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Over-prefixation: a lexical constructional approach[1]

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Verbs prefixed with *over*- exhibit varied subcategorization changes from the base verbs (*load hay onto the wagon/*overload hay onto the wagon, eat an apple/*?overeat apples, *sleep his appointment/oversleep his appointment*, etc.), which seem to defy a principled explanation. This article argues that the apparently puzzling behaviors of *over*-verbs can be coherently accounted for within the framework of construction grammar.

Over-verbs, in the excess sense, divide into those involving a container-based understanding and those involving a scale-based understanding. *Over*-verbs involving a container-based understanding (e.g. *overload*) differ from their base verbs as to the force transmission in a causal chain. Accordingly, those *over*-verbs are sanctioned by a different verb-class-specific construction from that which sanctions their base verbs. But *over*-verbs involving a scale-based understanding (e.g. *overheat*) are unchanged from their base verbs as to the force transmission, and hence as to the syntactic frame.

On the other hand, *over*-verbs in the spatial sense (e.g. *overfly*) are sanctioned by a 'landmark'-based construction, a construction that does not have to do with force transmission. And some excess *over*-verbs (e.g. *oversleep*) are also sanctioned by this verb-class-specific construction.

The proposed account pays close attention to both verbs and constructions. A verb's occurrence in a particular syntactic frame can be explained by claiming that that verb can be sanctioned by a particular verb-class-specific construction, irrespective of whether the verb is morphologically simple or complex. But in order to explain why that verb can be sanctioned by that construction at all, a detailed analysis of verb meanings is called for. In this sense, the proposed analysis is both lexical and constructional.

1 Introduction

As is well known, so-called locative alternation verbs like *load* or *spray* can appear either as a locatum-as-object variant, as in (1a), or as a location-as-object variant, as in (1b).[2]

(1) (a) Harry loaded hay onto the wagon. (locatum-as-object variant)
(b) Harry loaded the wagon with hay. (location-as-object variant)

When the prefix *over*- is added, however, these verbs occur in the location-as-object variant alone.

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[2] The terms 'locatum' and 'location' have been borrowed from Clark & Clark (1979).

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(2) (a) *John overloaded hay onto the wagon.
(b) John overloaded the wagon with hay.
(3) (a) *They oversupplied rifles to the Indians.
(b) They oversupplied the Indians with rifles.
(4) (a) *She overplanted the corn in the garden.
(b) She overplanted the garden with corn. (Fraser, 1971: 607)

Apparently, this fact alone may not cause a big problem and can be explained away by some formal mechanism. Things are not that simple, though, for *over*-prefixation brings about a variety of subcategorization changes. Thus *eat* is optionally transitive, as in (5), but *overeat* is apparently only intransitive, as in (6).

(5) (a) John ate.
(b) John ate an apple.
(6) (a) John overate.
(b) *?John overate apples.

In contrast, *sleep* is intransitive, but *oversleep* may be transitive, as in (7).

(7) (a) John slept well last night.
(b) John overslept his appointment.

What's more, the subcategorization property may remain unchanged. Thus both *heat* and *overheat* are transitive, as in (8).

(8) (a) John heated the room.
(b) John overheated the room.

Thus the effects of *over*-prefixation are quite complex and puzzling.

The present article attempts to resolve this apparent puzzle by focusing upon the following two questions: (1) Why does *overload* fail to alternate? and (2) Why do various *over*-verbs behave the way they do? The article is organized as follows. After critically reviewing several previous analyses, section 3 briefly outlines how argument-structure alternations are to be handled in construction grammar as a usage-based theory. Section 4 then shows that the question of why *load* alternates but *overload* does not can be accounted for in terms of a force transmission. In section 5 three schemas for the prefix *over-* in the excess sense are extracted, and in section 6 the proposed analysis is applied to further *over*-verbs, including apparent exceptions. Section 7 deals with *over*-verbs that fall outside a force-transmission-based account, and section 8 shows how several further issues raised by *over*-verbs can be handled in a usage-based theory. An appendix discusses the relevance of an arc trajectory to characterizing the preposition *over*.

2 Previous studies

That prefixation may alter the subcategorization properties of the base verb has been noted and discussed by many scholars (Fraser, 1974; Aronoff, 1976; Roeper & Siegel, 1978; Carlson & Roeper, 1980; Roeper, 1981; Smith, 1981; Bresnan, 1982; Bauer, 1983; Irube, 1984; Randall, 1985; Kageyama & Yumoto, 1997; Yumoto, 1997, 2001;

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Yamada, 2000; Talmy, 2000b; among others). However, only some of them squarely address the question 'What causes the observed subcategorizaton changes?' I will take up three representative studies and point out their problems.

2.1 Carlson & Roeper (1980), Roeper (1981)

Carlson & Roeper (1980) and Roeper (1981) note that complements of many prefixed verbs are limited to NPs, as in (9a) to (9c), and also that a couple of prefixed verbs are necessarily intransitive, as in (9d).

(9) (a) Bob miscalculated {the time of our arrival/*that we would arrive at nine o'clock}.
(b) John out-talked {Bob/*about the farm program/*to Bob}.
(c) John underestimated {our expenses/*Fred to be a good player}.
(d) John overate.

Based on this observation, Carlson & Roeper and Roeper argue that the subcategorization property of a complex verb is not inherited from the base verb, but rather follows from the constraint as summarized in (10).

(10) *Case Complement Restriction*
(a) Productive rules create complex verbs.
(b) Complex verbs have the unmarked form of transitive or intransitive.
(Roeper, 1981: 135)

This is tantamount to saying that prefixed verbs should be always either transitive or intransitive.

The significance of Carlson & Roeper (1980) and Roeper (1981) lies solely in the fact that they were the first to raise the issue of subcategorization changes induced by prefixation in the generative tradition, and no more. Obviously, their explanation is no explanation at all. Thus the validity of their observation has already been seriously challenged by Smith (1981) and Randall (1985). Besides, this analysis cannot explain why one and the same prefix yields different subcategorization changes to different base verbs, as seen above with *over*-verbs. Nor can it explain why different prefixes bring about different subcategorization changes, as illustrated by the contrast between *over*-verbs and *out*-verbs, the latter of which are uniformly transitive.

(11) (a) Bob ran.
(b) *Bob ran Bill.
(c) *Bob outran.
(d) Bob outran Bill.

This crucial difference between *over*-verbs and *out*-verbs cannot possibly be accounted for by the restriction in (10).

2.2 Randall (1985)

Randall (1985) argues that the subcategorization property of a complex verb is inherited from the base verb. As evidence, she observes that *re*-verbs may share with the base verbs the complement frames [NP PP], [PP], [NP S], or [S].

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(12) (a) resaddle Mary with all the messy chores [NP PP]
(b) reallude to the scandal [PP]
(c) readvise John to leave [NP S]
(d) redecide to marry John [S] (Randall, 1985: 54)

Randall thus proposes the following principle:

(13) Inheritance Principle: A derived item inherits the full subcategorization of its base if it maintains either the category and/or the meaning of the base form. If both of these are unchanged, the derived form inherits only the unmarked portion of the base form's subcategorization. (Randall, 1985: 63)

According to Randall, then, *re-* prefixes freely. In some cases the subcategorization properties are not identical between the base verb and the prefixed verb, but this is because the output is subject to semantic filtering (Randall, 1985: 84).

This account may look plausible for *re-* (though not without problems). But it is not promising for *out*-verbs and *over*-verbs, both of which undergo rather drastic changes in subcategorization properties.

2.3 Yumoto (1997, 2001), Kageyama & Yumoto (1997)

Yumoto (1997) attempts to capture the semantic effects of prefixation by means of the Lexical Conceptual Structure (LCS), and argues that the correct formalization of these effects 'should enable us to explain the inheritance phenomena without referring to the change in the argument structure' (Yumoto, 1997: 177–8).[3]

Following Marchand (1969), Yumoto distinguishes between *over-* in the spatial/temporal sense ('above/across') and *over-* in the excessive sense ('over or beyond in degree or quantity'). Both these senses are claimed to be uniformly handled by her account, which consists in the following two claims. First, 'OVER is inserted as or replaces a Place function that appears in the terminal event in the LCS of the base verb' (Yumoto, 1997: 189). Second, by adopting Tenny's (1987) thesis that the direct object is a delimiter, Yumoto argues that the argument of OVER thus introduced serves as the delimiter and should be realized as a direct object (1997: 189).

This account works as follows. First, *overrun* is an instance of *over*-prefixation in the spatial sense, and *run* and *overrun* receive the LCSs in (15).

(14) (a) overrun the line
(b) run over the line
(15) (a) *run*: [GO ([$_{\text{Thing}}$]$_i$,[$_{\text{Path}}$]$_{<j>}$)]
(b) *overrun*: [GO([$_{\text{Thing}}$]$_i$,[$_{\text{Path}}$ TO([$_{\text{Place}}$ OVER ([$_{\text{Thing}}$]$_j$)])])]

While in (15a) the Path of GO is optional for the base verb *run*, in (15b) the Path is further specified by OVER, which is intended to mean 'beyond'. And the argument of this OVER is linked to the direct object position via the index j. (cf. Jackendoff, 1990).

[3] Evidently Yumoto follows Lieber & Baayen's (1993) analysis of Dutch prefixed verbs.

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Over- in the excess sense is treated similarly. *Overshoot* is represented in (16b) based upon the paraphrase 'to cause to go over'. And the argument of a Place function OVER (e.g. the target) is linked to the direct-object position.

(16) (a) overshoot {*the gun/the target} (cf. shoot the gun over the target)
(b) [CAUSE ([Thing]$_i$, [GO ([ARROW],[Path TO [Place OVER([ ]$_j$)]])])]

This form of analysis seems difficult to apply to *overeat*, for *eat* does not clearly involve motion. But guided by the idea that some *over*-verbs (e.g. *overeat*, *overwork*, etc.) can be characterized as 'surpassing oneself', Yumoto argues that these *over*-verbs take a reflexive object at least in the LCS, and that, therefore, *overeat* cannot take a direct object, as in (17b). Accordingly, she posits the LCS in (18).

(17) (a) John overate.
(b)*?John overate apples.
(18) $\begin{pmatrix} \text{GO}([\ ]_i^{\alpha}, [\text{TO}[\text{OVER}([\alpha])]]) \\ \text{WITH } [\text{CAUSE } ([\alpha], [\text{GO}([\text{FOOD}], [\text{TO}[\text{IN}[\text{MOUTH OF}[\alpha]]]])])] \end{pmatrix}$

The first line represents the main function and reads 'to go over oneself', intended to express 'to surpass one's capacity'; the second line represents the subordinate function, intended to express 'to cause food to go into the mouth of'.[4] Thus the whole representation in (18) comes to mean 'to surpass one's capacity by eating'.

With *oversleep* also, the LCS for the base verb is subordinated to the main function in (19b). But this time, the argument of OVER is a temporal Place, rather than a reflexive object. The whole LCS is thus intended to mean 'to sleep beyond a certain time', and the argument of OVER again appears in the direct-object position.

(19) (a) John overslept the fixed time.
(b) $\begin{pmatrix} \text{GO}([\ ]_i^{\alpha}, [\text{TO}[\text{OVER}([\ ]_j)]]) \\ \text{WITH } [\text{SLEEP } ([\alpha])] \end{pmatrix}$ (Yumoto, 1997: 192)

So far the direct object seems to be correlated with the argument of OVER (or at least, so claims Yumoto). But this correlation does not hold for the *over*-verbs in (20).

(20) (a) overheat the room: 'cause the room to become too hot'
(b) oversimplify the rule: 'cause the rule to become too simple'

For *overheat*, Yumoto posits the LCS in (21b), arguing that OVER takes the Property HOT as its argument and that here OVER means 'excessively' rather than 'beyond'.

(21) (a) *heat*:
[CAUSE ([Thing]$_i$,[INCH([BE$_{\text{Ident}}$ ([Thing]$_j$,[AT ([Property HOT])])])])]
(b) *overheat*:
[CAUSE ([Thing]$_i$,[INCH([BE$_{\text{Ident}}$ ([Thing]$_j$,[OVER ([Property HOT])])])])]
(Yumoto, 1997: 188)

As to why the argument of OVER is not realized as a direct object, Yumoto suggests that with change-of-state verbs, the Place function is already satisfied by a constant in the

[4] This analysis follows Jackendoff's (1990) analysis of *drink*.

