Particle movement: A cognitive and functional approach*

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Abstract

The aim of this article is to provide an account of one instance of grammatical or configurational variation, namely ''particle movement''. While in traditional grammarians' works a variety of factors were claimed to influence the choice of one word order over another, in the transformational generative paradigm, factors other than syntactic ones were, on the whole, neglected. In more recent functionalist accounts, however, Cumming (1982) and Chen (1986) have shown that an analysis of ''particle movement'' benefits from also considering pragmatic factors.

In this article, drawing on the work by Deane (1992: 199–205), I shall formulate a hypothesis under which all *of the factors so far investigated can be subsumed. Second, I will show that the results of a corpus analysis and a survey conducted with native speakers of British English support this main hypothesis. Lastly, I will propose an explanation of the distributional data in terms of processing requirements.*

Keywords: *verb-particle construction; direct object; entrenchment; consciousness; accessibility; transitive phrasal verbs.*

1. Introduction

1.1. *The scope of the investigation*

The objects of this study are the factors governing the word-order alternation in the case of many English multi-word verbs, as exemplified in (1):

(1) a. John picked up the book.
    b. John picked the book up.

This construction consists of a verb and a morphologically invariant word, which, at present, shall be referred to by the neutral term *particle*, and has

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to be distinguished from another superficially similar construction, which is given in (2).

(2) John went into the problem.

In spite of their similarity, (1) and (2) can be distinguished on many syntactic as well as phonological grounds; for the present discussion, a brief consideration of three criteria will suffice.[1] Firstly, and most importantly, in contrast to (1), the verbs in (2) do not allow the word-order alternation under consideration:

(3) a. John went into the problem.
    b. *John went the problem into.

Secondly, when the direct object (DO) NP is an unstressed personal pronoun, it must precede the particle in constructions of the type in (1) while it must follow the particle in instances of (2).

(4) a. * John picked up it.
    b. John picked it up.
(5) a. John went into it.
    b. *John went it into.

Thirdly, in sentence-final position, the particle in verbal constructions of the type in (1) normally bears stress whereas it is commonly unstressed in constructions belonging to (2).

(6) What did John pick *up*?[2]
(7) What did John go into?

The differences shown so far have been interpreted by various scholars as reflecting the fact that the elements in (1) and (2), which we have called particles, do not belong to the same word class: *up* in (1) is taken to be an adverb; *into* in (2) is considered a preposition. These differences concerning the word class then extend to the classification of the respective verbal constructions: instances of (1) are generally referred to as *transitive phrasal verbs* (TPVs), and instances of (2) are known under the heading of *intransitive prepositional verbs*.[3]

A differentiation similar to the one on syntactic and phonological grounds can be arrived at by examining (1) and (2) from a cognitive grammar perspective in terms of trajector–landmark alignment. Yeagle (1983) considers the adverb-vs.-preposition debate inappropriate (which is why we will employ the more neutral term *particle*) since one would be brought to say that, for example, *up* is a preposition in one instance (cf. [8]) and an adverb in another one (cf. [9]).

(8) a. John ran up the hill.
b. *John ran the hill up.
(9) a. John ran up the flag.
b. John ran the flag up.

According to Yeagle (1983), the only way out of this problem is a rule stating that particles may not follow their landmark. In (8) for example, *up* encodes the resultant state of *John* (its trajector), and *the hill* is the landmark of *up*, which rules out the placement of *up* in sentence-final position; *up* in (9), however, can appear both before and after *the flag* because it encodes the resultant state of *the flag* (its trajector) and may thus precede or follow it (cf. Yeagle 1983: 119–122).[4]

The word-order alternation in (1) has (even outside of the transformational generative literature) most commonly been referred to as particle movement; however, in the present study this notion will not be employed for two reasons: the term particle movement emanated from the transformational generative paradigm, the theoretical foundations of which run counter to those underlying the present study; besides, the notion of particle movement can, even in the transformational generative paradigm, not be taken to imply that there is any consensus, whatsoever about the constituent that moves (i.e., is it the particle or the direct object?) let alone the direction of movement yielding the two possible surface structures (i.e., which structure is the basic one and which is derived?). Therefore, in order to avoid the theory-laden concept of movement and its implications, the word order alternation under investigation will be referred to as *particle placement*.

However, one last terminological problem remains to be settled: to my knowledge, no generally accepted terms have so far been coined in the literature on transitive phrasal verbs to refer specifically to each of the possible word orders in (1). In the present study, the word order of (1a), in which the particle is positioned adjacent to the verb, will be termed *construction*$_1$, and the word order of (2b), in which the direct object is adjacent to the verb, will be called *construction*$_2$; for ease of reference this is illustrated again here as (10):

(10) a. John picked up the book. Construction$_1$
b. John picked the book up. Construction$_2$

1.2. *Outline of the study*

Section 2 will very briefly review the literature on this subject and present the factors that are generally argued to contribute to the choice of the word orders in (10).

Section 3 will introduce the key concepts of the central hypothesis of this study. We will start by discussing the notions of *consciousness* and *attention*, which requires dealing with both the function of consciousness and the two most important factors determining the amount of consciousness the brain allocates to the processing of concepts, namely the *newness* vs. the *familiarity* and the *importance* vs. the *unimportance* of the concepts being processed.

As far as the former distinction is concerned, we will, following Lambrecht (1994) and Chafe (1994), distinguish different states of concepts according to their *identifiability status* (does a hearer H of a linguistic expression already have a stored representation of the referent of that particular expression or not?) and their *activation status* (is an identifiable concept already active in the mind of H or is it inactive, i.e., merely stored without being consciously focussed upon?). The different states of concepts (evoked by a linguistic expression) resulting from that differentiation will be related to the respective degree of cognitive accessibility or newness of these concepts, which depends both on the *context* of the respective linguistic expression and the *cognitive entrenchment* (i.e., familiarity) of the referent of the linguistic expression. Concerning the distinction between important and unimportant concepts, we will utilise Givón's (1992) treatment of what he termed "thematic importance". The notion of consciousness and the amount of attention required for processing will then be taken to be relevant for the preference of one construction over the other; the hypothesis to be put forward in this study will be referred to as the consciousness hypothesis (CH).

Sections 4 and 5 constitute the most important part of this study in which the descriptive power of the consciousness hypothesis is investigated. Section 4 will be devoted to relating the majority of factors extracted from previous analyses in the literature to the accessibility of the direct object of the respective construction mainly via contextual clues. Section 5 will discuss the results of an empirical investigation which support the proposed role of entrenchment.

In section 6, we will deal with a hypothesis that will serve to provide an explanation for the observed behavior of the two constructions in point, the processing hypothesis (PH). We will propose an explanation of the observed patterns with regard to different processing requirements for each of the two constructions. Besides, the distribution of the two word orders will be linked to the term *construction* as used in the framework of Construction Grammar.

Finally, section 7 will recapitulate and summarize the basic findings of this study and conclude with a brief outlook on possible future research.

2. Review of literature

Particle placement has attracted a lot of attention in the linguistic literature so that a variety of factors governing this alternation have been proposed so far. This section will briefly review these factors.

Factor 1: Word class of the direct object (cf., among many others, Kennedy 1920: 30; Poutsma 1926: 25)

The most obvious factor governing particle placement is the influence that personal pronouns as direct objects have on the acceptability of construction$_1$:

(11) a. John picked up the book.
b. John picked the book up.
(12) a. *John picked up it.
b. John picked it up.

If the direct object is a full lexical noun both constructions are, in general, acceptable; with pronominal direct objects, on the other hand, construction$_1$ is unacceptable. This can be taken to be representative of the way this factor is put forward in all of the works primarily dealing with particle placement. However, some approaches differ with respect to the number of categories available for the classification of the direct object: some grammarians only distinguish pronouns from full lexical nouns while others postulate a threefold distinction (pronouns vs. referentially vague or semipronominal nouns vs. full lexical nouns) in order to account for the observation that the preferred word order with fairly unspecific nouns such as *matters* or *things* as direct object is construction$_2$ (Kruisinga and Erades 1953: 77–78; Van Dongen 1919: 352; Quirk et al. 1985: 1370).

Factor 2: Stress of the direct object (cf., e.g., Van Dongen 1919: 352; Kruisinga and Erades 1953: 78)

Example (13) shows that construction$_1$ is obligatory with strongly on contrastively stressed direct objects.

(13) a. He brought back *the book*.
b. *He brought *the book* back.

The factor of stress is even strong enough to override the otherwise obligatory rule of personal pronouns requiring construction$_2$ that has just been discussed:

(14) a. *He brought back him.
b. He brought him back.
c. He brought back *him* (not her)!

Factor 3: Length/Complexity of the direct object (Van Dongen 1919: 351; Kennedy 1920: 30; Chen 1986; Hawkins 1991, 1994)

The next factor contributing to the choice of one construction over the other is the length or complexity of the direct object:

(15) a. He brought back the books that he had left at home for so long.
b. ??He brought the books that he had left at home for so long back.

If the direct object is long (i.e., if it contains much phonetic material) or syntactically complex (e.g., it contains embedded clauses), then construction$_1$ is strongly preferred, whereas short direct objects more readily allow both constructions. However, as Fraser has argued (Fraser 1966: 59, n. 3), the length of the direct object cannot be considered a criterion in its own right:

(16) a. The student worked more than seven of the difficult examples out.
b. *The student worked the example which he recognized out.

The factor of length also figures in several fairly recent transformational generative (cf. Aarts 1989, 1992; Kayne 1985, 1994 to name but a few) and performance/processing approaches (cf. Hawkins 1991, 1994), where it is addressed under the notion of syntactic weight and is argued to have the same influence as demonstrated in (15).

Factor 4: Presence of a directional adverbial after the construction (cf. Fraser 1965, 1966, 1974)

Apart from factors directly concerned with either the transitive phrasal verb or its direct object the structures following the VP under investigation also seem to exert influence on particle placement:

(17) a. He put the junk down onto the floor.
b. ?He put down the junk onto the floor.

