \mu + [v V prt], [v_p DP_j [v [v e_i] t_j]] \]

This analysis is valid for the pure idiom type in that the complex verb in (18) is formed as a single lexical item in the lexical component. Note that the formation of the complex verb by attaching a particle to a verb changes the selectional property of the verb (cf. (6)). This is similar to the case of the prefixed verb, which is generally assumed to be formed by a morphological rule in the lexical component. For example, when the prefix out- is attached to the intransitive verbs burn and wear, they select object DPs.

(21) a. A.G.E. bulb will outburn any other type.  
   (Fraser (1974a: 29))

   b. Rubber outwears leather when used for shoe soles.  
   (ibid.)

If we adopt the widely accepted assumption (cf. Chomsky (1986) and Borer (1984)) that the selectional property of each lexical item does not change during syntactic derivation, then the lexical component is an appropriate place for complex verb formation.

However, when extraction of an element from the complex verb is considered, (18) raises a problem: the syntactic extraction of a verbal portion from the complex verb as in (19) is a problematic process. Since this complex verb is formed as a single lexical item in the lexical component, the extraction should be prohibited by the Principle of Lexical Integrity (cf. Lapointe (1980)).

(22) **Principle of Lexical Integrity**

No syntactic rule can refer to elements of morphological structure.  
(Lapointe (1980: 8))

The complex verb analysis is never appropriate for the simple combination type. See the following Gapping cases:

(23) a. *Jones pulled the deal off, and Peters the money in.  
   (Fraser (1974a: 3))
(pulled off=achieved)  (pulled in=earned)
b. *Mary took the man off, and Bill, the woman in.
   (took off=copied)   (took in=deceived)

(24) a. Jones pulled the old table cloth off, and Peters, the new
   one on. (Fraser (1974a: 3))
b. Sally put the dessert out and her husband the dinner
   dishes away. (Kroch (1979: 223))

The cases in (23) and (24) are VPCs of the pure idiom type and the
simple combination type, respectively. In (23), the relevant idiomatic
meanings are also presented. According to Stillings (1975: 264) and
Johnson (1991: 591), only a single verb or a single complex verb can be
Gapped. Under this analysis, what undergoes Gapping in the second
conjunct in (23a) is pulled, which is only part of the single complex
verb pulled in; hence its ungrammaticality. A similar explanation
holds for (23b). Therefore, we can say that the complex verb analysis
succeeds in accounting for these phenomena. However, note that this
analysis should also predict similar results for the VPCs of the simple
combination type. But in fact the relevant Gapping cases in (24) are
grammatical. Hence it is clear that this analysis fails to capture the
difference in grammaticality between (23) and (24).

We also call into question the adequacy of this analysis for the hybrid
idiom type. The argument concerns intensifiers of particles. In this
type, the meaning of a particle is retained, even though it forms an
idiom in combination with a verb. Thus an intensifier can modify a
particle, as we have seen in (10). It is dubious to account for (10) on
the basis of the structure in (18). Given (18), the verb-particle com-
bination look right up in (10a) is represented as follows:

(25) \[
V \text{look} \ \text{[right up]}
\]

If the whole complex verb in (25) is raised to an upper functional
category as in (20), then the following derivation will be predicted:

(26) \[
\mu + [V \text{look} \ \text{[right up]}], [VP \ [DP \text{the information}]], [V' [V e], t_j]
\]

Similar derivations will follow for (10b, c) as well.

But in fact the surface order 'verb—intensifier—particle—object DP'
is generally not allowed.5

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5 Den Dikken (1995: 40) also points out that the complex verb analysis cannot
explain (27).
(27)  

a. *They looked right up the number. (Emonds (1972: 552))  
b. *The student figured right out the problem.

We are thus led to the conclusion that the complex verb analysis is also inadequate for the hybrid idiom type.

To sum up, both the small clause analysis and the complex verb analysis face some problems in accounting for the three types of VPCs. Consequently, there is an urgent need for an alternative analysis.

4. The Two V₀-Internal Domain Analysis

In this section, I will first propose an alternative analysis in the discussion of the structure of the pure idiom type. Based on the analysis, I will next discuss the other two types.