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LCS of the base verb in (21a). Judging from the following passage, Yumoto seems to think that the direct object of a change-of-state verb need not be a delimiter in the same way as the direct object of a nonchange-of-state verb should be.

> The event represented by the base verb is inherently a delimited one for which the Theme serves as the delimiter, so that *over-* does not affect the subcategorization feature nor the selectional feature of the base verb as in the case of *overheat*. (Yumoto, 1997: 190)

Thus Yumoto's analysis is based upon the observation that *over*-verbs generally realize the argument of OVER as a direct object, as seen in (22), with the exception of *over*-verbs derived from change-of-state verbs (e.g. *overheat*).

(22) (a) overshoot {*the gun/the target} (cf. shoot the gun over the target)
(b) overthrow {*a ball/the base} (cf. throw a ball over the base)
(c) overbuild {*houses/the city} (cf. build a house in the city)
(d) overcut {*trees/the forest} (cf. cut trees of/in the forest)

Now according to Yumoto, the inability of *overload* to alternate follows from this generalization. When a locatum-as-object variant is prefixed with *over-*, OVER is inserted into the Place function, as in (23b). Since the argument of OVER thus introduced must be realized as a direct object, as seen above, the Theme argument cannot possibly appear as a direct object. Hence the locatum-as-object variant is not possible.

(23) (a) load freight onto the ship → *overload freight onto the ship
(b) $[[\ ]_i$ CAUSE $[$BECOME $[[\ ]_j$ BE$[$ON$[\ ]_k]]]]$ →
*$[[\ ]_i$ CAUSE $[$BECOME $[[\ ]_j$ BE$[$OVER$[\ ]_k]]]]$
(adapted from Kageyama & Yumoto, 1997: 96)

On the other hand, when a location-as-object variant is prefixed with *over-*, OVER takes the Property LOADED, as in (24b), on the assumption that the location-as-object variant is a change-of-state verb (Rappaport & Levin, 1988; Pinker, 1989). Thus the subcategorization property is kept intact, parallel to change-of-state verbs like *heat* and *overheat*.

(24) (a) load the ship with freight → overload the ship (with freight)
(b) $[[\ ]_i$ CAUSE $[$BECOME $[[\ ]_j \begin{pmatrix} \text{BE}[\text{AT LOADED}] \\ \text{WITH}\ [\ ]_k \end{pmatrix}]]]] \rightarrow$
$[[\ ]_i$ CAUSE $[$BECOME $[[\ ]_j \begin{pmatrix} \text{BE}[\text{OVER LOADED}] \\ \text{WITH}\ [\ ]_k \end{pmatrix}]]]]$
(adapted from Kageyama & Yumoto, 1997: 96)

2.4 Problems of Yumoto's analysis

Yumoto (1997) is probably by far the most detailed analysis of the subcategorization changes induced by *over*-prefixation. There are a number of problems with her analysis, however.

First and foremost, Yumoto's analysis disregards the semantics of *over-*, despite paying lip service to the importance of the semantics of the prefixes. Yumoto represents

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the contribution of *over-* simply as [OVER] and leaves it at that. As a consequence, her analysis is blind to the semantic differences of [OVER] between (16b) (*overshoot*), (18b) (*overeat*), (21b) (*overheat*), and (24b) (*overload*).

Yumoto's disregard of the semantics of *over-* is also found elsewhere. In (14) above, *overrun the line* and *run over the line* are supposed to be synonymous. But few people will agree.

The disregard of the semantics of *over* alone does not disprove the theory, of course. Logically, any theory is justified to the extent that it can handle the observed facts without internal contradictions. Therefore, if Yumoto's analysis adequately captures the facts of subcategorization change, then to that extent her analysis might be justified.

But here comes the second major problem. Yumoto's analysis is not compatible with the observed facts. On the one hand, the observation that the argument of OVER realizes as a direct object is rather suspect. In (25) *hotels* is certainly not the argument of OVER.

(25) To expand the local airport and *overbuild* hotels would destroy the setting that makes Angkor Wat unique. (British National Corpus (BNC))

Also, Yumoto's claim that *overeat* does not take a direct object is belied by data like (26).

(26) . . . people who *overeat spicy foods*. (COBUILD)

On the other hand, Yumoto attributes the identical subcategorization properties shared between some *over*-verbs and the base verbs to the fact that the base verbs are change-of-state verbs, as in (27).

(27) (a) overheat the room: 'cause the room to become too hot'
(b) oversimplify the rule: 'cause the rule to become too simple'
(c) overrefine, overextend, overboil, oversocialize, overpurify (Yumoto, 1997: 186)

However, there are numerous *over*-verbs which are unchanged from the base verbs as to the subcategorization properties, but whose base verbs cannot plausibly be analyzed as change-of-state verbs, as in (28).

(28) (a) The writer Kingsley Amis has said that Keats is *overrated* as a poet.
(b) To say that all young people are involved with drugs is to *overstate* the problem.
(c) They were forced to the conclusion that they had *overestimated* him/his abilities. (all from CIDE)

Third, Yumoto's analysis is not coherent even theory-internally. As just seen, whether a verb is a change-of-state verb or not should play a crucial role in Yumoto's account. But she is rather careless in her handling of the data. Thus while *build* and *cut* can be safely regarded as change-of-state verbs, in (22) above these verbs are handled as spatial verbs on a par with *shoot* and *throw*.

Also, while Yumoto adopts Tenny's 'delimiter' thesis, it is rather doubtful whether Yumoto uses the relevant notion as originally intended by Tenny. Tenny (1987) uses the notion 'delimited' mainly to capture cases in which the direct object is an incremental Theme (cf. Dowty, 1991). Later, Tenny (1994) switches to a 'measure-out' account,

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where the notion of 'measure-out' is claimed to subsume not only incremental Theme verbs in (29a), but also change-of-state verbs in (29b) and route verbs in (29c).

(29) (a) eat an apple/build a house
(b) ripen the fruit
(c) climb the ladder/walk the Appalachian Trail/play a sonata

Notice that this notion of 'measure-out' does not cover *over*-verbs. The examples in (30) are certainly not incremental Theme verbs, change-of-state verbs, or route verbs.

(30) (a) overrun the line
(b) overshoot the target
(c) oversleep the fixed time

And Yumoto's claim that change-of-state verbs like *heat* are inherently delimited is factually incorrect. It has been recognized in the literature that many deadjectival change-of-state verbs can be either telic or atelic, as in (31a) (Dowty, 1979; Hay, Kennedy, & Levin, 1999; among others). And *heat* behaves similarly, as in (31b).

(31) (a) The soup cooled {in 5 minutes/for 5 minutes}.
(b) John heated the room {in 10 minutes/for 10 minutes}.

Moreover, at a more general level, both the 'delimiter' account (Tenny, 1987) and the 'measure-out' account (Tenny, 1994) have been seriously challenged by many scholars (Dowty, 1991; Jackendoff, 1996; Levin, 2000; among others). Thus Yumoto's appeal to Tenny's theory is doubly problematic: on the one hand, she uses the notion 'delimited' too loosely to fit Tenny's original definition. On the other, the validity of Tenny's theory is rather suspect. Thus nothing justifies Yumoto's explanation of why the argument of OVER should appear as a direct object.

In short, Yumoto's analysis is problematic semantically, factually, and even theory-internally.

3 A constructional view

3.1 A usage-based view of constructions

While all the previous analyses just reviewed assume that argument-structure alternations can, and should, be handled by formal mechanisms (be they syntactic or semantic), I take a different stance.

First, I claim that argument-structure alternations can be better handled by means of constructions in the sense of construction grammar (Fillmore et al., 1988; Goldberg, 1995; Michaelis & Lambrecht, 1996; Kay & Fillmore, 1999; Michaelis & Ruppenhofer, 2001; Kay, 2002; among others).

Construction grammar is a nonderivational theory, where syntactic and semantic commonalities shared between different expressions are captured by multiple instantiation rather than by derivation. Thus (32a), (32b), and (32c) all instantiate the caused-motion construction in the sense of Goldberg (1995). Sentences (32b) and

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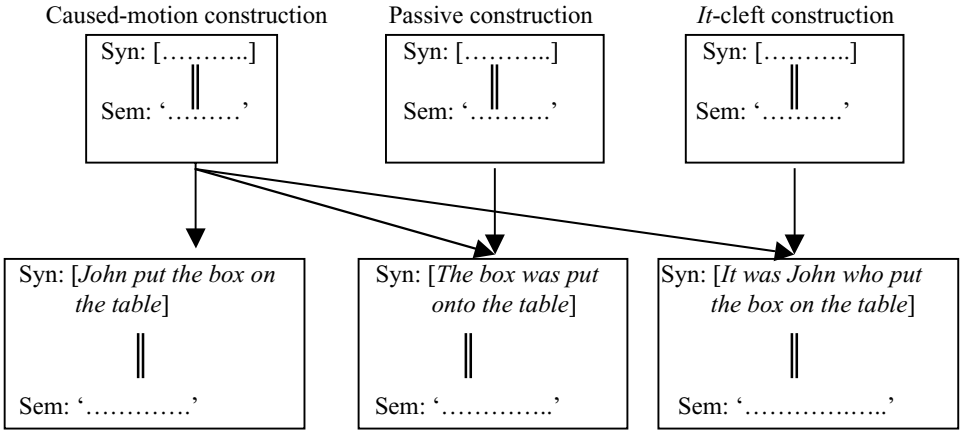


Figure 1

(32c), rather than undergoing further syntactic transformations, additionally instantiate the passive construction and the *it*-cleft construction, respectively, as in figure 1.

(32) (a) John put the box on the table.
(b) The box was put onto the table.
(c) It was John who put the box on the table.

Second, and more important, I am taking a usage-based view of constructions (Croft, 2001, 2003; Croft & Cruse, 2004; Boas, 2003; Tomasello, 2003; also Langacker, 1987, 1991, 1999; Taylor, 2002).[5] This entails that constructions are abstractions or schemas from occurrences of a given type of form-meaning pairing in context.

Also, since schemas are available at varying degrees of abstraction, constructions should be available at varying levels of abstraction. Take *put* again as an illustration. The verb *put* always appears in context, e.g. *John put the box on the desk*. By abstracting over this and other individual occurrences such as (33a) and (33b), a *verb-specific construction* arises in which *put* appears in the syntactic frame [NP V NP PP].[6]

(33) (a) Mary put a dish on the table.
(b) Susan put a book on the shelf.

Now there are other verbs like *throw* in (34a) or *move* in (34b) that have similar meanings and which also occur in the same syntactic frame.

(34) (a) John threw a ball into center field.
(b) John moved the piano into the living room.

[5] This does not mean that only these scholars assume a usage-based model. For instance, Goldberg (1995) explicitly argues for a usage-based model. It's just that the scholars named emphasize the usage-based aspects of constructions rather strongly. See Croft & Cruse (2004) for a compendium of several versions of construction grammar.

[6] The terms *verb-specific construction* and *verb-class-specific construction* have been borrowed from Croft (2003).

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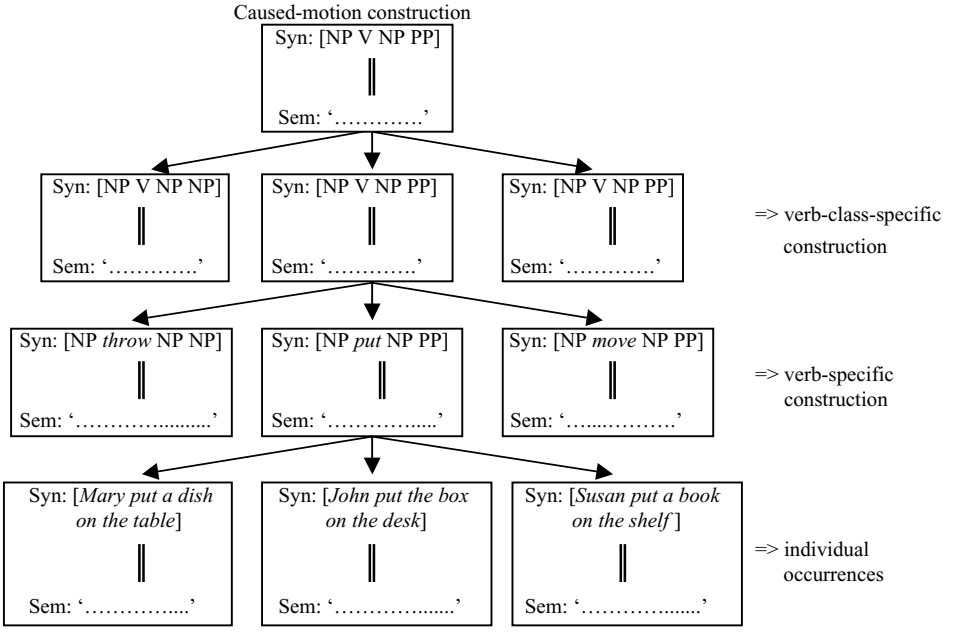


Figure 2. The hierarchical organization of constructions

By abstracting over these verb-specific constructions, we now have a *verb-class-specific construction* which pairs the common semantics with the syntactic frame [NP V NP PP].