If the VP is followed by a directional adverbial (a PP, that is), construction$_2$ is more frequent.

Factor 5: Modification of the noun or of the verb

Bolinger (1971) and Yeagle (1983) argue for another factor contributing to particle placement: the particles of transitive phrasal verbs are said to modify both the direct object and the verb. Both construction$_1$ and construction$_2$ denote the same objective situation, but

> the position of the particle tends to make one or the other paramount. With transitive verbs, when the particle is postposed it tends to modify the noun; when it stands next to the verb it behaves more like a verbal affix. (Bolinger 1971: 82)

In other words, according to this factor both of the constructions have a different meaning in that they highlight different aspects of the same objective situation, i.e., both sentences impose a different construal on the same objective scene. Construction$_1$ highlights the adverbial value of the particle (since the particle stands closer to and modifies the verb) so that the action is focussed upon; analogously, construction$_2$ highlights the adjectival value (since the particle is further away from the verb and stands closer to and modifies the direct object) so that the resultant state of the direct object is concentrated upon.

Factor 6: Idiomaticity of the construction (cf., among others, Fraser 1974)[5]

The more literal the phrasal combination, the higher the probability of construction$_2$:

(18) a. He has tried to eke out a profitable living.
b. *He has tried to eke a profitable living out.

Factor 7: News value of the direct object (Kruisinga and Erades 1953: 78; Erades 1961; Bolinger 1971; Chen 1986)

Another factor that is related to particle placement and that is connected to the notion of stress as discussed above is the news value of the direct object:[6]

(19) a. ?We'll make up a parcel for them. … On the morning of Christmas Eve together we made up the parcel.
b. We'll make up a parcel for them. … On the morning of Christmas Eve together we made the parcel up.

In (19), where the direct object is introduced in the first sentence, it is not newsworthy in the second sentence where the transitive phrasal verb is used. Thus, it is construction$_2$ that is preferred, while construction$_1$ sounds rather odd. In functionalist accounts, this factor is often treated under the notion of topicality or givenness of the direct object.

This criterion appears to be a very useful one in that it alone can account for several distinct observations. It explains why pronouns and referentially vague (or empty) nouns normally require construction$_2$ (cf. factor 1 above) whereas heavily modified nouns most frequently occur in construction$_1$: the head nominal is modified by many other constituents whereby the noun phrase is enriched informationally; cf. factor 3 above. Besides, it also handles instances in which an existential phrasal verb introduces something new to the discourse setting:

(20) a. It opens up unlimited possibilities.
b. ? It opens unlimited possibilities up.

c. It lets in a certain doubt.
d. ?It lets a certain doubt in.

The notion of news value even accounts for instances much more subtle than those just mentioned:

(21) a. ?Where's Joe?—He's sailing in his boat.
b. Where's Joe?—He's sailing his boat in.
c. Where's Joe?—He's hauling in his boat.
d. Where's Joe?—He's hauling his boat in.

The verb in (21a) entails its direct object which can thus be said to have little news value, yielding a preference for construction$_2$ (cf. [21b])—this is not the case in (21c) and (21d) where the action denoted by the verb may apply to a less constrained variety of direct objects so that both sentences are acceptable. Likewise, the same explanation can be extended to explain the preference for construction$_2$ in (22) since the mention of the time already foreshadows the *nightie:*

(22) It's almost ten o'clock. Put your nightie on, and run up to bed.

Factor 8: Times of subsequent mention (cf. Chen 1986)

So far we have been considering factors concerned with either the parts of the transitive phrasal verb construction or with the preceding discourse context. One factor proposed by Chen (1986) is connected to the discourse following the utterance in question, and it is measured in terms of how often the referent of the direct object in the utterance under investigation is mentioned in the discourse following this utterance. The more often the referent is mentioned in the following discourse, the higher the probability of construction$_1$; on the other hand, the less often the referent is mentioned in the subsequent discourse, the higher the probability of construction$_2$.

Factor 9: Distance to next mention (cf. Chen 1986)

The last factor to be considered is also connected to the discourse following the utterance in question, and it is measured in terms of the number of clauses (of the subsequent ten clauses) until the referent of the direct object is mentioned again. The earlier the referent of the direct object is mentioned in the discourse following the utterance in question, the higher the probability of construction$_2$ in the utterance under investigation. Likewise, the later the referent is mentioned subsequently, the higher the probability of construction$_1$.

As we have seen, all of the preceding factors seem to somehow contribute to particle placement: each word (be it the verb, the particle, or

the direct object) in the verb phrase, and both the preceding and subsequent discourse surrounding the transitive phrasal verb under investigation, are purported to have an effect on the choice of word order. However, the study of the literature also reveals several weaknesses:

- nearly none of the studies manages either to incorporate all, or at least the majority of, the prior results into his own account or to provide an explanation that is not questionable in some respect;
- many of the accounts proposed are monocausal ones, which fail to capture all of the subtleties particle placement offers on close inspection;
- several of the proposals suffer from the fact that they offer criteria without providing a consistent way of operationalizing these proposals in order to apply them to actual instances of transitive phrasal verbs: merely postulating some unmotivated weighting scales without providing a basis for the weighting and without even giving a precise definition of which NP counts as heavy and which ones do not is singularly unhelpful.

In the following sections, we will find that the vast majority of these factors can be derived from the speaker's assessment of the amount of consciousness required for the processing of the direct object by the hearer.

3. The consciousness hypothesis

In this section we will introduce and discuss in detail the key notion of this study, namely consciousness, and its main determinants, newness and importance, which are necessary for the understanding of the central hypothesis. The precise formulation of the consciousness hypothesis (CH) will be presented, and we will consider several testable expectations following from the hypothesis that should be confirmed if it does indeed describe particle placement satisfactorily.

In the psychological literature, the notion of *consciousness* is defined as the stream of current experience of a human mind (cf. Zimbardo 1992: 192; Roth 1997: 213). The notion of current experience comprises perceptions, thoughts, emotions, imaginations, and desires at a particular point of time. The central aspect of consciousness that determines, e.g., which thoughts are currently in our consciousness is *attention*: those aspects of experience we attend to are automatically in our consciousness whereas aspects of experience we do not attend to consciously are perceived or processed only subconsciously, if at all. The human brain is organized in such a way that it automatically allocates consciousness to aspects of current experience that are either *new* or *important* or both (cf. Roth 1997: 228–231).[7]

The allocation of consciousness to aspects of experience results in a longer and more thorough processing of the concepts or percepts attended to. In the present investigation, consciousness is argued to play a crucial role for particle placement; therefore, we need to elaborate on the notions of *new* and *important* that determine which concepts or percepts are attended to. We will do so with regard to speakers and hearers involved in discourse, and start by considering *newness*.

At a particular point of time in a discourse situation a speaker S and a hearer H generally interact in such a way that S verbally denotes some referent(s) and predicates something of it/them, i.e., expresses some state(s) of this/these referent(s) or relation(s) of the referent(s) to other entities. Concerning the state(s) of the referent(s) denoted by a linguistic expression uttered by S we may, following Chafe (1994) and Lambrecht (1994), distinguish concepts that are *unidentifiable* for H from concepts that are *identifiable*. Unidentifiable are those concepts for which H has no representation prior to the utterance (that is, by mention of such a concept S requires H to establish a new referential file for the referent introduced). Identifiable concepts, on the other hand, are concepts that are not new since a representation of them is already stored in the mind of H.

However, the fact that a representation of a referent already exists in the mind of H prior to an utterance does not necessarily entail that this referent is active in the mind of H at coding time: "[k]nowing something and thinking of something are different mental stages" (Lambrecht 1994: 93). That is, conveying information from S to H not only involves H's knowledge of the referents and their states and relations expressed by the utterance—it also involves consciousness (i.e., the activeness) of the referents mentioned in discourse. In other words, there are, at least, two kinds of identifiable concepts, namely *active* and *inactive* concepts.[8] The former are concepts currently in short-term memory and attended to consciously by H; the latter are concepts that are at coding time—though stored in declarative memory—not attended to consciously by H.[9]

We have seen that there are two different kinds of newness involved, so that expressions referring to the different kinds of newness need to have been established. The first kind of newness refers to the difference between unidentifiable and identifiable concepts, which is independent of the particular discourse situation; the second refers to the difference between concepts that are identifiable but inactive (i.e., new) in the particular discourse situation and those that are identifiable and active (i.e., not new in the present situation) and is, thus, dependent on the discourse situation. This difference in newness is not just a mere stipulation within the present study—it has been recognized by several scholars and is reflected in, e.g., different kinds of acceptability of noun phrases as topic (cf. Lambrecht

1994: 164), so that different terms for these kinds of newness have been introduced: unidentifiable referents are referred to as brand new; identifiable but inactive referents are referred to as unused (cf. Prince 1981: 237; Lambrecht 1994: 105–109).

These two kinds of newness taken together enable us to classify concepts according to their accessibility. *Accessibility* is, basically, to be understood here in its common everyday sense meaning of very much the same thing as availability. It refers to the degree of ease of activation of a concept for cognitive processes in working memory, which in turn depends to a certain extent on the nature of this concept (which will be investigated in more detail in what follows); in other words, the notion of accessibility as employed in this study can be equated with Chafe's notion of activation cost (Chafe 1994: chapter 6).[10] For the present investigation, we must, firstly, comment on ways of accessing a concept that is a referent of a linguistic expression and, secondly, on the ease of accessibility of a concept by means of and dependent upon those ways. We will proceed from concepts which are easiest to access to those most difficult to access.

Firstly, an identifiable and active concept is easiest to access for a hearer H: it is both familiar to H and currently lit up in the hearer's consciousness (cf. Chafe 1994) so that, in practice, neither additional effort nor the participation of consciousness is needed for its activation.