4.1. Pure Idiom Type

With this type, I essentially agree with the complex verb analysis. But then the problem concerning (22) should be solved. Let us begin by examining the internal structures of the verbs in (28), which are formed by word-formation rules in the lexical component.

(28)  
a. [v [p out] [v live]]  
b. [v [n glor] [v -ify]]  
c. [v re- [v write]]  


(28a) is a root compound, which consists of the preposition and the verb. In (28b), the category-changing suffix is attached to N. In (28c), the prefix is attached to the verb. Here note that what raises the problem above is the attempt to deal with the structure in (18) in the same way as the structures of complex words as in (28) in the light of principle (22). In other words, (22) rules out the extraction of the verbal portion V from the complex verb in (18) on a par with that of the V-internal elements from the complex words in (28).

To account for this lexicon-syntax mismatch, it will be necessary to assume a structure which satisfies the following two requirements for VPCs of the pure idiom type: (i) a verb and a particle must be formed as a single complex verb by a morphological rule in the lexical component like the complex words in (28), and (ii) the VPCs must allow a verb to be extracted from the complex verb, unlike these examples. With this in mind, I would like to postulate the following two domains within V₀: the domain from which an element cannot be extracted by a syntactic rule, and the one from which an element can. Specifically, I
first propose that the category $V^0$ is further divided into three levels: the lowest level $V^{00}$ (a verb stem), the middle one $V^{01}$ and the uppermost one $V^{02}$, as shown in (29).

\begin{equation}
V^0 = [V^{02} \ldots [V^{01} \ldots V^{00}(\text{stem}) \ldots] \ldots]
\end{equation}

Based on (29), I assume that syntactic rules like extraction (or exorporation (cf. Roberts (1993))) and incorporation (cf. Baker (1988)) cannot apply in the domain under $V^{01}$. I refer to this domain as domain A. Under this assumption, the verb stem and the element directly combined with it in (28), which are in domain A, cannot be extracted from the complex words. Namely, I claim that (22) only holds in domain A. I further assume that such syntactic rules can apply in the domain over domain A and immediately under $V^{02}$. I refer to this domain and $V^{02}$ together as domain B. These assumptions are illustrated in (30).

\begin{equation}
V^0 = \begin{cases} 
V^{02} & \text{domain B} \\
\ldots V^{01} \ldots & \text{domain A} \\
V^{00}(\text{stem}) \ldots & \text{domain A}
\end{cases}
\end{equation}

Furthermore, I assume that morphological rules of word formation can apply in both of the domains within the word level $V^{02}$. From this, it can be said that domain B is a level of word representation which may be accessed by both syntax and morphology. The applicabilities of the rules in each domain are summed up as in the following table:

\begin{table}
\begin{array}{ccc}
\hline
\text{domain} & \text{morphological rules} & \text{syntactic rules} \\
\hline
\text{domain B} & \text{applicable} & \text{applicable} \\
\text{domain A} & \text{applicable} & \text{inapplicable} \\
\hline
\end{array}
\end{table}

We refer to the analysis based on (29)–(31) as the two $V^0$-internal domain analysis (henceforth, the 2VD analysis, for convenience).6

Under this analysis, the combination ‘verb—particle’ of the pure idiom type is formed as a complex verb in the lexical component by a

6 To account for morphology-semantics mismatch within a word such as bracketing paradoxes, Pesetsky (1985) and Sproat (1988), etc. assume two distinct structural descriptions for a word structure, a morphological representation and a semantic or syntactic representation. It is not clear whether or not we can extend this move to verb-particle combinations. I leave it to future research.
morphological rule applying in domain B, as indicated in (32).  

(32) <the pure idiom type>

\[
\text{morphological rule} \rightarrow \text{domain B}
\]

Here I assume with Emonds (1972, 1976), Aarts (1992), and den Dikken (1995) that particles are analyzed as (intransitive) Ps. The structure in (32) can solve the problem concerning (22) above. In (32), \(V^{01}\) can undergo syntactic extraction, since it is in domain B, where (22) does not hold. Note further that under the 2VD analysis, it is possible to incorporate an \(X^0\) element into domain B of \(V^{02}\) in syntax. We will discuss this process in 4.2 and 4.3.