Now there are still other verb classes that have slightly different meanings and which occur in the same syntactic frame, such as (35a) and (35b) (see Goldberg, 1995; van der Leek, 2000).

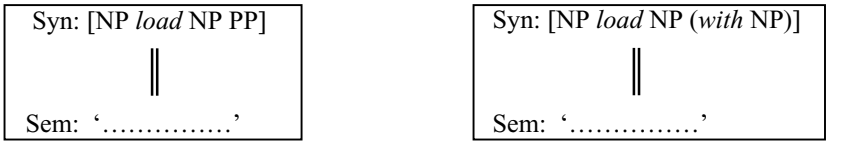
(35) (a) John coaxed Mary into the room.
(b) John helped Mary into the room.

By abstracting over these verb-class-specific constructions, we now have an abstract caused-motion construction.

Obviously there is much redundancy here, which formalists may well find objectionable. But in a usage-based theory, there is nothing problematic about this hierarchical organization of constructions: just because a higher-order schema is abstracted does not mean that lower-order entities are wiped out from memory (Langacker, 1987). Besides, schemas at different levels of abstraction serve different purposes.

> Lower-level schemas, expressing regularities of only limited scope, may on balance be more essential to language structure than high-level schemas representing the broadest generalizations. (Langacker, 1999: 118)

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(a) the locatum-as-object variant (b) the location-as-object variant

Figure 3. Two verb-specific constructions of *load*

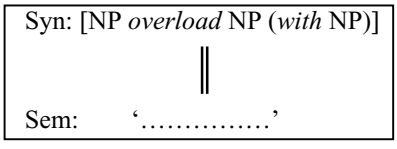


Figure 4. One verb-specific construction of *overload*

In the case of the construction hierarchy seen above, a verb-specific construction handles so-called subcategorization properties and selectional restrictions (cf. 'Verb Island Hypothesis' in Tomasello, 1992), while a verb-class-specific construction captures syntactic and semantic regularities of a verb class. And this is the level that captures argument-structure alternations (cf. Goldberg, 2002), as will be shown below.

3.2 A constructional view of the alternation

In a constructional approach to argument-structure alternations, the variants are not derivationally related to each other. Rather, for a single verb to alternate between two syntactic frames means simply that that verb has two verb-specific constructions.[7] Thus the two variants of *load* translate into the two verb-specific constructions in figure 3.

Now, unlike the previous analyses reviewed in section 2, I assume that prefixed verbs are subject to the same general mechanisms that capture the form–meaning correlation of nonprefixed verbs. Accordingly, the fact that *overload* has only a location-as-object variant translates into the verb-specific construction in figure 4.

A natural question that arises is, of course, why *load* may have the two verb-specific constructions, but *overload* only one. The answer is to be sought in the verb meanings: *load* is semantically compatible with either of the two constructions, *overload* with only one construction. But how? This is the topic to which we shall turn next.

[7] Strictly, the term 'subcategorization' is not compatible with a usage-based view, for what is called the subcategorization property of a verb is simply a verb-specific construction that is well entrenched. But for ease of presentation, I will continue to use this term as a mnemonic label.

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4 Analysis

4.1 Load

In order to give substance to the claim that *load* is semantically compatible with two constructions, it is necessary to identify the verb meaning of *load*, as well as the two constructions involved. Let us start with the verb meaning of *load*.

We have seen above that in a usage-based theory, constructions are abstractions over usage events. Notice that a usage-based view entails that verb meanings are also abstractions over occurrences of the verb in context (Croft, 2001; Boas, 2003; Tomasello, 2003). In our daily linguistic activities, verbs always appear in a particular syntactic frame. Thus, verb meanings in isolation are not accessible to us.

> The 'basic' or 'single' verb meaning is actually the meaning of the verb when it occurs in some other argument structure construction such as the transitive construction. Verb meanings cannot be defined in pure isolation; they are only definable with respect to the construction(s) they occur in. (Croft, 2003: 64)

It follows then that verb meanings, which are arrived at only after the (pure) contributions of argument-structure constructions are sifted out, are rather abstract. Therefore, individual verbs do not come with particular argument structures, as assumed by Yumoto. Rather, verb meanings are merely 'access points' for highly elaborate inferencing and meaning-construction processes. (For similar views, see Langacker, 1987: 91; Fauconnier & Turner, 1996: 98; Coulson, 2001; Tyler & Evans, 2001, 2003; see also Jackendoff, 1997, 2002; Carston, 2002; Wilson & Sperber, 2002; among many others.)

Now in the case of *load*, reference to both locatum and location entities is essential. The location entity is a container, although it need not be a container in the strict sense. Thus the location entity of *load* ranges from artifacts that are readily recognizable as containers in (36), through entities that are not so easily recognizable in (37), to entities which, without being used with *load*, are rather hard to construe as containers in (38).

(36) (a) When you *load the gun*, then you know what you're holding.
(b) *Load your camera* before you start, and have spare films (removed from their containers) within easy reach.
(c) In the pub, red plush and genteel fake gas globes, Francis *loaded the juke box*.
(d) *Load* the cassette *into the camcorder* in dust-free conditions.

(37) (a) As Phil *loaded his syringe* and Ricky tried to calm the terrified pony, whose eyes were quite glazed now, they heard frantic barking outside.
(b) When we *loaded the lighters* we got seven and six a day, at the latter end.
(c) *Load* the program 'filename' *into the program area*.

(38) (a) If you *load up your sentence* with trifles before you've built it properly, it will of course fall down.
(b) If you know in advance that a customer is going to take six months to pay you instead of one and you still want to make the sale, then consider *loading your price* to cover your finance costs.
(c) These volcanoes are large landforms which *load the underlying crust* and are partly isostatically supported by deep roots. (all from BNC)

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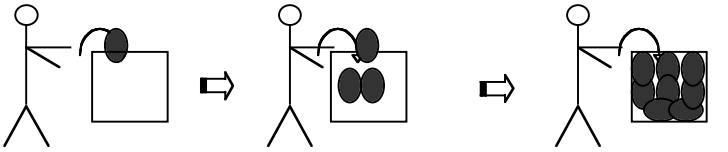


Figure 5. Schematic scene of *load*

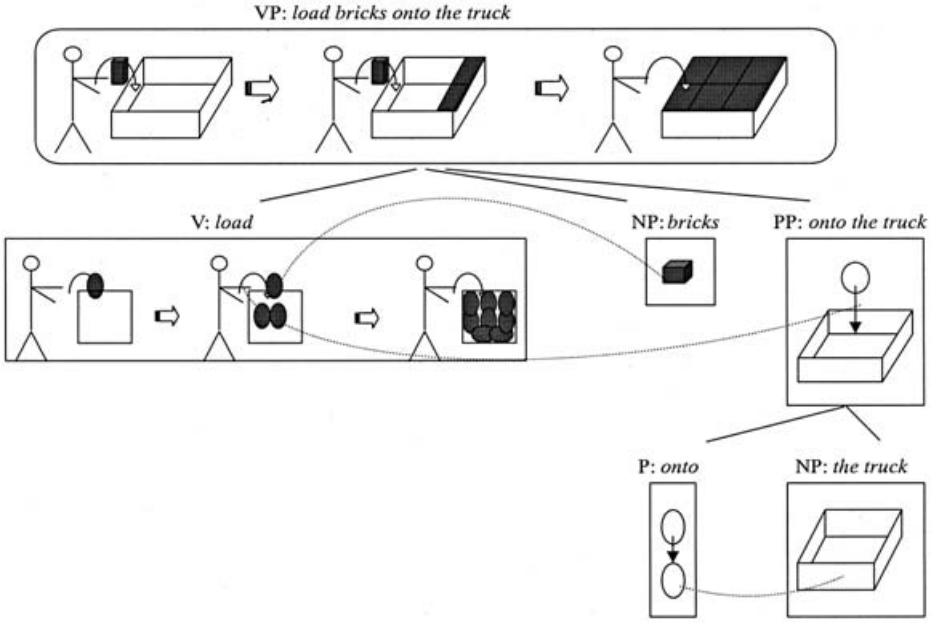


Figure 6

Thus the verb meaning of *load* is tentatively characterized as something like 'to transfer objects onto/into a container, and fill that container', as described in figure 5.[8]

Let us next see how the locatum-as-object variant is arrived at from this verb meaning. The verb meaning of *load* makes schematic reference to a transferred entity and its trajectory, which can be elaborated by *bricks* and *onto the truck*, respectively. Accordingly, the semantic structures are combined to yield the scene for *load bricks onto the truck*, as in figure 6.[9,10] This bottom-up aspect of *load bricks onto the truck* may seem too trivial, but there is also the top-down aspect.

[8] The qualification 'tentatively' is added because the exact nature of the encoded verb meaning cannot be fully determined by linguistic evidence alone. See Croft (2003).

[9] This is essentially the same as Langacker's (1987, 1991, 1999) view of composition, where integration depends upon correspondences between subparts of the two component structures.

[10] Strictly, the scene for *John loaded bricks onto the truck*, rather than that for *load bricks onto the truck*, should be displayed, as it is the former that is paired with the syntactic frame [NP V NP dir-PP]. But in order to save space, as well as to avoid unnecessary complications, only the relevant part of the scene will be discussed in the following.

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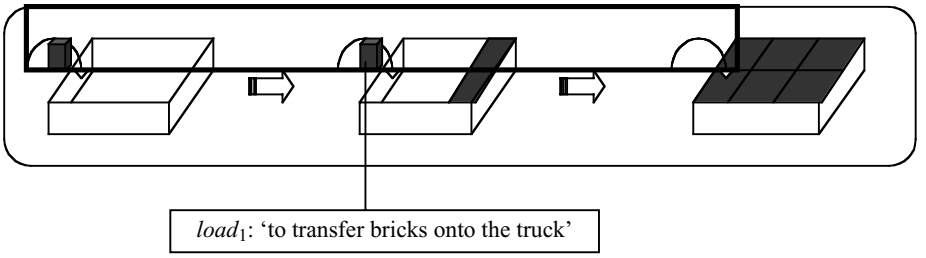


Figure 7

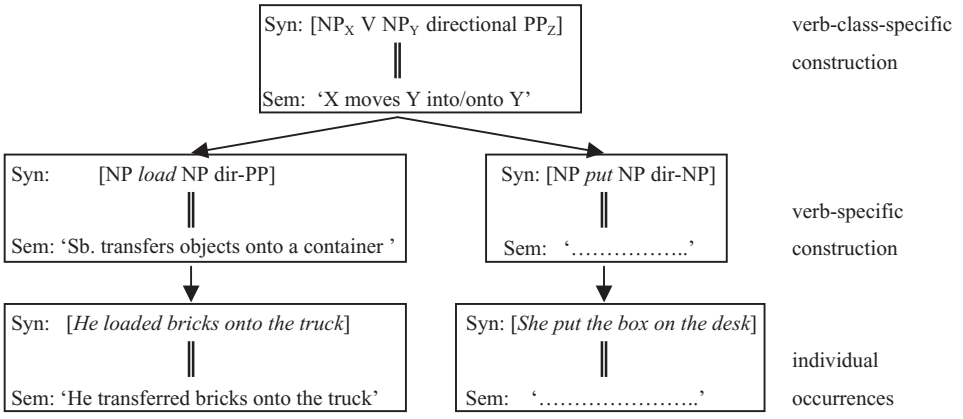


Figure 8

In a usage-based theory, newly encountered expressions are acceptable, and meaningful, to the extent that they can be associated with linguistic structures that already have unit status. There are two ways of association. On the one hand, the novel expression may count as an instance of a schema. On the other, it may be assimilated, via similarity, to an already established unit. If the novel expression fails both of the routes, then it is judged unacceptable (Langacker, 1987, 1991; Taylor, 2002; among others).