Secondly, an identifiable inactive concept from declarative memory may be accessed/become active (i.e., available for cognitive processing) by two different routes, namely *spreading activation* and *focussing* (following Deane 1992). Spreading activation is the process by which one concept subconsciously (i.e., fairly automatically and effortlessly) facilitates the recall of another, associated concept.[11] Cognitive focus, on the other hand, corresponds to the centre of attention, and thus is essentially a selective control mechanism requiring conscious effort (as does, e.g., its perceptual correlate, visual focussing). The accessibility of a concept (i.e., the ease of accessing it) is crucially determined by two factors:

i. The *entrenchment* of a concept, i.e., its familiarity (due to the frequency of its successful use; cf. Deane 1992: 34). The more entrenched a concept is, the easier it may be activated; the less entrenched it is, the more difficult it is to activate.
ii. The *context* of a concept may serve to facilitate its activation (cf. Chafe 1994); that is, even a concept only barely entrenched may be easy to recall because it might have been activated shortly before by having been mentioned in the prior discourse. On the other hand, a concept may be active via spreading activation from a related concept that has been dealt with in the prior context.

Thirdly, unidentifiable concepts may only be activated by being put in focus, i.e., H must consciously decide to put an unidentifiable concept into focus in order to establish a new referential file. However, focus is a limited resource and is constrained by the limits of working memory. Therefore, accessing (or creating a mental slot for) unidentifiable concepts is, generally, costly and involves more conscious effort than the other ways of activating concepts. This differentiation of concepts is summarized in Figure 1.

As has been shown in many other studies, the notion of accessibility of noun-phrase referents has important consequences for various syntactic phenomena (cf., among many others, Lambrecht 1994; Bock 1982). In this study, it will be demonstrated that accessibility also plays a crucial role in determining the position of the particle with respect to the direct object in the case of transitive phrasal verbs. This influence of accessibility on

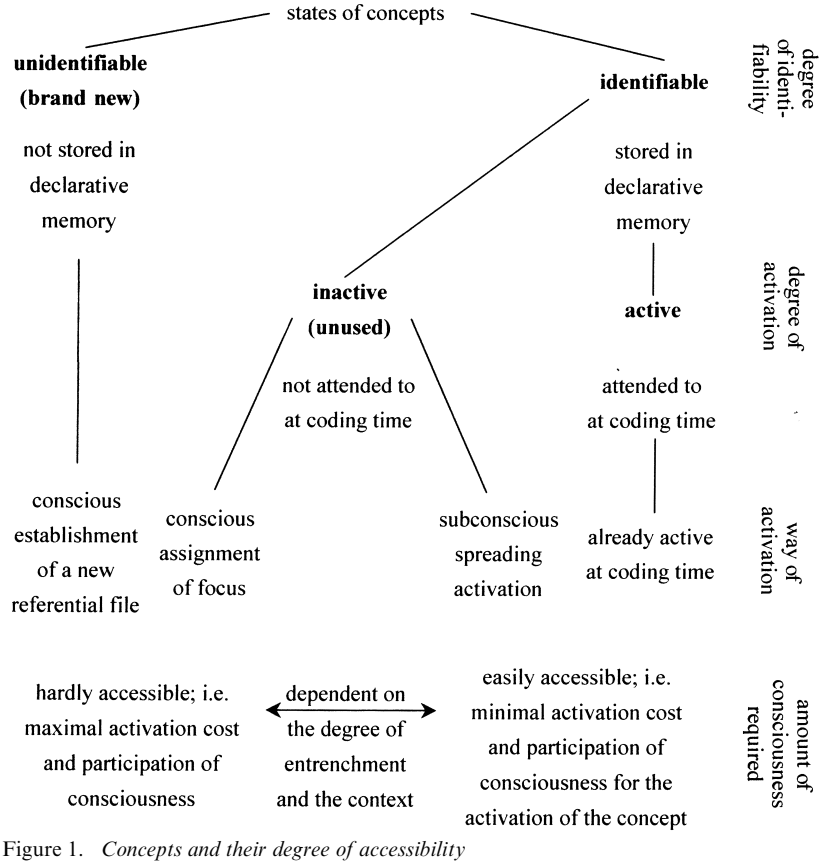

Figure 1. *Concepts and their degree of accessibility*

particle placement comes as no surprise if we recognize the linguistic correlates of the categories of shared information and thematic information we have seen to coincide with identifiability and activation. Linguistically, shared information is connected to issues of definiteness, pronominalization, and the syntax of reference; thematic information, on the other hand, is connected to issues of voice, word order, and sentence prosody (cf. Tomlin 1986: 39–40).

So far we have only concentrated on the influence of accessibility (as a result of different kinds of newness) on consciousness and attention. We still have to comment on the relation between consciousness and importance. Importance is used here as a technical term that denotes roughly the same as in its colloquial use. Following Roth (1997: 230–231), aspects of experience are, at a given point of time, considered important if they were relevant in the past either in a positive or in a negative way. As was argued above, the human brain allocates attention to the processing of important aspects of experience whereas the processing of unimportant aspects is left to our subconscious. If this mechanism is also extended to discourse then we may assume that the amount of consciousness required to process an important part of a speaker's utterance is higher than the one required for processing an unimportant utterance.

By now, we have elaborated on all the key notions figuring in the central hypothesis of this study. The hypothesis we propose to account for particle placement is the following:

(23) *The consciousness hypothesis (CH)*: By choosing one of the two constructions for an utterance U a speaker S indicates his assessment of the amount of consciousness the hearer H will need to process the direct object of U. More precisely, U's propositional content is, by S, enriched by a piece of information indicating the degree of consciousness which S assumes H will need in order to process the direct object in the following way: construction$_1$ will be preferred with direct objects requiring a high amount of consciousness; construction$_2$ will be preferred with those requiring none or only a limited amount of consciousness for their processing.[12]

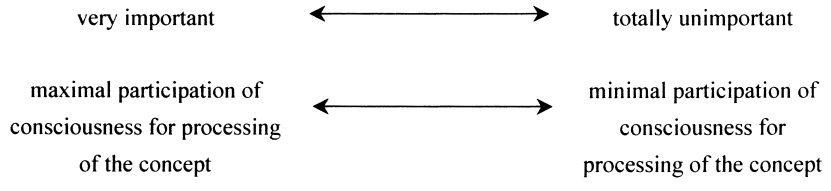

Figure 2. *Concepts and their degree of importance*

If this hypothesis is correct we should find correlations between the two possible word orders and the (factors influencing the) amount of consciousness required for the processing of the direct object such that:

i. the factors governing particle placement should, all in all, be explicable in terms of the consciousness hypothesis so the patterning of the constructions is as predicted in (23);
ii. the choice of one construction over the other should be reflecting the ways of activating the direct object given in Figure 1 in the way predicted in (23);
iii. direct objects whose referents are fairly important should preferably occur in construction$_1$ whereas those whose referents are fairly unimportant should be more frequent in construction$_2$;
iv. the choice of one construction over the other should reflect the different degrees of consciousness involved in accessing the direct object in the way predicted in (23):
    a. direct objects whose referents are active/accessible via the discourse context should preferably occur in construction$_2$ whereas those whose referents are not identifiable or inactive should mostly occur in construction$_1$;
    b. direct objects whose referents can be taken to be fairly entrenched should both be more frequent and more acceptable in construction$_2$ while poorly entrenched direct objects should be more frequent as well as more acceptable in construction$_1$.

From all of this it follows that the account offered will not provide a fully predictive clear-cut categorization of cases in which construction$_1$ is obligatory and others in which construction$_2$ is obligatory: the amount of consciousness proper as well as its two most important determinants are inherently scalar notions which can be differentiated along a continuum. In other words, in the majority of cases the question is not whether one construction is obligatory and the other one is ruled out—rather, what is relevant here is what Langacker has termed *construal*, namely, the subjective conceptualization of a given situation by a speaker (cf. Langacker 1987: 138–141), i.e., in this case, the speaker's construal of the identifiability, the level of activation, and the importance of the referent of the direct object noun phrase for the hearer.[13] However, we do not consider the fact that no either–or distinctions will be offered to arrive at an absolute predictability as a weakness of the present approach —rather, the scalarity of the syntactic phenomenon under investigation is in conformity with the theoretical assumptions of many cognitive linguistic analyses as it reflects the inherent scalarity of many cognitive processes.

4. Particle placement: Revisiting the literature

In this section, it will be shown that most of the factors that purportedly determine particle placement are related to the degree of consciousness required for the processing of the direct object and the ways of activating the referent of the direct object as predicted by the consciousness hypothesis.

4.1. *Phonological factors*

In all of the studies, a (contrastively) stressed direct object is unanimously argued to require construction$_1$ while, other things being equal, unstressed direct objects increase the probability of construction$_2$. This distribution is fully compatible with the consciousness hypothesis: stressed constituents are commonly those to which the conscious attention of the addressee is directed, so construction$_1$ is what we would expect, and indeed do find. Analogously, the lack of stress on a linguistic element (correlating with construction$_2$) indicates that it is not singled out for conscious attention because it is neither new nor important. This distribution corresponds to what functional accounts would predict in terms of given and new information.

4.2. *Syntactic factors*

As was argued above, particle placement is influenced by the word class of the direct object. This influence fully conforms to the consciousness hypothesis as well full lexical NPs are commonly used to denote referents which are newsworthy and require conscious processing effort (often because they are newly introduced into the discourse), whereas pronominal NPs are used for designating referents which are familiar in a given discourse situation, due to either their evocation in the preceding context or spreading activation, and thereby already active.

Chen (1986), distinguishes direct objects other than personal pronouns according to the nature of the determiner preceding the nominal element (definite vs. indefinite NPs). The relation between the determiner and accessibility has already been commented on, e.g., by Givón (1983: 8–9):

> Linguists traditionally deal with the binary distinction between definite and indefinite, with the former marking topics which the speaker assumes the hearer can identify uniquely, is familiar with, are within his file (or register) and thus available for quick retrieval. On the other hand, indefinites are presumably topics introduced by the speaker for the first time, with which the hearer is not familiar, which therefore are not available to the hearer readily in his file … .