At this point, it is necessary to motivate the 2VD analysis. Specifically, I will present two arguments for it. First, it can also account for certain facts of extraction of a \(V^{01}\)-internal element in Italian causative constructions such as (33).

(33) Piero fa spesso riparare la macchina (da Giovanni)

‘Piero has the car often repaired by Giovanni’

(Hoshi (1993: 116))

Essentially following Zubizarreta (1985) and Hoshi (1993), we assume that the causative verb \(fa\) forms a complex verb in combination with the embedded verb \(riparare\) in the lexical component, suppressing the external argument of \(riparare\), as shown in (34). This is based on the assumption that the argument structure of a lexical item does not change during syntactic derivation.

(34) \([V^{02} [V^{01} fa] [V^{02} riparare]]\)

To derive (33), \(fa\) must undergo syntactic movement to the position to the left of the VP adverb \(spesso\). The 2VD analysis can successfully account for this process. The verb \(fa\) is in domain B of the whole

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7 Den Dikken (1995: 89) makes an objection to the assumption that a verb and a particle form a complex verb. He argues that the sequence ‘verb—particle’ does not have the same stress pattern as other \(X^0\) complexes such as compounds (e.g. the verb \(baby\) \(sit\)) and V-inflection complexes (e.g. \(pushing\) and \(talked\)). But under the 2VD analysis it can be assumed that the rules of stress for the latter \(X^0\) complexes apply in the pure morphological domain, namely, domain A, but not in domain B, where a verb and a particle form a complex verb.
complex verb $V^{02}$, where (22) does not hold. Hence it can be extracted from this $V^{02}$, raised to $V_1$, and finally adjoined to I, as in (35).8

(35) $[IP$ Piero$_i$ $[I$ fa$_f$ I$][VP_1$ spesso $[VP_1$ $[V_1$ e$_v$ $][VP_2$ $[V_2$ $[VP_1$ $[V_0_2$ $[V_0_1$ e$_v$ $][V_0_2$ riparare$]]$ la macchina$](da$ Giovanni$)]$ ti$_t$]$]]$]

Secondly, the 2VD analysis can successfully capture the notion of 'head of a word.' Williams (1981) proposes the Right-Hand Head Rule: the head of a morphologically complex word is the righthand member of that word (cf. Williams (1981: 248)). Thus, in (36a) and (36b), the heads of the words are $construct_V$ and $tend_V$, respectively.

(36) a. $V$
   $\text{re} \quad construct_V$

b. $V$
   $\text{bar}_N \quad tend_V$

(Williams (1981: 249))

According to Spencer (1991: 321), this rule is mostly valid for English. But it does not hold for VPCs in the language. As is clear from (32), the head $V^{01}$ of the complex verb $V^{02}$ occurs to the left of the particle.

This contradiction can be elucidated by the 2VD analysis, if we assume that the Right-Hand Head Rule is only valid in domain A, like the principle in (22), and that the order of a verb and a particle in the complex verb is determined in domain B.9 As for the latter assumption, I claim that the order is determined by a kind of 'head-complement' parameter. I further propose that this parameter holds for not only the order of a head $V^{02}$ and its complement, but also that of a head $V^{01}$ and its sister, which are both determined in syntax. I refer to this parameter as "the extended head parameter." Under this proposal, the occurrence of the head $V^{01}$ to the left of a particle is due to the parametric value specified as [+head-initial]. The ideas above are indicated as follows:

(37) $\begin{align*}
V^{02} \\
\{V^{01} \text{prt}\} \\
\{\ldots \text{V}^{00} \text{stem}\ldots\} \\
\rightarrow \text{domain B} \quad \text{the extended head parameter} \\
\rightarrow \text{domain A} \quad \text{Right-Hand Head Rule}
\end{align*}$

8 The details of structure (35) are based on Hoshi (1993: 122).
9 Selkirk (1982: 20–21) attempts to revise the Right-Hand Head Rule so that it can cover ordinary compounds and verb-particle sequences.
It will be in order here to present an argument for the claim that the proposed parameter determines the order of a verb and a particle. Let us see some relevant facts from other languages. Languages with the basic order ‘complement—V’ such as German and Dutch show the pattern ‘particle—verb,’ as in (38).