In the current context, this means that the complex expression *load bricks onto the truck* needs to be sanctioned by some argument-structure construction. This is rather straightforward, once we recognize that by focusing upon the bricks' movement inside the scene, we get the interpretation 'to transfer bricks onto the truck' as in figure 7. Under this interpretation, *load* is semantically similar to verbs like *put*, which appear in the syntactic frame [NP V NP PP]. Consequently, (39a) can be regarded as instantiating the same verb-class-specific construction that (39b) instantiates, as in figure 8.

(39) (a) He loaded bricks onto the truck.
(b) She put the box on the desk.

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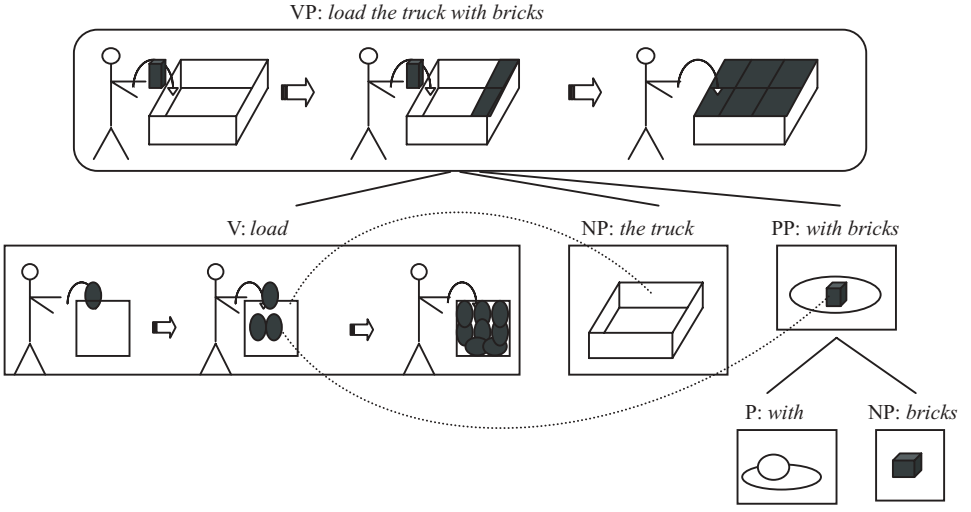


Figure 9

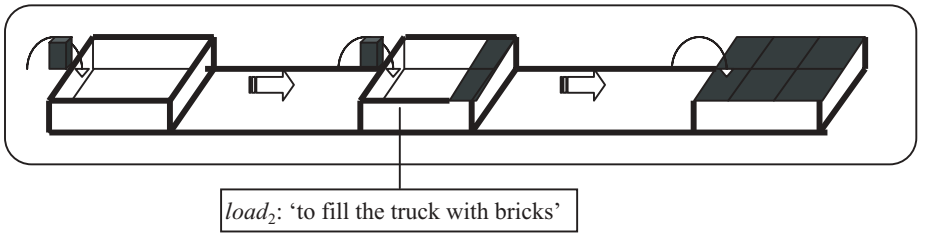


Figure 10

Thus the locatum-as-object variant *He loaded bricks onto the truck* is acceptable because it is sanctioned by a verb-class-specific construction which pairs the syntactic frame [NP V NP PP] with the semantics 'X moves Y into/onto Z'.

Let us next turn to the location-as-object variant. The composition goes as before. The verb meaning of *load* makes schematic reference to a transferred entity and a container entity, and these two entities can be elaborated by *bricks* and *the truck*, respectively, as in figure 9.[11] Essentially the same scene is obtained as before. But notice that by focusing upon the truck this time, we get the interpretation 'to fill the truck with bricks', as in figure 10. This time *load* is semantically similar to *fill*. Consequently, (40a) can be regarded

[11] I am assuming that the 'locatum' *with* phrase is an adjunct (cf. Jackendoff, 1990; Goldberg, 1995, 2002). But I will not go into a detailed discussion of this issue, as it will take us too far afield.

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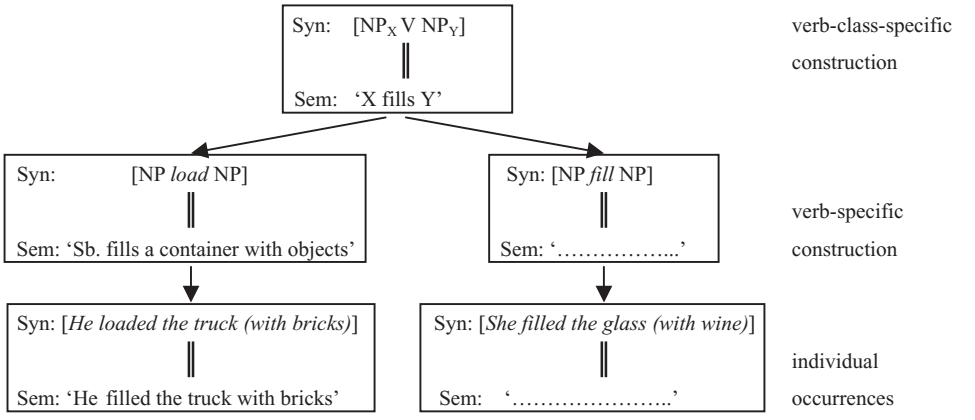


Figure 11

as instantiating the same verb-class-specific construction that (40b) instantiates, as in figure 11.[12]

(40) (a) He loaded the truck with bricks.
(b) She filled the glass with wine.

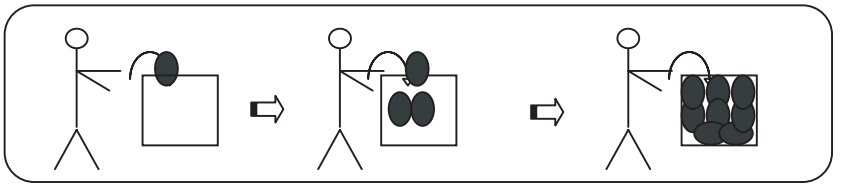
Thus the location-as-object variant *He loaded the truck (with bricks)* is acceptable because it is sanctioned by a verb-class-specific construction which pairs the syntactic frame [NP V NP] with the semantics 'X fills Y'.

Thus no special mechanisms are needed to account for the locative alternation. The two variants of *load* are sanctioned by two verb-class-specific constructions, just as *She put the box on the desk* and *She filled the glass (with wine)* are sanctioned by these verb-class-specific constructions. It is just that *load* is compatible with either of the two verb-class-specific constructions, for the schematic scene specified by *load* can be elaborated into either an event of moving objects onto/into a container (the locatum-as-object variant) or one of filling a container (the location-as-object variant).

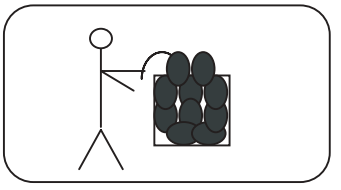
Alternatively, the possibility of locative alternation can be stated in terms of objecthood. It has been held in the literature that what appears in direct-object position is a force recipient in a causal chain (Croft, 1991; Langacker, 1987; Rice, 1987; Levin, 1999; Rappaport Hovav & Levin, 2001; among others). Now it can be said that in the schematic scene of *load*, either a locatum entity or a location entity has the potential to be construed as a force-recipient. Hence under the interpretation of a locatum entity as being acted upon, *load* can appear as a locatum-as-object variant, similarly to verbs like *put*. And under the interpretation of a location entity as being acted upon, *load* can appear as a location-as-object variant, similarly to verbs like *fill*.

[12] The observation that *load* can assume the syntax of *fill* because of its semantic similarity to *fill* has already been made in Fillmore (1971) and Fillmore & Atkins (1992).

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(a) the loading scene



(b) the overloading scene

Figure 12

This supposition is confirmed by the 'What X did to Y' test, which, though often employed as a diagnostic for affectedness (Jackendoff, 1990), actually identifies a force recipient, as Rappaport Hovav & Levin (2001) convincingly argue. With a locatum-as-object variant, a locatum entity is a force recipient as in (41). With a location-as-object variant, on the other hand, a location entity is a force recipient as in (42).

(41) (a) What Harry did to the hay was load it onto the wagon.
(b) ?What Harry did to the wagon was load hay onto it.
(42) (a) What Harry did to the wagon was load it with hay.
(b) ?*What Harry did to the hay was load the wagon with it.

4.2 Overload

Now is the time to turn to *overload*.

(43) (a) *John overloaded bricks onto the truck.
(b) John overloaded the truck with bricks.

As noted above, I am assuming that prefixed verbs are no different from nonprefixed verbs as to the form–meaning correlation. The clue to the 'subcategorization' difference between *overload* and *load* is, therefore, to be sought in the difference in their verb meanings.

Notice that the scene encoded by *overload* is in fact different from that encoded by *load*: while in the schematic scene of *load*, one transfers objects onto/into a container and fills that container as in figure 12 (a), in the overloading scene, one transfers objects onto/into a container beyond the capacity of that container as in figure 12 (b). This

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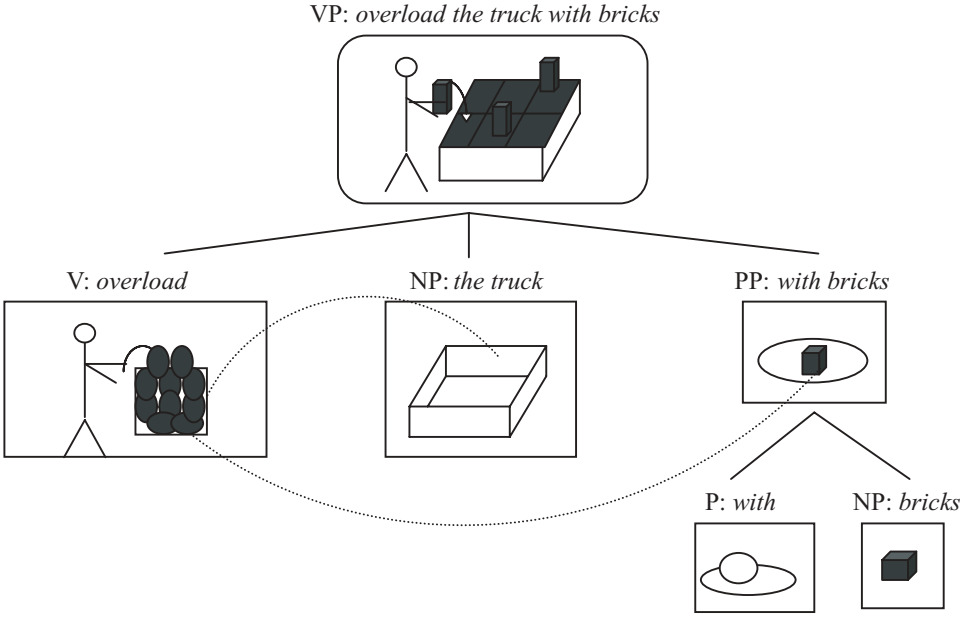


Figure 13

overloading scene makes schematic reference to a transferred entity and a container entity, which can be elaborated by bricks and the truck, respectively, as in figure 13.

Now notice that because more bricks are transferred onto the truck than the capacity of the truck, the truck is negatively affected. Consequently, (44a) can be regarded as instantiating the same verb-class-specific construction that (44b) instantiates, as in figure 14.

(44) (a) He overloaded the truck (with bricks).
(b) He damaged the truck.

Thus the location-as-object variant *He overloaded the truck (with bricks)* is acceptable because it is sanctioned by a verb-class-specific construction which pairs the syntactic frame [NP V NP] with the semantics 'X negatively affects Y'.

But what about a locatum-as-object variant? To the extent that bricks are caused to move, it would seem possible to elaborate *overload* into an event of moving objects onto/into a container. But the very fact that a container entity is affected precludes this possibility.

In the case of *load*, there is nothing that makes either one of the two entities (i.e. locatum and location) more salient than the other. Since both entities are equally cognitively salient, it is possible for a schematic loading scene to be elaborated into an event of transferring bricks onto a truck by focusing upon a locatum entity (*load bricks onto the truck*), or an event of filling a truck by focusing upon a location entity (*load the truck* (*with bricks*)).