Combining the argumentation of Chen (1986) and Givón (1983), we arrive at a distribution of the two constructions as predicted by the consciousness hypothesis: construction$_2$ is more likely to occur with more familiar and easily accessible referents of definite object NPs not requiring a lot of conscious effort, whereas construction$_1$ is more likely with less familiar and therefore poorly accessible referents of indefinite object NPs.

Another factor discussed in the literature is concerned with the length of the direct object. This factor also relates to the consciousness hypothesis quite straightforwardly: the observation that long and short direct objects are generally associated with construction$_1$ and construction$_2$ respectively can be linked to the fact that, on aggregate "the new information often needs to be stated more fully than the given (that is, with a longer, 'heavier' structure) …" (Quirk et al. 1985: 1361). In other words, conforming to the consciousness hypothesis, information requiring an extra amount of conscious effort due to its complexity is more likely to be encoded by construction$_1$: short direct objects, however, prototypically denote given information that may be processed unconsciously and preferably occur with construction$_2$.

The factor of directional adverbials following the construction can, at present, not be explained in terms of the consciousness hypothesis. We will return to this factor in section 5.2.

4.3. *Semantic factors*

The first semantic factor to be dealt with refers to the distinction of non-pronominal direct objects in terms of the specificity of their referents: referentially vague direct objects (such as *matters* or *things*) correlate with construction$_2$. Van Dongen (1919) has already pointed out that in these cases the function of the direct object "becomes almost that of a pronoun" (Van Dongen 1919: 333). This implies that expressions such as *matters* or *things* will be used only if their referents are already familiar in the discourse register of both speaker and hearer, as is the case with personal pronouns. In this case, *matters*, *things,* and the like refer to pieces of information that are easily accessible, so that—as predicted in the consciousness hypothesis—easily accessible information correlates with construction$_2$.

The factor that is concerned with the entailment relation of a verb and its direct object resulting in a preference for construction$_2$ (cf. examples [21] and [22]) also yields a distribution of the two constructions compatible with the consciousness hypothesis: in these cases, the verb denotes an activity or state the processing of which requires, or (so to say) opens up, a semantic frame for its interpretation. That is, in (21b), here repeated as (24), by uttering the verb *sailing* the speaker opens up a frame in which

sailing is closely related to the direct object typically involved in sailing (namely a boat); thereby, the speaker accesses the referent of the direct object by what we have termed spreading activation:

(24) Where's Joe?—He's sailing his boat in.

At this stage, the factor of idiomaticity of the verb phrase cannot be integrated with our approach; in sections 5.3 and 6, however, we will discuss it in some more detail.

4.4. *Discourse-functional factors*

The first of the discourse-functional factors is more or less equivalent to the main hypothesis in the present study. Erades (1961) considered news value to be the primary determinant of word order for transitive phrasal verbs: familiar direct objects (i.e., easy accessible ones) were associated with construction$_2$; newsworthy direct objects (i.e., inactive or unidentifiable objects) were argued to correlate with construction$_1$. The same goes for Bolinger's claim that the coupling of stress and position serves as a means of achieving semantic focus: the unaccented mid-position of objects (construction$_2$) was said to correlate with presupposed items (that are, by definition, identifiable), whereas the accented end-position of the object (construction$_1$) was taken to indicate its newness.

Chen's (1986) functional factor of *distance to last mention* also conforms to the consciousness hypothesis: Chen showed that direct objects tend to occur in construction$_2$ if they are mentioned shortly before, whereas they prefer construction$_1$ if the distance to their antecedent is fairly long. Evidently, if a direct object has been mentioned shortly before, its referent will be highly accessible, requiring hardly any conscious effort at all as it will presumably still be active in working memory. Likewise, the probability of a referent not being accessible anymore increases proportionally to the time (i.e., distance measured in clauses) since it was last mentioned.

As far as the criteria *times of subsequent mention* and *distance to next mention* are concerned, Chen showed that they correlate with particle placement in such a way that direct objects occurring frequently and without a large gap in the subsequent discourse are preferably used in construction$_1$. Since it has been shown (cf. Givón 1992) that these two factors can be employed to measure what has been termed *thematic importance* (the earlier and the more often a referent is mentioned after the clause in question, the more important it is in the given stretch of discourse), what we find in Chen's results is a correlation of important elements and construction$_1$. This is exactly what would be expected from the consciousness hypothesis: if a speaker chooses construction$_1$ to

introduce an important element into the discourse, it is indicated that the hearer should process the referent of the direct object using more of his conscious attentional resources.[14]

5. Particle placement and entrenchment

Section 4 has shown that the first four correlations which follow from the consciousness hypothesis turn out to be descriptively adequate: several factors already familiar from the literature were able to be shown to directly reflect, or at least be closely related to, the accessibility of the direct object and the resulting amount of consciousness. However, on first sight, it may appear as if so far little more than a successful recycling of factors, many of which were already proposed long ago, has been achieved, although this clearly is a promising approach in that it unites most of the factors so far only separately stipulated. What thus remains to be done is to find a possibility of investigating the other important determinant of accessibility (i.e., entrenchment) in order to test it without having to cope with other factors interfering with and influencing the results in non-controllable ways. Therefore, this section deals with an empirical investigation conducted to investigate the role of the degree of entrenchment of the direct object.

5.1. *The operationalization of entrenchment*

For an empirical investigation of the factor of entrenchment, this notion must first of all be operationalized. The entrenchment of a concept is, naturally, not just a question of entrenched vs. non-entrenched status—rather, the entrenchment of a concept is a matter of degree (as is probably the case with many, if not most, cognitive and linguistic phenomena). Therefore, it is plausible to assume that an operationalization of the degree of entrenchment of referents might best be devised by using a hierarchy ranking those referents according to their degree of entrenchment. Such a hierarchy has indeed been proposed Deane (1992: 199–205) has suggested that the so-called Silverstein hierarchy (SH, originally proposed to deal with case-marking patterns of split-ergative languages) is actually a hierarchy of entrenchment. The following facts support the interpretation of this hierarchy as an entrenchment hierarchy:

– This hierarchy orders NP referents, among other things, along a continuum from abstractness to concreteness and, within the concrete objects, from inanimate to animate referents. Recall that the degree of entrenchment/familiarity of a concept is, to a considerable degree, a function of the frequency of successful use; since concrete objects are

relatively more frequent interacted with than abstract entities, and likewise, humans are relatively more frequently interacted with than other entities, the ordering of the elements within the Silverstein hierarchy plausibly corresponds to that within a hierarchy of entrenchment.

– Apart from the criterion of mere frequency of successful use, the degree of entrenchment of the referent of an NP is also influenced by the kind of interaction humans have with that referent (cf. Deane 1992: 200–201): Humans can be, and are, prototypically interacted with in a much larger variety of ways (physically and/or socially) than inanimate objects which can often only be physically manipulated; this is not possible at all with abstract entities. A widely varied interaction with a given entity, then, yields a much higher degree of entrenchment/familiarity than just its being perceived (which is at least intuitively paralleled by the fact that a single conversation or collaboration with a human being results in a higher degree of familiarity with this person than of an entity which is frequently perceived but not interacted with; cf. also Roth 1997: 273, 322–323). Thus, what we find is a positive correlation between qualitatively different kinds of NP referents and the possibilities of interacting with them, the typically resulting degree of entrenchment/familiarity, and their rank ordering on the Silverstein hierarchy.
– Properties such as the degree of naturalness as viewpoint, empathy focus, and the information content of a concept correlate with both the Silverstein hierarchy and entrenchment (cf. Deane 1992: 197).
– Deane (1992) draws a parallel between the position of a noun on the Silverstein hierarchy and the ease, or point of time, of acquisition of the concepts denoted by the respective noun: ''the correlation between Piaget's stages [of the conceptual development of children] and the Silverstein Hierarchy is very direct'' (Deane 1992: 226).

Thus, the ordering of NP referents on the Silverstein hierarchy corresponds not only quantitatively (in terms of the frequency of successful use) to what would be expected from an entrenchment hierarchy—the ordering also reflects qualitative differences of familiarity based on different kinds of interaction with NP referents and aspects of acquisition. Apart from that, Deane (1992: 201–209) refers to several analyses of linguistic phenomena in which either the Silverstein hierarchy proper or constitutive subparts of it are employed while arguing on the basis of entrenchment or closely related notions: Delancey's (1981) analysis of split ergativity, Kuno's (1987) treatment of reflexivization in English, and Deane's (1987) analysis of possessive constructions in English.

Table 1. *The Silverstein Hierarchy (SH) according to Deane (1987)*

		least entrenched
1.	↑	Abstract entities
2.	↕	Sensual entities
3.	↕	Locations
4.	↕	Containers
5.	↕	Concrete objects
6.	↕	Animate beings (other than humans)
7.	↕	Kin terms
8.	↕	Proper names
9.	↕	3rd person singular pronoun
10.	↕	2nd person singular pronoun
11.	↓	1st person singular pronoun
		most entrenched

To sum up, it seems as if the Silverstein hierarchy can plausibly be regarded as an entrenchment hierarchy. For both the corpus analysis and the survey to be presented, we will use the modified version of the hierarchy shown in Table 1, which has been employed by Deane (1987).[15]

5.2. *An empirical investigation*

In order to examine the role of entrenchment on its own with respect to particle placement as well as its relation to some other factors previously discussed, we will consider 150 randomly collected clauses with three different transitive phrasal verbs (*to bring back*, *to build up*, and *to pick up*) from the Collins Cobuild Corpus.[16] The dependent variable is, of course, the type of construction that was chosen by the speaker or writer of the utterance in point—the independent variables analyzed are

i. the degree of entrenchment of the referent of the direct object noun phrase;
ii. the length of the direct object noun phrase (in syllables);
iii. the influence of a PP/directional adverbial following the construction.