(38) a. (Dutch) om-blazen ‘blow down,’ op-komen ‘come up,’
    voort-duren ‘continue’

b. (German) abnehmen ‘take off,’ übersetzen ‘carry over,’
    durchschneiden ‘cut through’

Languages with the basic order ‘V—complement’ such as Swedish show the pattern ‘verb—particle,’ like Modern English.

(39) a. Jon sparka ut hunden
    ‘Jon kicked out the dog’ (Åfarli (1985: 75))

b. Vi kasta ut/oppi/utover mjølet
    ‘We threw out/in/around the flour’ (ibid.: 91)

We will further see the relevant English facts from a diachronic point of view. Van Kemenade (1987) observes that English changed from a ‘complement—V’ language to a ‘V—complement’ language in the period of Early Middle English. Interestingly, Hiltunen (1983: 114) points out that the order ‘particle—verb’ changed to the order ‘verb—particle’ in almost the same period. The facts above suggest that the determination of the order of a verb and a particle depends upon that of a verb and its complement.

Having established our 2VD analysis, we may next consider how the VPCs (6a) and (6b) are derived. But before discussing this, it is necessary to clarify some points concerning English clause structure. Firstly, note that we accepted the overt main verb movement. Furthermore, to derive the pure idiom type VPCs like (6a), we should place an object before a stranded particle and after a raised verb, as schematically represented in (40) (cf. (19)).

(40) \[ V_i \ [\text{obj} \ [V \ t_i \ \text{particle}] \]

This derivation is possible under some recent analyses such as Johnson (1991), Koizumi (1993), and Bowers (1993). Among others, Bowers gives both main clause and small clause predication a uniform structure as in (41) by introducing a new functional category, Pr(edication).

(41) \[ [\text{PrP \ DP(subject)} \ [\text{prP \ Pr XP(predicate)}]] \ (X= \{V, A, N, P\}) \]

Noting that there are several syntactic parallelisms between subjects and objects, he further assumes that objects are generated in [Spec, VP], parallel to the position of subjects in [Spec, PrP].
In view of the theoretical elegance, I adopt his analysis.

Under this analysis, the derivation of (6a) is represented below:

\[
\text{(43)} \quad [\text{IP} [\text{DP The store keepers}] [\text{I'} I [\text{PrP} t_1 [\text{Pr'} [\text{Pr} [V_01 \text{ took}]]] [\text{VP} [\text{DP the students}]]]]]
\]

In (43), the original position of the $V_0^1$ took is within domain B, and thus it can be extracted (or excorporated) from the $V_0^2$. Next, (6b) can be derived by applying the process of raising to the whole complex verb $V_0^2$, as shown in (44).

\[
\text{(44)} \quad [\text{IP} [\text{DP The store keepers}] [\text{I'} I [\text{PrP} t_1 [\text{Pr'} [\text{Pr} [V_02 \text{ took in}]]] [\text{VP} [\text{DP the students}]]]]]
\]

4.2. Simple Combination Type

In this section, we will consider the structure and the derivation of VPCs of the simple combination type under the 2VD analysis. In the course of this discussion, I deal with VPCs with the following two kinds of particles:

\[
\text{(45)} \quad (i) \quad \text{particles with spatial or motional meanings (or derivational ones) and the meaning \text{`terminus or result'}}
\]

\[
(ii) \quad \text{particles with completive meanings}
\]

To begin with, let us discuss VPCs with the particles in (45i). We will first consider the position of the particles. See again the Gapping examples in (24). From their grammaticality, it is clear that the particles do not form complex verbs with the verbs, unlike the pure idiom type. This suggests that they occupy a position outside $V_0^2$.

This being the case, in what exact position are they generated? Here, it will be worthwhile to notice that they are quite similar to resultative predicates in the following three respects. First, they have a meaning of terminus or result, as pointed out by Visser (1963: 597), Bolinger (1971: 85), and Tenny (1994: 148) (cf. section 2). Second, they cannot occur before pronominal objects, which is also the case for resultative predicates. This suggests that they occupy a position outside $V_0^2$.