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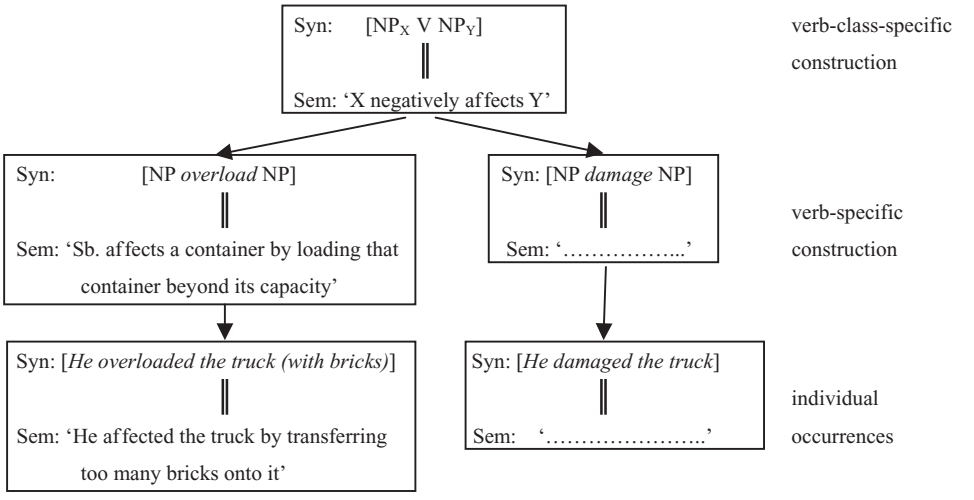


Figure 14

By contrast, with *overload*, a location entity, rather than a locatum entity, is affected. When one puts bricks onto a truck beyond the capacity of that truck, that act is detrimental to the truck. For instance, the truck may be physically damaged, the truck can't move, etc.

The sense of a location entity being negatively affected persists even when overloading does not involve physically moving objects onto/into a container. Interestingly enough, this is reflected by the collocation facts. Thus in (45a) and (45b), *overloading* appears as the direct object of *risk*, and in (46c) overloading is identified as the risk, suggesting that overloading is a potential source of danger (cf. Fillmore & Atkins, 1992).

(45) (a) I believe that if we deal with both of these subjects in one such conference we *risk* overloading the boat.
(b) However, you should take care not to *risk* overloading the electrical wiring in the process . . .
(c) Its purpose is to split the incoming electricity supply to serve the various lighting and power circuits in the house, and to protect each of these circuits from *the risk of* overloading. (BNC)

Furthermore, the corpus data in (46) suggest that overloading is something dangerous (46a), to be prevented (46b), and to be blamed for (46c).

(46) (a) Thomas Chawner, the Architect to the Land Revenue Department, pointed out the need for a fire-proof building, and *the dangers of* overloading the existing structures with books and printing presses.
(b) *Prevention of* overloading is another important target for the would-be licence holder.

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(c) Announcing the figures, Environment Minister David Trippier claimed that heavy rains were in part to *blame for* overloading coastal sewage treatment systems, while the preceding drought meant that a higher density of sewage bacteria had been carried in rivers. (BNC)

Evidently the sense of negative affectedness is encoded in the verb meaning of *overload*, rather than emergent at the level of composite expressions like *overload the truck* or *overload the socket*.

And because of the sense of negative affectedness, a location entity is far more salient than a locatum entity: what is affected is a location entity, not a locatum entity, after all. Consequently, an overloading scene can be construed only as an event of affecting a location (container) entity. It is true that an overloading scene contains the displacement of a locatum entity as its component part, but the whole scene cannot be categorized as an event of causing a locatum entity to change its location. This is why *overload* does not allow a locatum-as-object variant. The following facts are explained along the same lines.

(47) (a) *John overpoured water into the glass.
(b) John overfilled the glass with water.
(48) (a) *overstuff papers into the bag
(b) overstuff the bag with papers
(49) (a) ?overplant trees in the park
(b) overplant the garden with trees (Yumoto, 1997: 186)

Now the present account can be summarized as follows. First, the possibility of alternation depends upon the verb meaning's potential to be construed in more than one way. In the case of *load*, either a locatum or a location entity can be interpreted as a force recipient in a causal chain, as in (50). In the case of *overload*, in contrast, a location entity is negatively affected and is therefore uniquely identified as a force recipient, as in (51). This is why *load* alternates between the two syntactic frames, but *overload* does not.

(50) (a) John ==> hay
(b) John ==> the truck

(51) John ==> the truck

Second, the location-as-object variant of *load* and that of *overload*, while seemingly identical, are actually sanctioned by different verb-class-specific constructions: the former instantiates the 'fill'-class construction, and the latter the 'negatively affect' construction.

Third, the variants of *load* and *overload* are not derivationally related. Yumoto essentially claims that the location-as-object variant of *overload* can be formed from that of *load*, but that the locatum-as-object variant of *overload* cannot, as in figure 15 (a). But the present account maintains that while two variants can be obtained by elaborating the verb meaning of *load*, only one variant can be obtained by elaborating the verb meaning of *overload*, as in figure 15 (b).

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load NP_1 onto NP_2 → *overload NP_1 onto NP_2
load NP_2 (with NP_1) → overload NP_2 (with NP_1)

(a) Yumoto's view



(b) the present analysis

Figure 15

Yumoto's approach could be justified if the prefix *over-* attached to VPs, as in (52).

(52) (a) *over-[load NP_1 onto NP_2]
(b) over-[load NP_2 (with NP_1)]

This is patently false, however. The prefix *over-* attaches to verbs, and *load* and *overload* are two distinct (though related) lexical items on their own. Whether a verb can appear in a syntactic frame depends upon whether it is compatible with the constructional meaning associated with that frame, and the internal structure of a verb is irrelevant. This point can be made clearer by alternatively representing my analysis as (53) and (54), where *load* can appear in the slot for a verb in either of the two syntactic frames, but *overload* can occur only in the verbal slot for one frame.

(53) (a) [$_V$ *load*]
↓
NP [V] NP_1 *onto* NP_2
(b) [$_V$ *load*]
↓
NP [V] NP_2 (*with* NP_1)
(54) (a) [$_V$ *overload*]
↕
NP [V] NP_1 *onto* NP_2
(b) [$_V$ *overload*]
↓
NP [V] NP_2 (*with* NP_1)

Notice that besides enabling an entirely parallel account of *load* and *overload*, this view of prefixed verbs is in accord with the Lexical Integrity Principle, which amounts to saying that a word's internal structure is not visible to syntax (Di Sciullo & Williams, 1987; Bresnan & Mchombo, 1995; Matsumoto, 1996; Ackerman & Webelhuth, 1998; among others).

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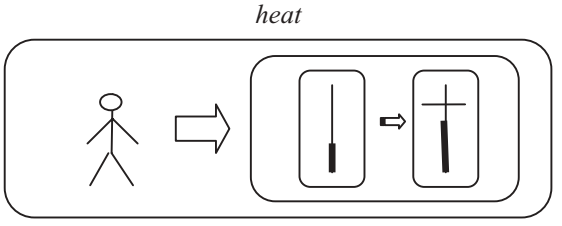


Figure 16

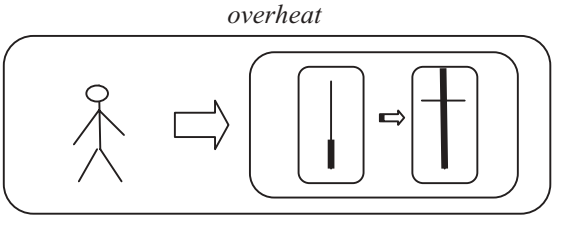


Figure 17

4.3 Overheat

Having explained one case of *over*-prefixation that results in a subcategorization change (i.e. *overload*), let us next consider a case of *over*-prefixation that does not. As noted in section 1, *overheat* is no different from *heat* as to the syntactic frame.

(55) (a) John overheated the room.
(b) John heated the room.

My account can explain why *overheat* and *heat* share the subcategorization property by following the same procedure as before.

The base verb *heat* is a change-of-state verb 'to cause to become hotter than before' (cf. Dowty, 1979). Thus the schematic heating scene may be described as in figure 16, where something comes to be located at a higher point on a temperature scale than before. There is nothing surprising about the syntactic frame of *heat* in (55b), for an entity that undergoes a change of state generally appears as a direct object, as with change-of-state verbs like *break* or *cut*. Clearly, (55b) is sanctioned by a verb-class-specific construction that pairs the syntactic frame [NP V NP] with the semantics 'X causes Y to change state'.

Turning to *overheat*, its verb meaning is 'to cause to become hotter *beyond the proper limit*'. This is still a change of state, the only difference being that the change goes on to a higher degree. This means that the same entity is a force recipient in a causal chain, as in (56) and (57).

(56) (a) John heated the room.
(b) John ==> the room

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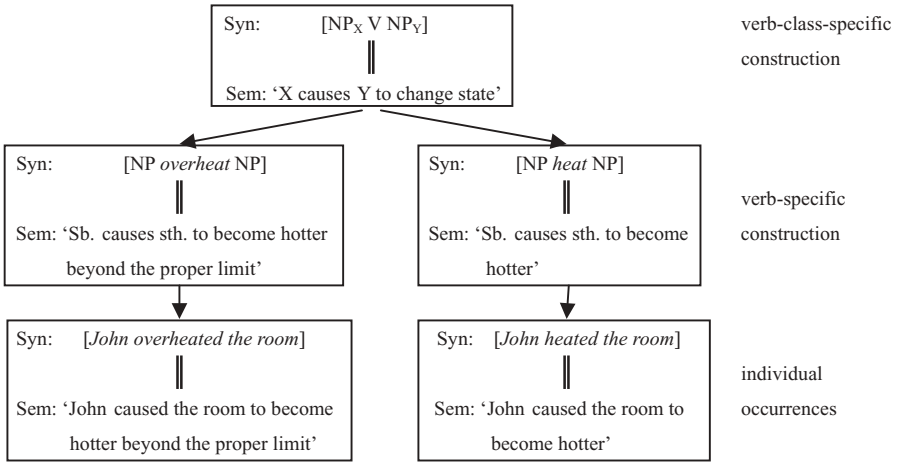


Figure 18

(57) (a) John overheated the room.
(b) John ==> the room

Consequently, (58a), along with (58b) and (58c), is sanctioned by a verb-class-specific construction that pairs the syntactic frame [NP V NP] with the semantics 'X causes Y to change state', as in figure 18.

(58) (a) John overheated the room.
(b) John heated the room.
(c) John cooled the room.

This is why *overheat* and *heat* appear in the same syntactic frame.

Now the difference between the case of *overload* and that of *overheat* can be summarized as follows: an overloading scene, whose causal chain is different from that of a loading scene, allows only the location entity to serve as a force recipient. Accordingly, only the location-as-object variant is available. On the other hand, an overheating scene is identical to a heating scene as to the causal chain. Since the same entity is a force recipient, the same subcategorization property is shared between *heat* and *overheat*.

5 Another story of *over*

5.1 Two schemas for the prefix over-

As the previous section has shown, whether the same subcategorization property is shared between an *over*-verb and its base verb (*overheat* and *heat*) or not (*overload* and *load*) depends upon whether the causal chain is identical or not. And this difference

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between *overload* and *overheat* can be traced back to the difference as to how the excess sense is understood.

With *overload*, whether an action is excessive or not is determined relative to a container, rather than the amount of substance *per se*: two tons of bricks may fall far short of filling up a large truck, but transferring only half a ton onto a small cart may be 'overloading'. By contrast, with *overheat* the excess sense is understood without reference to a container. If the room temperature becomes higher than is necessary for the purpose at hand, then it is 'overheating'. The norm may vary from context to context, but simply to go past a contextually given norm is sufficient.

These two understandings of excess are to be attributed to the prefix *over-*, which means that the prefix *over-* in the excess sense is polysemous, a point missed by Yumoto. In a usage-based theory, an expression can be analyzed into component parts 'to the extent that the analysis is sanctioned by a schema' (Taylor, 2002: 324). That is, morphological structures like stems and affixes emerge when appropriate form–meaning associations have been made (Bybee, 2001; Kemmer, 2003). Thus an overheating scene and an overloading scene can be broken down into component parts as in figure 19 (a) and (b), respectively. We now have two schemas for the excess *over-*, one based on a scale and one based on a container.