The results show that the consciousness hypothesis is strongly confirmed by the data. Of the three independent variables investigated, the degree of entrenchment had the highest influence on the choice of construction_1 or construction_2 in the direction predicted by the hypothesis ($r_S = 0.68$; $p_{\text{2-tailed}} < 0.0001$): the more entrenched the direct object, the more likely was the use of construction_2.

While most of the other correlations are not of interest here, one of them shall be discussed in some more detail, namely the positive correlation

between the degree of entrenchment of the direct object and the occurrence of a PP following the construction ($r = 0.24$; $p = 0.003$). This correlation sheds some light on the observed, but not yet explained observation by Fraser (1976), namely that PPs following the construction yield a preference for construction$_2$ ($r = 0.53$; $p_{2\text{-tailed}} < 0.0001$). This pattern can be explained if we take into account the nature of transitive phrasal verbs and directional adverbials in the constructions under investigation: transitive phrasal verbs very often consist of a verb denoting the change of location of the referent of the direct object (such as *to bring*, *to put*, *to build*, *to pick*, *to throw*, *to lay* etc.) along the path designated by a particle typically also having a locational or directional meaning (*back*, *down*, *up*, *away*, etc.; cf., among others, Bolinger 1971: 85–92). That is, directional adverbials, typically, further specify the path along which the direct object of the verb is moved, as in (25):

(25) a. He picked the coin up from the ground.
b. He brought the escapee back to prison.

Since it is much more likely for concrete objects or animate beings (especially humans) to move or be moved along a path, the probability for the occurrence of a PP is much higher with the kind of direct objects denoting exactly these referents, which, in turn, are those we have taken to be the more entrenched ones (as opposed to, say, abstract referents of the direct objects). Hence, the presence of a following PP does not influence the choice of construction$_2$ over construction$_1$ at all (as was argued by Fraser)—rather, it is the entrenchment of the referent of the direct object that increases the probability of both the presence of a PP and the choice of construction$_2$. That is to say, the factor of following PPs that could hitherto not be explained by any of the accounts proposed simply follows from the degree of entrenchment of the direct object.

In the corpus analysis, the factor of entrenchment was analyzed in natural examples within a given context. In order to further back up the consciousness hypothesis, the factor of entrenchment should also be investigated in isolation. Therefore, a survey was devised in which 16 native speakers of British English were asked to judge several sentences according to their acceptability.[17] Each of these sentences can be classified into one of two groups, depending on which of the two construction under consideration is instantiated by the sentence. For each sentence the verb was one of the three different transitive phrasal verbs already investigated in the corpus analysis, namely *to bring back*, *to build up*, and *to pick up*. For each group of sentences constituted by one of the verbs and one type of construction, several direct objects (differing in their degree of entrenchment) were offered in order to test all of the combinations of construction

type, verb, and level of entrenchment on the Silverstein hierarchy—however, it was not possible to combine every verb with direct objects of every level of entrenchment, as some sentences would have been considered ungrammatical due to their violation of selectional restrictions rather than for reasons following from the notion of entrenchment. The pattern of the sentences offered may be summarized as follows:

(26) a. He $V_{trans\ 1}$ particle $NP_{DirObj\ SH\text{-}level\ 1}$
He $V_{trans\ 1}$ particle $NP_{DirObj\ SH\text{-}level\ 2}$
…
He $V_{trans\ 1}$ particle $NP_{DirObj\ SH\text{-}level\ 11}$
He $V_{trans\ 2}$ particle $NP_{DirObj\ SH\text{-}level\ 1}$
…
He $V_{trans\ 3}$ particle $NP_{DirObj\ SH\text{-}level\ 11}$

b. He $V_{trans\ 1}$ $NP_{DirObj\ SH\text{-}level\ 1}$ particle
He $V_{trans\ 1}$ $NP_{DirObj\ SH\text{-}level\ 2}$ particle
…
He $V_{trans\ 1}$ $NP_{DirObj\ SH\text{-}level\ 11}$ particle
He $V_{trans\ 2}$ $NP_{DirObj\ SH\text{-}level\ 1}$ particle
…
He $V_{trans\ 3}$ $NP_{DirObj\ SH\text{-}level\ 11}$ particle

The sentences were presented without any special intonational marking. Moreover, all of the sentences were of nearly identical length, and if a direct object contained a determiner, it was in all cases a definite one; additionally, all of the sentences were given without any context at all. To sum up, the design only tests for entrenchment; all other factors are held constant and cannot interfere with it.

The survey yielded 784 acceptability judgements. For each construction, the eleven average judgements for each level of the Silverstein hierarchy were then correlated with the rank of the levels of the Silverstein hierarchy. Again, the results provide striking evidence in favor of the consciousness hypothesis. For $construction_1$, we obtained a significant negative correlation between the degree of entrenchment of the referent of the direct object and the acceptability of the construction ($r_S = 0.6$; $p_{1\text{-tailed}} = 0.026$); in other words, the more entrenched the direct object, the less acceptable $construction_1$ is. For $construction_2$, we even found a very significant positive correlation in the direction predicted by the consciousness hypothesis: the more entrenched the direct object, the more acceptable is $construction_2$ ($r_S = 0.77$, $p_{1\text{-tailed}} = 0.0027$). As a result of this, all of the predictions which follow from the consciousness hypothesis are clearly borne out by the data.

5.3. *Particle placement and idiomaticity*

The last factor governing particle placement that has so far not been related to the consciousness hypothesis is the idiomaticity of the construction yielding a preference for construction$_1$. However, in view of the results discussed in the previous section, this factor can now be dealt with appropriately.

In the present study, linguistic expressions are not taken to be either totally idiomatic or totally literal—rather, different degrees of idiomaticity are possible. Therefore, we may, in the case of transitive phrasal verbs, also distinguish between different degrees of idiomaticity. As has already been argued, transitive phrasal verbs typically designate a change of place of the direct object along the path denoted by the particle. Thus, if the direct object of the transitive phrasal verb is a concrete object (hence, presumably highly entrenched), the sentence will most likely designate the change of the location along the path denoted by the particle, and the sentence will have a fairly literal meaning (cf., e.g., example [25]). However, if the direct object is an abstract noun (hence, likely to be only barely entrenched) then the direct object cannot be interpreted as moving along the path denoted by the particle, and the sentence is likely to be interpreted more idiomatically, as in (27):

(27) a. He brought back peace.
b. People who built up a very close military relationship with Iraqi …
c. They picked up speed.

However, in these examples, the verb phrases are not totally idiomatic, but still fairly compositional—their interpretation is to a large extent determined by what Lakoff and Johnson (1980) have termed conceptual metaphor: the actions which the referents of the abstract direct objects undergo are encoded as if they described actions some concrete objects were undergoing. That is to say, the meanings of some of these constructions is still fairly easily computable from the meaning of its parts: these instances of transitive phrasal verbs should, therefore, be regarded as metaphorical rather than totally idiomatic. But, since we have seen that, in cases like these, the metaphoricity results from combining transitive phrasal verbs denoting changes of location with fairly abstract (and thus barely entrenched) objects, we conclude that it is not the metaphoricity of the verb phrase that determines the choice of construction$_1$ as has traditionally been claimed; it is the entrenchment of the direct object that is responsible for both the metaphoric interpretation and the choice of construction$_2$. This explanation of the preferred patterning of metaphoric

verb phrases and construction$_1$ is confirmed by the statistical analysis of the corpus already investigated above. There is a highly significant inverse correlation between the degree of metaphoricity and the degree of entrenchment ($r_S = -0.42$; $p < 0.001$); in other words, the lower the degree of entrenchment, the higher the degree of metaphoricity. Therefore, the explanation proposed here for metaphoric verb phrases being preferred in construction$_1$ is strongly supported by the data.

This explanation in terms of entrenchment extends to many other non-literal and much more opaque constructions with transitive phrasal verbs as well. Examples such as (28) and (29), which generally occur only in construction$_1$, show that in constructions with a comparatively high degree of idiomaticity, the direct objects occupy a position very low on the Silverstein hierarchy and are, correspondingly, very little entrenched, thereby supporting the consciousness hypothesis.[18] This analysis is further strengthened by the fact that even the most opaque idiomatic constructions with transitive phrasal verbs require construction$_2$ if the direct object is, for example—due to the reference to the direct object's referent in the preceding context, an unstressed personal pronoun (following Cowie and Mackin 1975: xlv–li).

(28) a. He wanted to lay down the law.
b. ??He wanted to lay the law down.
c. *He wanted to lay down it.
d. He wanted to lay it down.

(29) a. He has tried to eke out a profitable living.
b. *He has tried to eke a profitable living out.
c. He has eked out a review of Byron.
d. He has eked a review out.[19]

Table 2 summarizes the discussion of idiomaticity so far.[20]

However, the discussion should not end here, as we still have to explain why transitive phrasal verbs figuring in idiomatic constructions behave the way they do; in other words, why do idiomatic constructions not display the same gradient of frequency and acceptability with regard to their direct objects' entrenchment as do literal expressions?

We can explain this by considering general syntactic properties of idiomatic expression. Many idiomatic expressions are syntactically unproductive such that, e.g., the set of participants they allow is highly restricted and/or they cannot undergo syntactic transformations (not necessarily in the transformational generative sense of the term) such as passivization or topicalization. That is, while most literal expressions readily undergo syntactic rearrangements, idioms often resist the rearrangement of their component parts although speakers might wish

Table 2. *Degrees of idiomaticity and particle placement*

	Literal ⟷ Metaphoric ⟷ Idiomatic		
Possible objects	all objects possible; their interpretation depends on the degree of entrenchment of the referent of the direct object		full lexical object(s) compatible with/ constituting the idiomatic meaning and personal pronouns designating the referents of these lexical objects
Interpretation			
	literal interpretation	metaphoric interpretation (due to degree of entrenchment)	idiomatic interpretation
Syntactic behavior			
	both constructions are acceptable	preference for $construction_1$ due to entrenchment of the direct object	$construction_1$ is strongly preferred—$construction_2$ is obligatory with personal pronouns due to the context of the direct object
Examples			
	to bring a book back to bring back a book	to bring back peace ??to bring peace back	to put up a friend/my sister ??to put a friend up to put him up

this for some communicative reason. Therefore, if idioms in general are so recalcitrant as to resist syntactic rearrangements, it is only logical that idioms consisting of transitive phrasal verbs are also less susceptible to syntactic rearrangements due to information-structural reasons.