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\[
\text{(46)} \quad \begin{align*}
\text{a.} & \quad *\text{He painted red it.} \quad \text{(Fraser (1974a: 36))} \\
\text{b.} & \quad *\text{They set free him.} \quad \text{(ibid.)}
\end{align*}
\]

Third, particles can occur before a full DP object, as in (5b). This behavior is also found in some resultative predicates, as in (47).

\[
\text{(47)} \quad \begin{align*}
\text{a.} & \quad \text{They cut short the speech.} \quad \text{(Bolinger (1971: 70))} \\
\text{b.} & \quad \text{Break open the cask.} \quad \text{(ibid.)}
\end{align*}
\]
c. Will it bleach white the undies? (Bolinger (1971: 74)
From these facts, it is reasonable to assume that particles in (45i) originate in the same position as resultative predicates. Rothstein (1983), Ike-uchi (1991), and Carrier and Randall (1992) claim that resultative predicates are generated in the sister position of a verb. There are two possible structures for the sequence ‘verb—object DP—particle.’ One is a ternary branching structure where the object DP and the particle are sisters of a verb, as in (48).

(48) \([v^* V^0_2 DP \text{prt}]\)
(48) is essentially based on Carrier and Randall’s (1992) analysis. The other possible structure is a binary branching structure with V-raising, which is essentially based on Ike-uchi (1991). He argues that the particle is in the complement position of the verb in VP and the object DP is generated in [Spec, VP]. Within Bowers’ framework, the relevant structure of VPCs is represented as follows:

(49) \([\text{PrP} [\text{Pr} [\text{Pr} V^0_2i] [\text{VP DP} [v^* \text{v}_0_2 e_i \text{prt}]])])\]
Here, it is plausible to take (49), as (50) suggests.

(50) Mel and Kim were watching television in the dark when suddenly Rick burst in; he switched the lights on and the TV off. (Harts (1992: 80))
Note that the sequences the lights on and the TV off are coordinated. Under the standard analysis, each of coordinated elements must be a single constituent (cf. Larson (1990: 624–627) and Harts (1992: 80), etc.). Thus each of the two sequences in (50) is regarded as a single constituent. In (48), the object DP and the particle do not form a single constituent, while in (49), the two elements form the single constituent VP; hence (49) is tenable.

Let us next consider the category of particles. As we noted earlier, particles are viewed as intransitive prepositions. Furthermore, it is important to recall that they can be modified by intensifiers such as right, as in (8). Lieber (1992: 50), Aarts (1992: 82), and Neeleman and Weerman (1993: 468) argue that such intensifiers, which generally modify PP, occupy the specifier position of PP. If this is correct, then it follows that the category of particles is projected up to PP, a maximal projection.

In view of the discussions above, we can represent the structure of VPCs with the particles in (45i) as follows:

(51) \([\text{PrP} [\text{Pr} [\text{Pr} V^0_2i] [\text{VP DP} [v^* \text{v}_0_2 e_i \text{PP(particle)}])]])\]
Here note that the problem concerning \(\theta\)-role assignment for the
small clause analysis as pointed out in 3.1 does not arise in (51). Essentially following Rapoport (1990: 10) and Neeleman and Weerman (1993: 454), I assume that in (51), each of the trace of V02 and the particle PP assigns its own θ-role to the object DP. Here I adopt Chomsky’s (1986: 97) θ-criterion (52).

(52) **Theta Criterion**

Each argument α appears in a chain containing a unique visible θ-position P, and each θ-position P is visible in a chain containing a unique argument α. (Chomsky (1986: 97)) According to (52), what should be unique is not a θ-role but a θ-position; hence the assignment of more than one θ-role does not violate (52).

Note also that the problem of the complex verb analysis concerning Gapping does not arise here. See (24) again. In (24a) and (24b), the elements which undergo Gapping are the single verbs, *pulled* and *put*, respectively: they are V02 but not V01, part of single complex verbs. The particles *on* in (24a) and *away* in (24b) are complements of the V02 (cf. (51)). Thus the grammaticality follows.