5.2 *Previous analyses of excess* over-

In the literature, two characterizations of the excess sense have already been proposed, so it is necessary at this point to see how my analysis compares with these previous analyses. First, Lakoff (1987: 434) suggests that the excess schema is an image schema plus a container-based metaphor. According to Lakoff, *overflow* illustrates the basis of the excess sense: there is a container with vertical sides, and the height of the sides characterizes the maximal normal amount of fluid. When overflowing takes place, the fluid goes upward and *over* the side of the container.

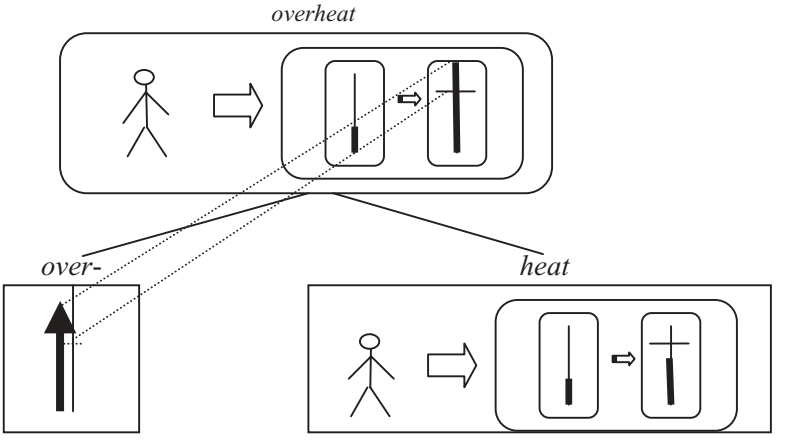
(59) The river overflowed.

But overflowing is more than just flowing over the edge of a container: when overflowing occurs, the fluid put into the container is wasted and creates a mess. Because of this regular correlation in experience, the excess sense is understood in terms of the metaphor AN ACTIVITY IS A CONTAINER for the effort (or energy) put into it, with the sides of the container defining the maximal normal effort required to achieve the goal of the activity.

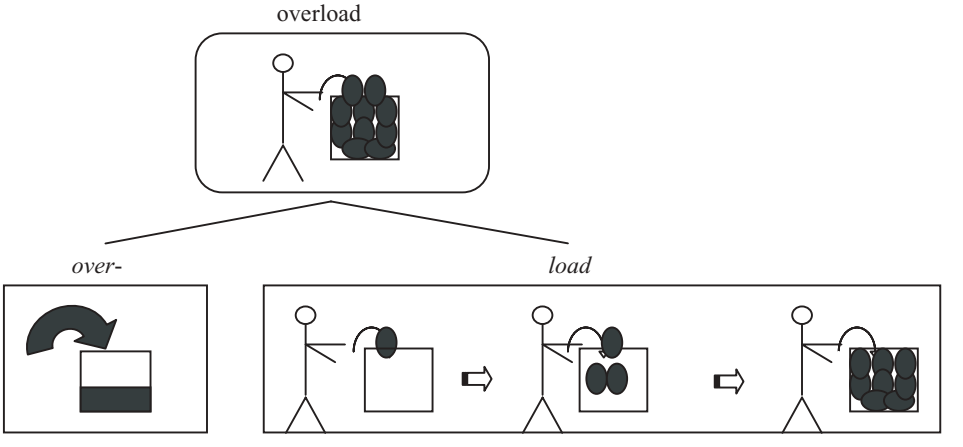
> *Overdoing* something involves putting more than the maximal normal amount of effort into an activity that is required to achieve the goal. This results in wasted effort, and sometimes in awkwardness (a social mess). (Lakoff, 1987: 434)

Next, Tyler & Evans (2001, 2003) claim that besides a container-based understanding, the excess sense has another origin. In the above-and-beyond schema in figure 22 (a),

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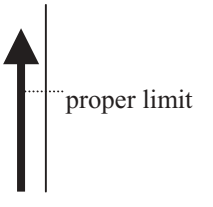


(a) *over*$_1$- in *overheat*

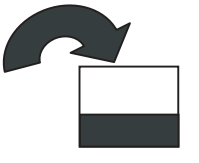


(b) *over*$_2$- in *overload*

Figure 19



(a) scale-based excess



(b) container-based excess

Figure 20

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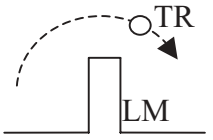
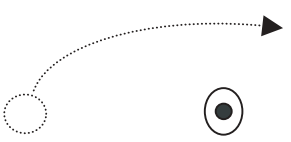


Figure 21



(a) excess I

(=above-and-beyond sense)



(b) excess II

(=over-and-above sense)

Figure 22

the LM represents an intended goal or target and the TR moves beyond this intended or desired point, as in (60a); in the over-and-above schema in figure 22 (b), the level of liquid in a container is higher than the top of the LM, as in (60b).

(60) (a) The arrow flew over the target and landed in the woods. (sense I)
(b) The heavy rains caused the river to flow over its banks. (sense II)

Thus Lakoff attempts to account for the excess sense by means of an image schema plus a container-based metaphor. Tyler & Evans claim that there are two schemas for the excess sense. There seems to be some plausibility to both analyses as far as how the excess sense is related to some other sense of the preposition *over*, i.e. how the excess sense is *motivated*.

5.3 The story of the prefix over- *in the excess sense*

But when it comes to how the excess sense of the prefix *over-* is actually construed in on-line processing, neither is satisfactory.[13] Most importantly, the proposed schemas in the two analyses do not correctly describe the actual scenes conveyed by *over*-verbs.

[13] It is one thing to show how the excess sense is motivated, quite another to claim that the motivating schema is mentally represented every time an *over*-verb is used. Tyler & Evans (2001, 2003) are not clear about this distinction. While they claim that when a distinct sense arises via pragmatic strengthening of an implicature, the original schema need no longer be evoked, on many occasions they sound as if the original schema is still always evoked. Thus consider the following passage:

> For instance, in a compound such as *overtired*, it seems that the conceptualization involved is not that an expected level of tiredness is a goal that is missed [(=excess I)] but rather that an expected or normal capacity for tiredness has been exceeded [(=excess II)]. (Tyler & Evans, 2003: 99–100)

It is quite difficult, if not impossible, *not* to interpret this to mean that the two schemas for the excess sense are actually employed in on-line processing.

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Thus according to Lakoff, the excess sense of an *over*-verb should always involve a container-based understanding. But while it makes sense to say that overloading involves putting more than the maximal normal amount of stuff into/onto a container, to say that overheating involves putting more than the normal amount of heat into the room will miss the important point noted above, namely, that simply going past a contextually given norm is sufficient for 'overheating'.

Next, Tyler & Evans' two excess schemas apparently correspond to the two schemas in my account. But to say that *overheat* involves a trajectory as described by the above-and-beyond sense of figure 22 (a) makes little sense. Rather, temperatures rise and fall on a vertical, linear scale (cf. Lakoff, 1990, 1993), so that *overheat* is better handled by the scale-based excess schema in figure 20 (a) in my account.[14]

Tyler & Evans' excess II is also problematic. Thus in the corpus data of *overload* in the spatial sense in (61), the image of spillage described by the over-and-above sense of figure 23 (b) is absent.

(61) (a) In the summer he was stopped by the police for *overloading his builder's van*.
(b) *Overloading the spoon*, awkward presentation, irritated or cold emotional effect will all influence the feeding interaction.
(c) There was *a desk overloaded* with papers and two freestanding bookcases, though they held few books. (BNC)

Moreover, since excess II is related to the 'more' sense (e.g. *He weighs just over 150 pounds*), vertical elevation should be essential to excess II, according to Tyler & Evans. But apart from (61c), vertical elevation does not seem to be a salient aspect of overloading. Rather, what is crucial is that *the amount of the substance being transferred* is great relative to the capacity of the container.[15]

This is further confirmed when we turn to other data of nonspatial *overload*. It hardly makes sense to claim of the following examples that the level of the entity contained becomes higher than the top of the LM.

(62) (a) Children can suddenly start to refuse to eat foods they had previously enjoyed. In an attempt to give them what they like, mothers can *overload the child* with their favourite food until satiation is reached and the child doesn't want it any more. . .
(b) Cellulite is always more severe in women who lead far from healthy life-styles. That is, if they smoke, get little exercise, *overload their digestive systems* with junk-food and drink gallons of strong tea or coffee.
(63) (a) Don't *overload your diary*.
(b) . . .to avoid *overloading the present chapter*, the union's creation and activity is discussed in Chapter 7.
(c) If you *overload your Windows system* then Windows still tries to keep going.

[14] The properties of a scale are determined by the inherent properties of the semantic domain relative to which the scale is defined (see Jackendoff, 1992; Lakoff, 1993; Iwata, 1995, 1999a). Considering that the scale-based excess will probably generalize over various kinds of quality and quantity scales in the sense of Horn (1989), and that vertical orientation does not seem to be prominent in some of them, verticality may not be essential to the scale-based excess.

[15] Notice also the fact that *over*-verbs can be used hyperbolically.

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(64) (a) Don't use these outlets for appliances containing heating elements, though, in case you *overload the adaptor*.
(b) *Overloading a socket outlet* can easily start a fire, and all those trailing flexes pose a serious trip hazard. (all from BNC)

Furthermore, some *over*-verbs evince an understanding of excess that could involve the exact opposite of vertical elevation. The verb *overdraw* exhibits a very similar paradigm to *overload*.

(65) John drew money from his account.
(66) (a) *?John overdrew money.
(b) John overdrew his account. (Yumoto, 1997)

It is not difficult to realize that *overdraw* is amenable to a parallel treatment to *overload* on the assumption that a bank account is a container for money. Just as *overload* means 'to load beyond the capacity of a container', so *overdraw* means 'to draw beyond the capacity of an account'. And whether an action is excessive or not is determined relative to a container, rather than the amount of substance *per se*: two tons of bricks may fall short of filling up a large truck, but transferring only half a ton onto a small cart may be 'overloading'. Similarly, drawing $1,000 from John's account may not be 'overdrawing', but drawing only $50 from George's may be.

There is one crucial difference between *overload* and *overdraw*, however: with *overdraw*, a substance is caused to move out of, rather than into, a container. Accordingly, the container-based schema in figure 20 (b), which aptly handles *overload*, does not do justice to *overdraw*. We thus need two schemas that are container-based: the schema extracted from *overload* should be better labeled the excess-addition-to-container schema, and the one extractable from *overdraw* may be termed the excess-removal-from-container schema in figure 23.

The existence of this schema has profound implications. Tyler & Evans (and, for that matter, Lakoff as well) try to derive the excess sense from the experiential correlation of the excess and the vertical elevation of the level of the entity contained (followed by spillage). But if one is to understand the schema in figure 23 along this experientialist line (which I do not),[16] then the excess-removal-from-container schema should mean that the level of the entity contained becomes *lower* than before, exactly the opposite of Tyler & Evans' excess II schema.[17]

[16] The excess-removal-from-container schema is intended to convey that substance beyond the capacity of a container is removed from that container, and no more. Notice that when one overdraws one's account, the level of the remaining money cannot be said to become lower or higher (although the figure may go down), for nowadays bills or coins do not have to be physically present in one's account.

[17] Notice that admitting the utility of imagistic representations in linguistic descriptions does not entail being committed to 'experientialism' in the sense of Lakoff and his colleagues (Grady, 1997; Lakoff & Johnson, 1999).

> Generally, whereas no one would object to the presence of schematic structures in perception and cognition, there is no reason to think that image schemas, and therefore concepts, have the 'experientialist' origin. (Rakova, 2003: 26)

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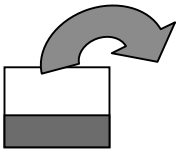


Figure 23. Excess-removal-from-container schema

All this indicates not only that Tyler & Evans' two image schemas are inadequate, but also that the excess sense cannot be reduced to any of the image schemas which Tyler & Evans posit for *over* as a preposition or a particle in the first place. In other words, the prefix *over-* has its own story, distinct from that of *over* as a preposition or a particle.