Put differently, idiomatic expressions containing transitive phrasal verbs do not undergo a change in word order from $construction_1$ to $construction_2$ (in order to indicate a certain cognitive status of the referents of the direct objects) just because the referents of the direct object display a low degree of entrenchment—rather, in order to change the word order of idiomatic expressions, the direct object has to be maximally entrenched *and* highly accessible because of its context, i.e., an unstressed personal pronoun. Metaphorically speaking, it takes more than an entrenched direct object to allow idiomatic expressions to be rearranged—a direct object capable of enforcing $construction_2$ with idiomatic constructions has to meet most of the criteria elaborated upon so far, i.e., be fairly prototypical for $construction_2$.[21]

The results presented so far not only strongly substantiate the consciousness hypothesis, they also render doubtful other accounts of

particle placement, such as, e.g., Hawkins's (1994) claim that, in cases where his EIC principle[22] does not make strong predictions, the grammaticalization of a basic word order frequently determines the word order of verb-particle constructions. If that was really the case, the results of the survey should be such that there should, regardless of the type of construction, be a strong overall tendency towards construction$_2$ since this is, for Hawkins, the grammaticalized basic word order (Hawkins 1994: 88, 181). However, the results do not confirm Hawkins's hypothesis at all. If the direct object is short so that EIC does not make strong predictions (or any at all), then, for both constructions, the factor of entrenchment of the direct object plays a very significant role regardless of which construction is investigated. Hawkins is, of course, aware of ordering principles such as the ones discussed here, but he speculated that these orderings (such as animate > inanimate) can be reduced to average lengths: "I believe that animate entities will be shorter on aggregate than inanimate ones" (Hawkins 1994: 424). Still though, it is still questionable whether the fairly fine distinction of concepts according to the Silverstein hierarchy and the other factors can really be mirrored adequately by average syntactic lengths alone.

In sum, transitive phrasal verbs behave in the way predicted by the consciousness hypothesis, but their adherence to the patterns predicted may differ according to their idiomaticity. The only point that remains to be considered is: why is it construction$_1$ that is used for idiomatic meanings and proves to be so recalcitrant rather than construction$_2$? Answering this question is one of the objectives of section 6.

6. The processing hypothesis

So far, we have seen the consciousness hypothesis is supported on theoretical and empirical grounds:

i. most of the factors independently discussed in the literature were shown to be related to both the accessibility (via spreading activation, cognitive focussing, and the discourse context) and the importance of the direct object;
ii. we have found statistically significant correlations between the degree of entrenchment of direct objects and their occurrences in the respectively preferred constructions.

However, the consciousness hypothesis is only a description of distributional facts, albeit one that subsumes all other factors proposed so far and that is substantiated by overwhelming statistical evidence. Therefore, it would be desirable to be able to provide an explanation for why speakers'

choices of one construction over another should correlate with their assessment of the cognitive effort of accessing the direct object. In order to do so, we shall have a brief look at some basic tenets of Construction Grammar and cognitive linguistics.

One assumption of Construction Grammar is that pragmatic information may be conventionally associated with a particular linguistic form and, therefore, contribute to the semantics of a grammatical construction. The fact that particle placement is determined by the accessibility and the importance of the direct object in question may be regarded as an instance where there is such a pairing of linguistic forms and conventional pragmatic information. Following Givón (1992), we may say that grammatical signals (such as, in this case, the choice of one construction over another) can be considered mental-processing instructions that pertain to attentional activation and search in memory storage. Just as "certain grammatical constructions impose a particular reference-point organization" (Langacker 1997: 209), the two constructions constituting the phenomenon of particle placement impose a particular informational organization. More specifically, we put forward the following hypothesis:

(30) *The processing hypothesis (PH)*: By choosing one of the two constructions for an utterance U (along the lines predicted by the consciousness hypothesis), a speaker S communicates his or her idea about the amount of consciousness required by subordinating to the different processing requirements of both constructions: S formulates U in such a way that he triggers mental-processing instructions in the mind of the hearer H and simplifies the processing of U (including access to the referents within U).

If this hypothesis is correct we should be able to come up with an explanation of how the choice of one construction over the other can be taken to influence and simplify processing.[23] Consider (31):

(31) a. NP_{Subj} V_{trans} particle NP_{DirObj} = $construction_1$
only consciously processable

b. NP_{Subj} V_{trans} NP_{DirObj} particle = $construction_2$
unconsciously processable

That is to say, $construction_1$ and $construction_2$ seem to display a pattern very similar to the one most thoroughly investigated in the school of Functional Sentence Perspective (FSP): accessible/topical material (not needing conscious processing effort) is preferably positioned at the

beginning of a sentence whereas inaccessible/focal material (needing conscious processing effort) is positioned sentence-finally. To explain why accessible material is in general placed before inaccessible material,

> it is hypothesized that such a rendition of information not only allows the speaker to concentrate on the formulation and presentation of the less accessible material, but also aids the comprehension task of the addressee. The readily accessible language data is processed automatically, freeing the addressee's processing resources for the controlled processing of the less accessible information. Moreover, the automatically processed data provides the basic frame for or perspective for the interpretation of the utterance; hence the processing task for the interlocutor is made easier if this perspective is presented first. (Siewierska 1988: 84–85)

> The chunks of old, redundant information ("topical") information in the clause serve to ground the *new* information to the already-stored old information. Cognitively, they furnished the *address* or *label* for the *storage locus* ("file") in the episodic memory. (Givón 1992: 9)

These quotations alone, however, do not provide sufficient motivation for the patterns observed since (i) they do not account for the influence of importance on particle placement and (ii) they do not comment explicitly enough on the linguistic level(s) on which accessibility might effect processing, although the words *frame* and *perspective* suggest that it is the semantic aspect of processing that is focussed upon. Therefore, the explanation in terms of processing to be developed here must also be capable of explaining the factor of importance; besides, I propose that there are, apart from semantic considerations, also structural processing requirements that play a crucial role, although it is not the processing influence of a purely syntactically motivated principle such as EIC (cf. Hawkins 1994) that I take to be most relevant. Consider Table 3, where possible combinations construction types and degrees of consciousness required are illustrated.[24]

Suppose, a speaker S who wants to encode an event (by means of a transitive phrasal verb) in which an inaccessible referent figures as the direct object. If S chooses construction$_1$ for this purpose (cf. cell 3 in Table 3), we have the canonical word order of the Functional Sentence

Table 3. *Combinations of construction types and degree of accessibility*

	Amount of consciousness required	
	low	high
Type of construction		
construction$_1$	①*John brought back him.	③John brought back peace.
construction$_2$	②John brought him back	④?John brought peace back.

Perspective; the hearer listens online to S, processes all the linguistic material uttered on the spot and is relieved of two different processing tasks, one being semantic/lexical in nature, the other one being syntactic. Firstly, the hearer does not have to process the inaccessible referent (already costly on its own) while still waiting for the particle of the transitive phrasal verb to be inserted in its syntactic slot. Secondly, H needs to process the semantic import of the direct object only after all other semantic clues within the sentence have already been processed, thereby —presumably—semantically simplifying the access to an inaccessible referent.[25] On the other hand, suppose S chooses construction$_2$ to refer to an inaccessible concept as the direct object of a transitive phrasal verb (cf. cell 4 in Table 3): H, then, must both process the inaccessible direct object and, simultaneously, wait for the particle modifying the verb, thereby using an extra amount of the limited resource of attention, which is then not available for the processing of the inaccessible direct object. This line of reasoning naturally extends to direct objects which need a high amount of consciousness due to their importance. Processing important direct objects is also much easier and effective if all of the semantic clues within the sentence and the whole structure of the transitive phrasal verb have already been processed and consciousness can be allocated to the important referent alone. As Chafe (1994: 54) put it, "language is very much dependent on a speaker's belief about activation states in other minds"; that is to say, if S chooses construction$_1$ for the encoding of an event, he thereby tells H that the direct object still to be expected will require a high amount of consciousness and attention, whereby he manages to adhere to the communicative principle that "speakers have also to take into account the communicative needs of their addressees" (cf. Siewierska 1988: 85–86). We may, therefore, consider this to be the pragmatic information associated with the schema of construction$_1$.

This explains why construction$_1$ is the preferred option with unidentifiable, fairly inaccessible, and important direct objects—it does not provide an explanation for why there are two constructions at all. In other words, there is an obvious need for a construction that (i) marks an object as requiring comparatively much conscious effort and (ii) provides a syntactic structure that renders these objects as easily processable as is possible when using a transitive phrasal verb—but why is there an alternative construction, since the syntactic structure and their processing cannot be optimized any further?

Imagine, therefore, a speaker S who wants to encode an event (by means of a transitive phrasal verb) in which an easily accessible and unimportant referent figures as the direct object. If, for this purpose, he chooses

construction$_2$ (cf. cell 2 in Table 3) then the direct object is, again, positioned according to the claims of the Functional Sentence Perspective, and S marks it as comparatively easy to process since it is neither difficult to access nor of any particular importance. That is, if S chooses construction$_2$ for the encoding of an event, he thereby issues a mental-processing instruction that the referent of the direct object can be easily processed by H, which may be taken to be the pragmatic information associated with the schema of construction$_2$. Besides, in cases like these, H has the advantage of processing the referent of the direct object before the particle. We consider this an advantage because it is plausible to assume that the referent of the direct object, though easily accessed and unimportant, plays a more prominent role in the event or state being encoded by S than does a particle that merely serves to specify the precise nature of the process already profiled by the verbal part of the transitive phrasal verb. Thus, with easily accessible and unimportant direct objects, the processing requirements for H are not as demanding as with inaccessible and important direct objects (because the processing of the former kind of direct object is less costly), so that construction$_2$ allows S to provide for H the participants of the event more quickly than does construction$_1$, where the order is reversed (cf. cell 1 in Table 3).