Having established the structure of VPCs with the particles in (45i), we can now go on to consider the derivations of (5a) and (5b) on the basis of (51). First, (5a) is derived as follows:

(53) \[ \text{IP} \text{Hei I} [\text{PrP} \text{ ti} [\text{Pr} [\text{V02 cut}]]] [\text{V} [\text{V02 e}]] [\text{PP off}]]]]

As shown in (53), (5a) is derived by the raising of the V02 *cut* to Pr. With respect to the derivation of (5b), it is necessary to consider the position of the particle *off*. I assume with Kageyama (1987) and Baker (1988) that the word formation process takes place not only in the lexical component but in syntax. On this assumption, I argue that the particle is optionally incorporated into V02 in overt syntax, as in (54a). According to Baker (1988), the process of incorporation is a head movement. It follows that the incorporation of the particle here is P0-movement. Note that this process does not give rise to a violation of (22), because its landing site is in domain B within V02 in the 2VD analysis. After this process, the complex verb V02 is raised to Pr, as shown in (54b).

(54) a. \[ \text{IP} \text{Hei I} [\text{PrP} \text{ ti} [\text{Pr} [\text{V} [\text{V02 cut}]] [\text{P off}]]] [\text{PP Pr} [\text{V} [\text{V02 e}]] [\text{PP e}]]]]

b. \[ \text{IP} \text{Hei I} [\text{PrP} \text{ ti} [\text{Pr} [\text{V} [\text{V02 cut}]] [\text{P off}]]] [\text{VP DP the branches} [\text{V} [\text{V02 e}]] [\text{PP Pr} [\text{V} [\text{V02 e}]]]]]]
It will be in order here to show that a verb (V^02) and a particle such as off in this case form a single complex verb in overt syntax. The first argument for this concerns the following sentences.

(55) a. I brought out and aired the flag. (Bolinger (1971: 167))
    b. He picked up and threw the ball. (ibid.)
In (55), the verb-particle sequences are coordinated with the single verbs. This shows that the sequences form single complex verbs.

The second argument concerns the contrast between (50) and (56).

(56) *Mel and Kim were watching television in the dark when suddenly Rick burst in; he switched on the lights and off the TV.

As mentioned above, each of the sequences the lights on and the TV off in (50) is a single constituent, and thus their coordination is possible. From this point of view, the ungrammaticality of (56) shows that each of the sequences on the lights and off the TV does not form a constituent. Clearly, this follows from our claim that the verb and the particle form the complex verb V^02, as in (54a).

The third argument is that the analysis of overt complex verb formation can successfully explain the facts in (57), which are noted, among others, by Emonds (1972: 552) and Aarts (1992: 82).

(57) a. *I cut right off the branch.
    b. I cut the branch right off. (Aarts (1992: 82))
In the ungrammatical example (57a), the sequence ‘intensifier—particle’ is adjacent to the verb, while in the grammatical one (57b), it is not. According to our analysis, the incorporation of the particle is a movement of the head P^0, as in (54a). That is, it does not take place as a movement of PP with the intensifier right in [Spec, PP]; hence (57a) can never be derived.

Here one might be tempted to say that the P^0-incorporation may possibly yield a wrong derivation with the intensifier right stranded, as in (58).

(58) [IP I I [P^0P t_i [P^0P [Pr [V^02 [V^02 cut] [P off_k]]]
    [VP [DP the branches] [V' [V^02 e_k [PP right [P' [P e_k]]]]]]]]
But it is noteworthy that movement of a head with its intensifier stranded is generally ruled out, as in the Dutch example (59).

(59) *dat Jan de auto [erg i_t] will voli tanken.
    that Jan the car very wants full tank.
‘Jan wants to fill up the tank of the car.’
(cf. den Dikken (1995: 108))
Consequently, it can be assumed that this kind of head movement is independently constrained by a condition like (60).

(60) An XP the head of which is modified by an intensifier is an island for movement of the head X.

Thus the adequacy of the analysis of overt complex verb formation is not undermined.

Let us next consider the case of VPCs with the particles in (45ii). First note that these particles also can be modified by intensifiers like the ones in (45i).10

(61) I will clean the room all/right up. (Fraser (1974b: 573))

This suggests that they are also analyzed as PPs. Note further that they do not allow the order ‘verb—intensifier—particle—DP.’