In fact, while both Tyler & Evans and Lakoff try to account for the excess sense of *over*-verbs on a par with various senses of the preposition *over*, this very methodology is on the wrong track. First, notice that the pure excess sense is not available with the preposition *over*. Thus Tyler & Evans cite many examples of *over*-verbs as instances of the excess II sense, but not a single example of a preposition (or particle). As for excess I, they cite only the two examples in (67).

(67) (a) Your article is over the page limit.
(b) Most students wrote over the word limit in order to provide sufficient detail.
(Tyler & Evans, 2003: 84–5)

But it is questionable whether these uses of *over* really encode the excess sense. Rather, both of the examples in (67) owe the notion of excess to the word *limit*.[18]

Quite probably, *over* in (67) is essentially the same as *over* in the 'more' sense as exemplified in (68).

(68) a. He weighs just over 150 pounds.
b. The car was going over ninety miles an hour.
c. Mary has been in Europe for over five months. (Tyler & Evans, 2003: 98)

The 'more' sense is understood on the basis of a vertically oriented linear scale. Since the notion of 'limit' is contextually added in (67), the notion of excess emerges. And notice that this is exactly how an *over*-verb comes to have the sense of 'scale-based excess' in my account: moving beyond the proper limit on a vertically oriented linear scale.

Another consideration that argues for the necessity to analyze the prefix *over-* separately from the preposition *over* is that prefixes and suffixes generally have their own polysemy structures (Lehrer, 2003). And this is to be expected in a usage-based

See Rakova (2002, 2003) and Wilson (2001) for many arguments against 'experientialism' on the grounds of acquisition and philosophical foundations. See also Abbott (1997), Green & Vervaeke (1997), Vervaeke & Green (1997), and many contributions to the special issue of *Journal of Pragmatics* 31:12 (1999) on Literal and Figurative Language.

[18] By contrast, *over*-verbs under discussion inherently express the notion of excess, which is not conditioned by other lexical items.

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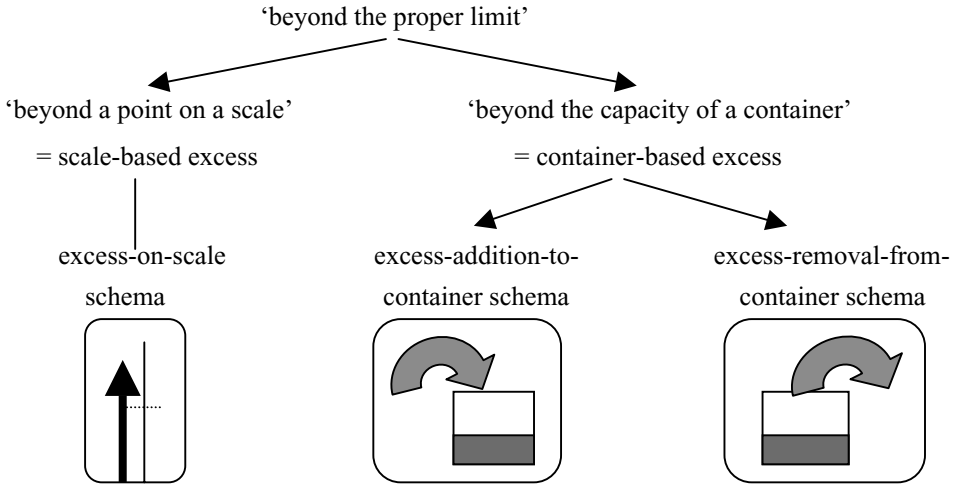


Figure 24. The network of the prefix *over-* in the excess sense

theory. Since *over*-verbs are stored in memory as distinct from the preposition *over*, it is no wonder that the prefix *over-* develops its own polysemy structure.

Thus our discussion up to this point, while limited to the three *over*-verbs (*overload*, *overheat*, and *overdraw*), seems to suggest that the prefix *over-* in the excess sense has a network structure as follows. At the most general level, *over*-verbs invariably mean 'to do beyond the proper limit', as noted by Marchand (1969: 98). Then there are two types, according to whether the proper limit is a point on a scale (=scale-based excess) or the capacity of a container (=container-based excess). The container-based excess further divides into two types, depending upon whether the excess amount of substance is added to, or removed from, a container.[19]

6 Subcategorization changes once again

6.1 Container or not?

Let us get back to the issue of subcategorization change. The foregoing discussion has shown that whether an *over*-verb behaves syntactically differently from its base verb

[19] A reviewer observes that an ideal example instantiating the excess-removal-from-container schema should come not from *draw* but from a verb like *strip*, which alternates as in (i), in a parallel fashion to *load*.

(i) a. strip the wallpaper from the wall
b. strip the wall of the wallpaper

But *strip* cannot be prefixed with *over-* (**overstrip the wall of the wallpaper*).

The unavailability of *overstrip* is probably due to the semantic incompatibility between *over*-verbs and verbs of removal participating in the alternation (e.g. *clear*, *empty*, *strip*, and *drain*). In order for an action to be done to excess, some sort of degree needs to be involved. But the *of*-variant of verbs of removal means that a container or a surface is completely vacated, and is therefore not compatible with the notion of degree. One can continue to transfer objects into/onto a container even after it has become full (*overload*), but one cannot continue to take away stuff that is no longer there.

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(as with *overload* and *overdraw*) or not (as with *overheat*) is correlated with whether it involves a container-based understanding or not. This account easily extends to other *over*-verbs.

First consider the sentences in (69).

(69) (a) John overate.
(b) *?John overate apples. (Yumoto, 1997: 191)

This contrast can be accounted for by invoking the excess-addition-to-container schema. When we eat something, that something goes into our body, a container. Thus *overeat* 'to eat beyond the proper limit' means 'to eat *beyond the capacity of oneself as a container*'. It follows then that a container entity, rather than the foods eaten, is affected as a result of overeating.

So far the story goes exactly like that of *overload*. But unlike *overload*, in the case of *overeat* the container entity is identical to the character engaging in the act of overeating. Because there is only one participant, *overeat* does not fit with the transitive syntax. Instead, in English the simple intransitive syntactic frame [NP V] is available for coding one-participant events, so that *overeat* occurs only intransitively in (69).

Next, *overbuild* takes as its direct object a location, rather than what is built.

(70) (a) overbuild {*houses/the city}
(b) build a house in the city (Yumoto, 1997: 186)
(71) (a) And if you look up there that extremely *overbuilt* area there is called the crown post truss. (BNC)
(b) Manila had no property boom in the 1980s and is now about the only significant capital in South-East Asia that is not *overbuilt*. (BNC)

Again, this apparently abrupt change in the subcategorization property from the base verb *build* can be accounted for in terms of the excess-addition-to-container schema.

In a formal theory, a location entity where buildings are built may not be included in the verb meaning of *build*. But under the view of verb meanings as merely 'access points' for further meaning-construction processes (section 4.1), a location entity is certainly accessible for *build*, and also for *overbuild*. Thus it is rather straightforward to get an overbuilding scene involving a location entity. In the type of overbuilding scene described in (70) and (71), too many buildings are built in a location *beyond the capacity of that location*. That is, the proper limit is defined relative to the capacity of a location as a container for accommodating buildings. Accordingly, sentences like (71) are sanctioned by the 'affect' construction, just like *John overloaded the truck* or *John overdrew the account*. As a consequence, the location entity, which is negatively affected, appears in a direct-object position.

There are many other *over*-verbs whose direct object is a location, be it concrete or abstract, as in (72)–(74). All these cases can be similarly accounted for by means of either the excess-addition-to-container schema in (72) and (73), or the excess-removal-from-container schema in (74).

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(72) (a) Environmentalists say Australia is already *overpopulated*.
(b) The city's hospitals are *overburdened* by casualties.
(c) The popular schools – the sort you really might drive across town for – tend to be heavily *oversubscribed*. (all from COBUILD)
(73) (a) Do not *overfeed* your fish. (BNC)
(b) She *overdosed* on aspirin and died. (CIDE)
(74) (a) This part of the Mediterranean is terribly *overfished*. (BNC)
(b) Cecil Melling, the chairman of the Eastern Board, drew the inevitable lesson, and in a subsequent year *overspent* his budget by as much as 12 per cent. (BNC)

Let us now turn to cases where an *over*-verb shares the same syntactic frame with the base verb. As pointed out in section 2.4, in many cases the base verb cannot plausibly be analyzed as a change-of-state verb, contrary to Yumoto's analysis.

(75) (a) The writer Kingsley Amis has said that Keats is *overrated* as a poet.
(b) To say that all young people are involved with drugs is to *overstate* the problem.
(c) They were forced to the conclusion that they had *overestimated* him/his abilities. (all from CIDE)
(76) (a) The importance of education cannot be *overemphasized*. (COBUILD)
(b) After winning the collection, Hoving *overpraises* its considerable merits. (BNC)
(77) (a) . . .cars have been *overproduced* this year. (CIDE)
(b) We all tend to *overuse* certain expressions. (CIDE)
(b) Now they are both desperately trying not to *overprotect* Robert. (BNC)

Rather, what is crucial is that the degree of an action is beyond some norm, which is defined without any reference to a container. That is, here the prefix *over*- expresses the scale-based excess.

Thus all these examples corroborate my claim that whether an *over*-verb behaves syntactically differently from its base verb or not is correlated with whether it involves a container-based understanding or not.[20]

6.2 Apparent exceptions

There are apparent exceptions, however. We have just seen that the contrast between (69a) and (69b) is due to the excess-addition-to-container schema, but there are examples of *overeat* taking a direct object, as in (78).

[20] While *over*-verbs with a container-based understanding require the notion of a container, *over*-verbs with a scale-based understanding require the notion of degree. In this sense, *over*-verbs with a scale-based understanding seem to be more easily coined, for they are possible as long as the notion of degree is somehow involved. On the web, even *overtell*, *overbelieve*, and *oversay* can be found.

(i) (a) It shouldn't be more than 20 pages. Don't *overtell*. Convince not bewilder. (http://www.rossiterandco.com/new-media-07-multimedia.htm)
(b) We think this is in error given the current state of psychological research showing that jurors tend to *overbelieve* eyewitnesses and that a witness' confidence in their selection of a suspect from a photo or live lineup is actually a weak indicator of reliability. (http://www.talkleft.com/archives/002956.html)
(c) I may *oversay* those things because you do *oversay* those things in saying them. (http://www.normangrubb.com/Articles/CM-Saviorhood.htm)

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(69) (a) John overate.
(b) *?John overate apples.
(78) (a) . . .people who *overeat spicy foods*. (COBUILD)
(b) Cough causes a bursting headache. Worse (<) cold, uncovering, cold dry weather, eating and especially *overeating stimulants*, mornings, anger, mental exertion. (BNC)
(c) The fat balance explains in part why settling points vary among people who *overeat fat*. (Yamada, 2000: 75)

Moreover, by using the Google search engine, I have come across the following attested examples.

(79) (a) This low fat intake can often cause someone to *overeat CHO (= carbohydrates)*, making them gain weight.
(http://www.health.arizona.edu/Health%20Education%20On-Line%20Library/ Nutrition%20and%20Eating%20Issues/zone.htm)
(b) BREAD, PASTA, CEREAL, RICE, and GRAIN. Be careful! You tend to *overeat these foods*.
(http://tsangenterprise.com/news5.html)
(c) 'Situations, not hunger, trigger a stress eater's desire to *overeat their favorite comfort foods*', said Karen Miller-Kovach, MS, RD, Chief Scientist at Weight Watchers International.
(http://www.weightwatchers.com/aboutus/i2 au comp pr comfort.asp)
(d) Why Do We *Overeat Stockpiled Products*?
(http://www.wansink.com/lessonplans/kpmodule61.html)
(e) Why 100% raw vegans eat so much avocado and nuts, or *overeat sugar* (*fruit*)?
(http://www.beyondveg.com/billings-t/cal-par/calorie-paradox1f.shtml)
(f) Even vegan sweets aren't good when you *overeat them*.
(http://www.vegsource.com/talk/eatingissues/messages/8437.html)

Evidently, not all these examples are perfectly acceptable to every speaker. My informants tend to judge transitive *overeat* slightly less acceptable than intransitive *overeat*. In fact, one of my informants even suggested that transitive *overeat* is totally unacceptable.

Nevertheless, considering the number of examples of transitive *overeat* that can be easily found by browsing through the internet, the above examples cannot be simply swept aside as performance errors. They cry out for explanation.

Even this apparently baffling problem can be solved in my account. Notice that *overeat* cannot be followed by every NP that can be a direct object of *eat*.