To sum up, the significant correlation between the degree of consciousness required for the processing of a direct object and the choice of construction is determined by the pragmatic information that is conventionally associated with each of the two constructions, which, in turn is motivated by the processing demands upon S trying to facilitate communication. So it is construction$_1$ that is used to encode direct objects requiring a high amount of consciousness, since construction$_1$ facilitates the (syntactic and semantic) processing of fairly inaccessible and important direct objects by S as well as H. If, however the factor of processing demands does not play any crucial role (because the direct object is readily accessible and/or unimportant) then the choice of word order is influenced both by the pragmatic information that is associated with construction$_2$ and the tendency to introduce the concepts figuring more prominently in the event that S encodes first. This may be illustrated as in Figure 3.[26]

A similar division of processing tasks of speakers and hearers into two different kinds of processing has been postulated in other studies, too:

> Adult language production and comprehension involves two syntactic processing modes; one that may be termed "automatic" affecting easily accessible language data, and the other which is more controlled, relating to less accessible material. (Siewierska 1988: 84)

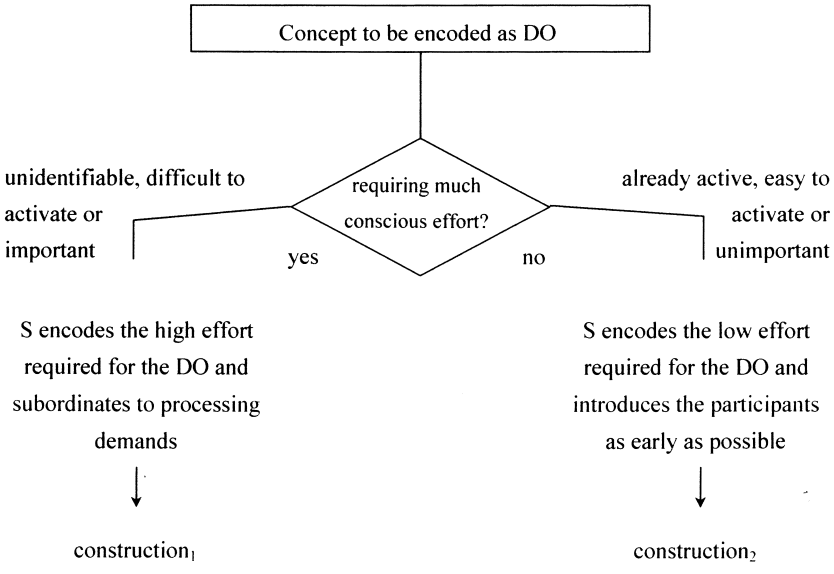

Figure 3. *Decision tree for particle placement*

Furthermore, psychological experiments have shown that the accessibility and other semantico-cognitive properties of NP referents can have a profound influence on phrase order in sentences:

> Lexical accessibility influences the syntactic structure of utterances, implicating a certain amount of data-driven processing in sentence formulation. (Bock 1982: 3; cf. also Bock 1982: 14)

The present account in terms of the consciousness and the processing hypotheses also distinguishes two different modes of processing according to the degree of consciousness determined by the accessibility of the direct object and is, thus, compatible with the findings of Siewierska and Bock. Besides, explaining the motivation of the patterning of the two constructions with their respective degrees of consciousness in terms of their processing requirements now enables us to account for the strong correlation between totally idiomatic transitive phrasal verbs and construction$_1$, which could be shown to be related to the consciousness hypothesis, but could hitherto not been explained. If we examine the comprehension of idiomatic expressions from a processing perspective then it becomes obvious that there is not yet a generally accepted theory of idiom comprehension. However, experiments have shown that "people process both the literal and figurative meanings of idioms" (Gibbs 1994: 94); what is more, it could be demonstrated that "some parts of an idiom are more relevant than others for determining the phrase's figurative

meaning" (Gibbs 1994: 95). Thus, if the interpretation of idioms involves the processing of two meanings (both the literal and the figurative one), then the processing of idiomatic expressions will involve more subconscious mental-processing activity than the processing of literal expressions with only one meaning. Since construction$_1$ facilitates the online processing of sentences, the processing cost of which is increased due to the newness and importance of the direct object, it is only plausible to assume that construction$_1$ is also preferred if the processing cost of sentences increases due to the fact that the hearer has to simultaneously process both the literal and the idiomatic meaning of the expression he encounters. If the speaker has chosen construction$_1$ for an idiomatic expression, then the hearer processes both the literal and the idiomatic meaning, but, at least, he is relieved of having to process the direct object before the valence of the transitive phrasal verb is satisfied by the particle. That is to say, an increase of processing effort needed for sentences with transitive phrasal verbs can be for one of two reasons:

i. the processing cost of a sentence can increase due to the nature of the direct object, i.e., if the object is difficult to access (due to its context and degree of entrenchment) and important;
ii. the processing cost of a sentence can increase due to an increase in idiomaticity of the meaning of the verb phrase or where it yields a metaphorical interpretation (due to its degree of entrenchment).

The interesting aspect about this is that it could be demonstrated above that both of these possible reasons for an increase in processing cost strongly correlate with construction$_1$ since it is construction$_1$ that is capable of facilitating the processing of the utterance. Thus, investigating the two constructions in terms of the processing hypothesis leads to claims about their processing costs that perfectly fit the distribution of the two constructions predicted by the consciousness hypothesis, which is shown in Table 4. Before concluding this section, it is useful, as at the end of section 5, to compare the processing approach advocated by Hawkins (1994) with the processing hypothesis in order to elaborate some of the

Table 4. *Construction$_1$ and construction$_2$ and the factors influencing their processing effort*

Construction$_1$	Factors influencing processing	Construction$_2$
idiomatic meaning of the verb phrase	⟷ degree of idiomaticity	literal meaning of the verb phrase
inaccessible object important object	⟷ nature of the direct object	accessible object unimportant object

crucial differences between the two superficially similar accounts. Firstly, the present study does not rely on processing of syntactic structures alone as it also incorporates semantic and cognitive aspects of processing and information distribution, and therefore manages to account for all the factors governing particle placement observed so far. Secondly, due to the incorporation of aspects other than syntactic ones, the present approach does not face any problems whatsoever concerning the question of which of the two constructions instantiates the basic word order. As has already been briefly discussed, Hawkins argues for construction$_2$ as basic since there would be no reason why construction$_2$ should exist at all if construction$_1$ (the EIC-ratio of which cannot be improved) were basic. On the other hand, the basicness of construction$_2$ is a striking exception to Hawkins's general line of reasoning since, in general, basic word orders are those orders whose arrangements conform to EIC rather than violate it, and, what is more, Hawkins does not explain why in some cases a grammaticalized word order may lead to resistance to a rearrangement and in other case it may not do so. In fact, since Hawkins relies on syntactic weight alone, one may suspect that he will not actually be able to explain this phenomenon, since the only kind of argument he admits (arguments concerning syntactic weight) is the one that yielded the problems in the first place.

In the present approach, this question of which word order is basic does not pose any problem at all: it simply does not arise. Both constructions are, due to their different semantic and processing properties, grammaticalized, i.e., for each construction there exists a schema that, firstly, specifies the nature of the linguistic elements that constitute a particular instantiation of the respective construction and, secondly, is conventionally associated with a piece of pragmatic information about its contribution to the meaning or the use of the structure containing it (cf. Fillmore 1988: 36). More precisely, following Lambrecht's classification of construction types,[27] the two constructions under investigation constitute typical examples of information-structure constructions that (apart from the meaning of the elements constituting the particular construction) specify the cognitive status of the referents of the direct objects.

7. Conclusion

This study set out to describe and explain particle placement from a cognitive and functional perspective. Although particle placement is a phenomenon that is obviously recognizable at the level of syntax, word-order alternations like these require a lot more than just description and

explanation on this level alone: ''studies of word order variation reveal that word order is dependent on an array of syntactic, semantic, pragmatic and even phonological factors'' (Siewierska 1988: 29). Accordingly, the investigation of particle placement in the present study has had to consider evidence from all of these levels of linguistic description.

The first central hypothesis of this study, the consciousness hypothesis (CH) was put forward in order to, first, adequately describe the distribution of the two constructions in terms of the degree of consciousness that is required to process the direct object within the respective constructions. The consciousness hypothesis could be supported on both theoretical and empirical grounds in that it accounts for no less than all of the factors on particle placement identified so far (which are often separately discussed without explanation in the literature) and is supported by statistical evidence from two separate empirical investigations (a corpus analysis and a survey of native speakers).

The second hypothesis, the processing hypothesis (PH), was proposed in order to explain the distribution of the data in terms of different processing requirements (both syntactic and semantic) a speaker has to subordinate to when formulating his utterance for a hearer. On the one hand, this explanation provides a more appealing explanation for the distribution of the two constructions without having problems other approaches have encountered; on the other, this analysis perfectly fits a Construction Grammar account according to which both constructions are grammaticalized and specified with regard to their schematic syntactic structures and the pragmatic information they contribute to the meanings of the words figuring in these constructions.

One last point of this analysis, however, remains to be settled. As was argued before, the notion of the amount of consciousness is, quasi per definition, a scalar one, in that its key determinants (the accessibility and importance of concepts) are graded. The same holds for processing cost; there is not just a twofold distinction between *difficult to process* and *easy to process*, but rather there are various intermediate degrees of processing difficulty. However, Figure 3 and the Construction Grammar approach seem to suggest a dichotomous account of particle placement rather than one in which the continuous nature of underlying cognitive processes is reflected. At first sight, this might appear to contradict the theoretical assumptions upon which this study is purportedly based. Still though, this contradiction can be easily resolved by considering the function of grammar as, e.g., described by Givón (1992: 10):

> Grammar is a discretizing process par excellence, in the sense that a construction, a word, or a morpheme is either present or absent, either has or doesn't have some formal property.