(62) *I will clean all/right up the room.

In view of the discussion concerning (27), we can say that the particle PPs are not generated inside V02. Then there are two candidates for their position: the complement position of a verb and the adjunct position. But the latter is inappropriate. If the PP is adjoined to VP (or PrP), it is quite hard to derive (63a) from (63b).

(63) a. I will clean up the room.

b. I will clean the room up.

To derive (63a), the particle up in (63b) must be incorporated as P0 into V02, as represented in (64a), or the DP the room must be moved to an adjunct position to the right of the adjunct up, as in (64b).

(64) a. \[VP [VP [DP the room] [V [V02 [V01 clean] [P up]]]] [PP [P e]]]

b. \[VP [VP ti [V [V02 clean]] [PP up]] [DP the room]]

The former process gives rise to a violation of the ECP (cf. Baker (1988)). The latter is not driven by a clear motivation, since the DP is not ‘heavy.’ Hence, it is possible to conclude that the particles in (45ii) also occupy the complement position of a verb and can be overtly...
incorporated into $V^{02}$ without any violation of the ECP.\footnote{11}

4.3. Hybrid Idiom Type

As noted in section 2, the hybrid idiom type is similar to the pure idiom type in that the selectional properties of verbs are changed, and similar to the simple combination type in that the meanings of particles are retained. What are the structure and the derivation of VPCs of this type? We will consider them in view of these similarities.

Based on the latter similarity, we can assume that a particle is generated as PP in the complement position of $V^{02}$. Its status as PP and its clear spatial or completive meaning are suggested by the fact that an intensifier like right can modify the particle, as we have seen in (10). From the former similarity, on the other hand, the addition of a particle changes the selectional property of a verb. But to explain this, we cannot resort to complex verb formation in the lexical component because the particle originates outside $V^{02}$, i.e. in the complement position of $V^{02}$, as we have just assumed. To maintain both the change of the selectional property and the generation of a particle outside $V^{02}$, I first assume that a Lexical Conceptual Structure (LCS) representation and an argument structure of a verb-particle combination are specified for $V^{02}$ in the lexicon, although the particle is outside $V^{02}$. Essentially following Roberts’ (1993) analysis of morphological subcategorization, I next assume that a subcategorization frame such as [+ up], [+ out], or [+ away] is also specified for $V^{01}$. On this assumption, I claim that the particle is incorporated as $P^0$ into the $V^{02}$ in overt syntax or at LF, whereby the $V^{01}$ fulfills the frame and a complex verb is formed.

As for the combination look up in (7), for example, let us first consider its LCS representation under Kageyama’s (1996) analysis. It is important to note that the action of looking up, i.e. examining, can be regarded as (perceptional) acting on things to be examined, but the things do not undergo any change in state. Thus it is plausible to take

\footnote{11} Here I assume that the particles in (45ii) have no $\theta$-grid and only impart their completive meanings to verbs. Thus in the VPCs with such particles, only verbs assign their $\theta$-roles to object DPs.
its LCS to be similar to that of activity verbs. Note also that the meaning ‘completion’ of up is added to the meaning ‘examine.’ Thus if the LCS for look up specifies ‘TO AN END’ as its ingredient of its whole meaning, then it is as represented in (65).

\[(65) \ [\text{EVENT} \ [ \_x \ \text{ACT ON}-\ [ \_y \ \text{TO AN END}] \]

Kageyama assumes that the subject and the object of ACT are mapped onto the external argument and internal argument in argument structure, respectively. Given this, the argument structure of look is represented in (66) a la Grimshaw (1990).

\[(66) \ (\text{Agent (Theme)}) \]

With the morphological subcategorization frame, we can specify [+___ up] for V01 of look. In sum, the lexical entry of look is as given in (67).

\[(67) \ \text{look}(V): \ (V01) \ [+\_\_\_\_ \text{up}] \]
\[(V02) \ [\text{EVENT} \ [ \_x \ \text{ACT ON}-\ [ \_y \ \text{TO AN END}], \]
\( \ (\text{Agent (Theme)}) \]

LCS representations for idioms in which a particle has a motional and resultative meaning are different from (65). In (68), for example, the driver’s action of getting down by his or her car, acts on the two men and as a result, they are lying on the ground.

\[(68) \ \text{The careless driver ran down the two men.} \]

Hence the verb run in this case can be viewed as an achievement verb. Then the entry of run with its LCS is represented as follows:

\[(69) \ \text{run}(V): \ (V01) \ [+\_\_\_\_ \text{down}] \]
\[(V02) \ [\text{EVENT} \ [ \_x \ \text{ACT ON}-\ [ \_y \ \text{CAUSE} [\text{EVENT BECOME} \ [\text{STATE} \ [ \_y \ \text{BE AT-ON THE GROUND}]], \ (\text{Agent (Patient)}) \]

Let us now consider the derivation of VPCs of the hybrid idiom type. As an illustration, we take (7) again. The particle up in this example is generated outside V02, as shown in (70).

\[(70) \ \text{[IP [I will] [PP [DP I] [Pr Pr [V01 look]] [PP [P [P up]]]]]} \]

The particle P0 is first incorporated into V02 to satisfy the frame [+___ up] in overt syntax. Then the V02 is further overtly raised to Pr; hence (7b) is derived. This is represented in (71).

\[(71) \ \text{[IP [DP I] [I will] [PP [Pr Pr [V02 [V01 look] [P up]]]]] [VP [DP the information] [V [V02 e] [PP [P [P e]]]]]} \]

If particle-incorporation takes place at LF, then (7a) follows. More specifically, the particle P occupies its original position in overt syntax;
hence the surface order the information up in (7a) is derived. At LF, the particle P is first adjoined to the trace \([v_{02} e]_i\) and then excorporated from the adjoined position. Next it is incorporated into the \(V^{02}\), which has been overtly raised to Pr, as in (72).\footnote{One might be tempted to say that the P-incorporation at LF in examples like (i) yields a violation of (60).} \footnote{It is important to consider the productive formation of compound nouns and compound adjectives which consist of a verb-particle sequence. The compounds in (ia), (ib), and (ic) are formed from their original verb-particle sequences of simple combination type, pure idiom type, and hybrid idiom type, respectively.}

\[
\text{(72) } [\text{IP } [\text{DP I} ] [\text{will} ] [\text{PrP } [\text{Pr' } [\text{Pr } [v_{02} [v_{01} \text{look} ] [p \text{ up} ]_j] ]] ]]
\]
\[
[\text{VP } [\text{DP the information} ] [v' [v_{02} t_i [v_{02} e]_j ] [pp [p' [p e]_j ]]]]]
\]

5. Conclusion

In this paper, we considered the structures and the derivations of the three kinds of VPCs (4i-iii). To solve the problems with some previous analyses, we proposed the 2VD analysis (cf. 4.1). Under this analysis, the verb-particle sequence of VPCs of the pure idiom type was

\[
\text{\[IP [DP I] [I will] [PrP [Pr' [Pr [V02 [V01 look] [P up]i]j]]]}
\]
\[
[VP [DP the information] [V' [V02 t_i [V02 e]_j ] [PP [P' [P e]_j ]]]]]
\]

\[
\text{(72) } [\text{IP } [\text{DP I} ] [\text{will} ] [\text{PrP } [\text{Pr' } [\text{Pr } [v_{02} [v_{01} \text{look} ] [p \text{ up} ]_j] ]] ]]
\]
\[
[\text{VP } [\text{DP the information} ] [v' [v_{02} t_i [v_{02} e]_j ] [pp [p' [p e]_j ]]]]]
\]
analyzed as \([V_{02} V_{01} \text{prt}]\), from which the verbal portion \(V_{01}\) can be extracted in overt syntax. It was next claimed that a particle in VPCs of the simple combination type is generated in the complement position of \(V_{02}\), and can be overtly incorporated as \(P_0\) into \(V_{02}\). As for VPCs of the hybrid idiom type, it was argued that a particle is generated in the complement position of a verb, while an LCS and an argument structure are specified for \(V_{02}\) of the verb and a morphological subcategorization frame is specified for its \(V_{01}\). To fulfill the frame, a particle is incorporated into the \(V_{02}\) in overt syntax or at LF.

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