This is especially apparent in the case of particle placement: although the cognitive dimensions underlying accessibility are inherently scalar, this does not automatically entail that the same scalarity must in fact be observable at all linguistic levels (cf. Givón 1992: 19–22). That is to say, by choosing one of the two constructions for the encoding of a particular event, a speaker S has to decide (along the lines given in Figure 3) which of the two constructions better suits his construal of the information structure of the concepts figuring in the event or state to be encoded. By studying speakers' linguistic performance we may, therefore, also shed light on aspects of the human mind which are not directly observable.

Although the consciousness hypothesis seems to provide a satisfactory and empirically confirmed account of particle placement, the need for further investigation of the processing hypothesis is apparent: for instance, it remains to be experimentally tested whether the two kinds of processing (automatic/subconscious vs. conscious processing) are of importance for other constructions or word-order alternations as well. Moreover, since online processing does not only entail the processing of the syntactic structure of an utterance, the proposed approach to processing, which also incorporates semantic aspects of processing, needs to be further refined and tested. Additionally, as has already been observed, the psychological basis for an entrenchment hierarchy also needs to be elaborated in order to refine the notions employed here. Then, we may—in an interdisciplinary manner—gain further valuable insights into processes of the human mind.

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Notes

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1. For further work employing similar tests and some additional criteria that may serve to differentiate between the two kinds of verbs, cf. Quirk et al. (1985), Mitchell (1958), Cowie and Mackin (1975).
2. Throughout this study, italics will be used in examples to indicate stressed constituents.
3. According to Bolinger (1971: 3), this classification is the one most generally accepted; cf., for example, Quirk et al. (1985: 1152–1161); Mitchell (1958: 106); Palmer (1987: 215–239), etc. However, there exists considerable terminological profusion concerning

the verb class under consideration; other terminological options are, for example: composite verbs, compound verbs, discontinuous verb, separable verb, two-word-verbs, verb-adverb compound, verb-adverb-locution, verb-particle construction; cf. Kruisinga and Erades (1953), Live (1965), Taha (1964), Kennedy (1920), Fraser (1965), etc.

4. Unfortunately, Yeagle offers no explanation for the observed pattern (that a particle should not follow its landmark). We can only speculate that this might be a consequence of some iconic principle that has been termed CLOSENESS IS STRENGTH OF EFFECT by Lakoff and Johnson (1980: 128–132) (cf. further, e g., Haiman 1992: 191 on conceptual distance) or Behaghel's law (cf. Behaghel 1932: 4) requiring closeness of the particle to its trajector: the particle directly modifies its trajector and, therefore, the elements must be positioned fairly close to each other, which is not possible in **John went the problem into*. This latter is ungrammatical because it violates a cognitive iconicity principle, thereby providing a semantic word order distinction corresponding to, and—presumably—motivating the traditional distinction.
5. A linguistic expression is understood as idiomatic if the meaning of the expression as a whole is not a function of the meaning of its individual parts.
6. In functionalist accounts such as the one by Chen (1986), this factor was called *distance to last mention of the DO*, and it was operationalized by counting the number of clauses between the direct object under investigation and its last antecedent.
7. This mechanism of attention allocation is most apparent in the case of the orienting reflex (cf. Deane 1992: 190–192).
8. There are some authors who argue for more than two different activation states (cf. Chafe 1987, 1994; Deane 1992; Lambrecht 1994). For our purposes, however, the differentiation of two attentional states will suffice.
9. For a strikingly similar classifications of concepts cf. Givón (1992) and Tomlin (1986). Lambrecht's (1994) distinction between the information-structure categories of identifiability and activation exactly mirrors, e.g., the one by Tomlin (1986) between shared information and thematic information.
10. Notice that the notion of accessibility as it is employed here is not identical to the one used in Chafe (1987, 1994) or Lambrecht (1994) where it refers to an intermediate activation state. Moreover, the present notion of accessibility also differs from the one in Ariel's (1988, 1991) Accessibility Hierarchy, where the primary factor constituting the Accessibility Hierarchy is "the nature of the language necessary to make a shared referent identifiable in a given context" (Chafe 1994: 179).
11. Accessing a concept via spreading activation corresponds to what Lambrecht (1994) has considered as activation of a concept due to its belonging to the set of expectations of a schema (cf. Chafe 1987) or a semantic frame.
12. There are two different perspectives on the degree of consciousness involved in the choice of one construction over the other: the first depends only on the state of the concepts in the speaker's mind, the second depends on the speaker's assessment of the state of the concepts in the listener's mind—however, we may not need to choose categorically between them. Typically, the speaker may assume that the processes in the listener's mind are in harmony with those in the speaker's own mind. We will concentrate on the processes in the speaker's mind since it must be the speaker's assessment of the listener's mental processing that takes priority if the language is to perform its communicative function satisfactorily: "language works best when the expression of activation cost is listener-oriented" (Chafe 1994: 75).
13. It might, at least theoretically, be the case that the factors of importance and accessibility lead to contradictory predictions concerning the choice of construction: an object might, in principle, be totally new (yielding a preference for construction$_1$), but totally

unimportant (yielding a preference for construction$_2$). In cases like these, it would, again, be the speaker's construal of the scene to be described that determines his choice of construction: if, e.g., the speaker considers his assessment of the newness of the referent of the direct object more relevant for the discourse situation than his assessment of the unimportance of the direct object's referent, then he will choose construction$_1$. However, we do not think that this kind of objects occurs in any frequency worth mentioning: speakers will, presumably, only introduce totally new referents if these referents are of at least some importance for the discourse to follow.

14. This distribution of elements within a sentence would also be expected from the principle of end focus.
15. It has to be observed, however, that the Silverstein hierarchy is not totally without problems, an issue that was also addressed by one of the reviewers. For instance, "it is entirely possible for a subjective, agentive, and concrete concept to be totally unentrenched if the person in question never happened to develop that particular concept" (Deane 1992: 196). However, this is certainly not the typical case and we will, therefore, follow other research concerning entrenchment and employ the Silverstein hierarchy in this form, leaving it to future research to further develop another (more adequate?) entrenchment hierarchy.
16. The sentences investigated included examples such as *If they were fighting and she picked up a knife and stabbed him*, … or *From there they brought back some of the most bizarre tastes imaginable* or *and when he brought his eyes back to her, they were*. Corpus data were obtained from Collins Cobuild (1995).
17. No difference was made between acceptability or grammaticality. Following Quirk and Svartvik (1966), the subjects were offered three different possible answers: *perfectly acceptable*, *a bit odd*, and *totally unnatural* (cf. Quirk and Svartvik 1966: 13).
18. Often, as in the cases given here, these constructions occur only with a very limited set of full lexical object NPs.
19. Naturally, there are instances of idiomatic constructions with transitive phrasal verbs that do not obligatorily require construction$_1$ such as *He put up his friend* and *He put his friend up*—but, firstly, these cases are not very frequent, and, secondly, for these instances, again, a pronominal direct object requires construction$_2$, for reasons already discussed in detail.
20. There are several scholars who also postulated a threefold semantic distinction of transitive phrasal verbs (cf. Bolinger 1971: 113–114, n.2). Fairclough (1965), for example, argues for a differentiation of literal, metaphorical, and figurative verbs. Observe, however, that in the present study this differentiation is not just postulated —rather, it is motivated by the factor of entrenchment of the referent of the direct object.
21. Not only can this account explain why idiomatic transitive phrasal verbs resist rearrangement more strongly than literal ones—it can do so without arbitrarily stipulating any theory-internal special mechanisms or somewhat opaque modules. The present explanation of the behavior of idiomatic transitive phrasal verbs follows from a very general feature of idiomatic expressions, which has been observed in every framework regardless of its orientation. Moreover, we can even explain the fact that these idiomatic transitive phrasal verbs still do allow a change while other idioms are totally unproductive: as has been observed "normally decomposable idioms … were found to be much more syntactically productive than semantically nondecomposable … idioms" (Gibbs 1994: 281). Since idioms consisting of transitive phrasal verbs commonly are semantically decomposable, it follows that they are, in spite of their general resistance to rearrangement, still productive to a limited extent; it simply takes a very high amount of accessibility to do so.

22. The EIC principle states that words occur in their respective orders so that hearers can recognize syntactic groupings and their immediate constituents as efficiently as possible (cf. Hawkins 1994: 77); thus, EIC results in orderings where, generally speaking, longer constituents are positioned behind shorter constituents within a clause.
23. Naturally, the verification of this explanation would require thorough psycholinguistic experimentation, which lies beyond the scope of this study. However, as has already been noticed, it is plausible to assume that these results would strengthen the hypothesis being argued for (cf. Siewierska 1988: 84).
24. For expository reasons, the amount of consciousness required for processing is, in this table, indicated solely by the degree of entrenchment of the direct object; the subsequent discussion, however, will consider both accessibility and importance as the determinants of the degree of consciousness required.
25. Semantic clues may be features such as agentivity and inanimacy, or they may comprise semantic roles such as agent, dative/benefactive, etc.
26. This decision tree is not meant to be a graphic illustration of mental processes actually taking place in a speaker's head—it is meant as a model of psychological processes the exact nature of which cannot be elaborated upon in the present study; the focus of the latter is primarily a linguistic (although cognitive linguistic) one, and psychological notions are utilized without elaborating upon their psychological or neurological foundations—these should be investigated by psychologists or neurologists.
27. Following Lambrecht (1994: 34–35), there are three different types of sentential constructions: speakers' attitude constructions (let-alone construction, mad-magazine construction), speech-act constructions (interrogative, imperative, declarative), and information-structure constructions (coming in all of the sentences and expressing differences in the scope of presupposition and assertion, in topic-focus structure, and "in the cognitive status of the referents of argument expressions").

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