(80) (a) *Yoshika overate {apples/lunch}.
(b) Yoshika overate {fruit/sweets/fatty foods}.

What differentiates (80b) from (80a) is that the direct object denotes some particular type of food whose consumption in a large quantity is harmful to one's health, *irrespective of whether the person becomes full*.

To further appreciate this point, notice also a difference between intransitive *overeat* and transitive *overeat*: people who overeat are generally overweight, but people who overeat a particular food (e.g. spicy foods) are not necessarily so.

That is, while the person who overeats something may be affected, that person is not construed as being affected in the same way as a container into which substance

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is put that is beyond the capacity of the container. Rather, whether or not a particular act counts as 'overeating' depends upon whether or not the amount of the food eaten is more than the general norm or standard for a healthy living. In other words, the proper limit is defined *relative to the amount of the food eaten*, rather than to the person's capacity as a container.

Thus, what distinguishes between *eat* and *overeat* in this construal is nothing more than the amount of food eaten. This is parallel to the difference between *heat* and *overheat*, where the latter differs from the former only in that the temperature goes past a contextually given norm. Hence here a scale-based understanding of excess is at work, the force transmission being unchanged from that of *eat*.

(81) people ==> spicy foods

This is why *overeat* is transitive in (69) and (78).

Essentially the same account applies to *overbuild*. As already seen in (70), *overbuild* normally takes a location entity as its direct object.

(70) (a) overbuild {*houses/the city}
(b) build a house in the city

But an entity that is built may appear as a direct object, as in (82).

(82) To expand the local airport and *overbuild* hotels would destroy the setting that makes Angkor Wat unique. (BNC)

Note that here the location need not be fully occupied by the hotels: just a couple of hotels may be sufficient to destroy the charm of the place. Again, therefore, the proper limit is defined relative to the number of hotels, rather than the capacity of some location as a container. Accordingly, a scale-based understanding, rather than a container-based understanding, is involved. Therefore, *hotels*, as a force recipient, may occur in a direct-object position.

Interestingly enough, *overbuild* presents still another type of apparent exception to the generalization that only a location entity appears as a direct object. Yamada (2000) observes that *overbuild* may take a Theme as a direct object when it means 'to make something too big'.[21]

(83) (a) In contrast, when companies that have built 200-foot yachts – like that which builds the Leopard – set out to build a 75-foot day boat, they approach it from the standards of large ocean-going vessels. Such companies, contends Chahine, are more likely to *overbuild* the boat.
(b) In retrospect NASA and Congress appear to have *overbuilt* the launch complex.
(Yamada, 2000: 75)

[21] Interestingly enough, the distinction between cases like (82) and those like (83) is reflected in the determiner of the object NP: the former may take a bare plural NP, but not a definite NP, whereas the latter may take a definite NP.

(i) (a) overbuild {*the hotel/hotels}
(b) overbuild the boat

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From my viewpoint, this comes as no surprise. The fact that in (83a) the boat was built larger than the ordinary size means that the proper limit is defined relative to the ordinary size of boats in general, rather than the capacity of some location as a container. Again, therefore, the relation between *build* and *overbuild* in the 'too big' sense is entirely parallel to that between *heat* and *overheat*: some property of an entity is made to go beyond a contextually given norm, without altering the force transmission from that of the base verb. Consequently, the same syntactic frame as that for *build* is available for *overbuild*.[22]

Thus all these apparent exceptions are actually no exceptions at all. On the contrary, they actually support my claim that the prefix *over-* may allow for both scale-based and container-based understandings. Apparent exceptions arise because some *over*-verbs can be construed with or without a container-based understanding.

7 The 'landmark'-based cases

The discussion so far has been exclusively concerned with *over*-verbs in the excess sense. Two important points about these *over*-verbs are (1) that a force-recipient appears as a direct object, and (2) that the prefix *over-* is to be handled separately from the preposition *over*. But there are *over*-verbs that need to be treated differently from the *over*-verbs thus far considered in these respects.

7.1 Spatial senses

As pointed out by Marchand (1969), the prefix *over-* has a spatial sense, besides the excess sense. And many *over*-verbs in the spatial sense are transitive, contrasting with their base verbs, which are intransitive verbs followed by a path PP.

(84) (a) fly over the territory
(b) overfly the territory
(85) (a) grow over the garden
(b) overgrow the garden
(86) (a) flow over the banks
(b) overflow the banks

It thus looks as if the preposition has been syntactically incorporated into the verb (cf. Baker, 1988).

[22] Incidentally, I have come across a very interesting example of *overbuild* on the web. The following passage nicely illustrates that the norm beyond which an action goes is quite distinct from the entity that appears as a direct object.

(i) A home is consider (sic) overbuilt when *it has been expanded or improved to a level beyond that of most homes in the area*. An overbuilt home can be difficult to sell for a reasonable price (based on its size and features) because it *has been improved past the affordability level of the typical area buyer*. (http://www.informediagroup.com/jacksoncontent/sg/overbuilt.asp)

This is fully compatible with my analysis, which holds that the direct object of an *over*-verb is an affected entity if an *over*-verb involves a container-based understanding, and is identical with that of the base verb otherwise.

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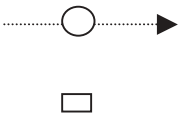


Figure 25. Schematic overflying scene

These *over*-verbs are different from the *over*-verbs so far considered in two respects. First, while we have seen in section 5.3 that the excess sense cannot be reduced to any of the image schemas proposed for the preposition *over*, the spatial trajectories described by the *over*-verbs in (84b)–(86b) are more or less like those proposed for the preposition *over* in the literature (Brugman, 1981/88; Lakoff, 1987; Dewell, 1994; Tanaka, 1997; Tyler & Evans, 2001, 2003; among others). For instance, an overflying scene is described as in figure 25.[23] That is, spatial *over*-verbs, unlike excess *over*-verbs, can be analyzed by means of the image schemas available for the preposition *over*.

Second, while excess *over*-verbs like *overload* and *overheat* can be safely regarded as being sanctioned by constructions based upon force-transmission (the 'affect' construction and the 'change-of-state' construction, respectively), spatial *over*-verbs like (84b)–(86b) cannot be so handled. Thus *the territory* in (84b) cannot be coherently called a force recipient, as witnessed by the 'What X did to Y' test.

(87) *What they did to the territory was overfly it.

If anything, *the territory* is a landmark.

This indicates that spatial *over*-verbs like (84b)–(86b) are sanctioned by a different construction from either the 'affect' construction or the 'change-of-state' construction. Notice that in English the direct object is not limited to a force recipient (Tsunoda, 1985; Levin, 1999). One such case comes from path-incorporating motion verbs as exemplified in (88) (Gruber, 1976; Jackendoff, 1983, 1990; Talmy, 1985, 2000a, b).

(88) (a) He entered the room.
(b) The train passed the station.
(c) He crossed the street.

With these verbs, the direct object is not acted upon, as witnessed by the 'What X did to Y' test.

(89) (a) ?*What he did to the room was enter it.
(b) *What the train did to the station was pass it.
(c) ?*What he did to the street was cross it.

Rather, the direct object expresses a landmark, which is confirmed by the paraphrases of *enter*, *pass*, and *cross* as 'go into', 'go past', and 'go across', respectively (Jackendoff, 1990). It seems reasonable to suppose, then, that we have a distinct construction that

[23] It is immaterial to the present discussion which schema of whose analysis should be adopted in accounting for spatial *over*-verbs.

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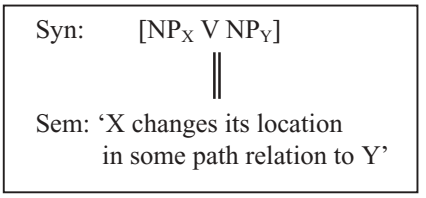


Figure 26. The simple transitive 'landmark' construction

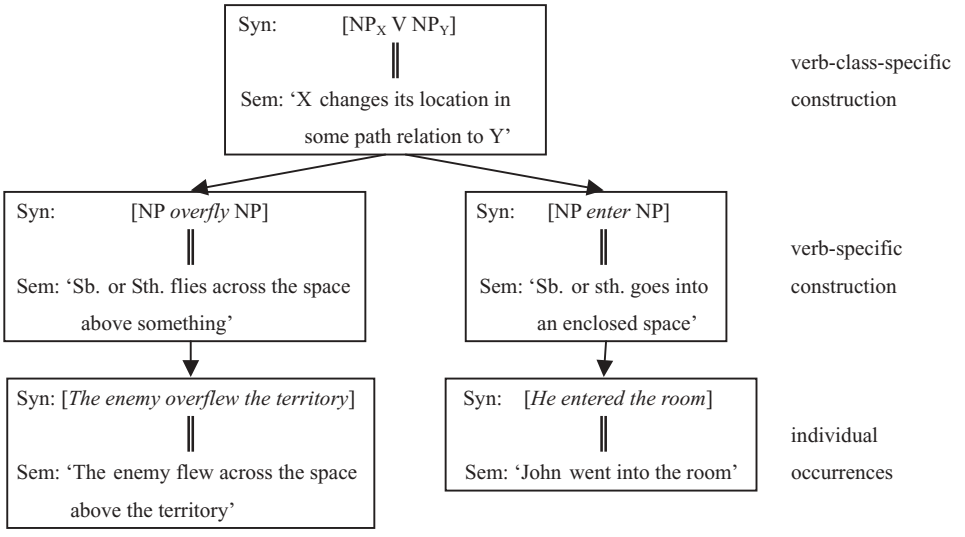


Figure 27



Figure 28. Schemas for *overgrow* and *overflow*

relates a landmark to a direct-object position, as shown in figure 26. I will call this construction *the simple transitive 'landmark' construction*.

This 'landmark' construction sanctions both *He entered the room* and *The enemy overflew the territory*, irrespective of whether the verb is simple or complex. Other spatial *over*-verbs like *overgrow* or *overflow* are treated similarly, except that they involve different image schemas in figure 28.[24]

[24] Notice that this schema simply describes a liquid physically spilling over a container. It is not to be confused with the schema for the excess sense.

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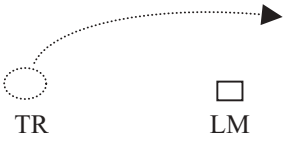


Figure 29

(90) (a) overgrow the garden: 'grow over the garden'
(b) overflow the banks: 'flow over the banks'

Incidentally, some spatial *over*-verbs exhibit a rather drastic subcategorization change, like excess *over*-verbs. Yumoto (1997) includes *overshoot* in (91a) and *overthrow* in (92a) in the class of excess *over*-verbs accompanied by subcategorization changes from the base verbs.

(91) (a) overshoot {*the bullet/the target}
(b) shoot the bullet at the target
(92) (a) overthrow {*a ball/the base}
(b) throw a ball at the base (Yumoto, 1997)

However, they are unlike the excess *over*-verbs that have been analyzed in sections 4 and 5, in that the direct object is not acted upon, as confirmed by the following contrast.

(93) (a) What John did to the wagon was overload it (with bricks).
(b) What John did to the room was overheat it.
(94) (a) *What John did to the target was overshoot it.
(b) *What John did to the base was overthrow it.

Rather, they are instances of spatial *over*-verbs. Both *overshoot* and *overthrow* involve the schema in figure 29 (the 'above-and-beyond' schema in Tyler & Evans, 2001, 2003), and the 'landmark' entity appears as a direct object. This is why *overshoot* and *overthrow* occur in different syntactic frames from their base verbs.[25]

7.2 Oversleep, overstay

Besides the spatial *over*-verbs just seen, some excess *over*-verbs are also sanctioned by the 'landmark' construction. *Oversleep* and *overstay* may be transitive, quite differently from their base verbs *sleep* and *stay*, as in (95) and (96).

(95) (a) I overslept my appointment.
(b) *I slept my appointment.

[25] Strictly speaking, the construction sanctioning *overshoot* and *overthrow* in the simple transitive syntax may not be the 'landmark' construction noted above. While in (88b) the subject expresses an object that goes past the station, in (91a) and (92a) the subject expresses a character that causes an object to go past the target. Maybe there is a closely related construction that sanctions a small number of verbs like *miss*, *overshoot*, and *overthrow*. Alternatively, a single construction with a more schematic meaning may be responsible for all the cases involving a landmark. I leave this issue open.

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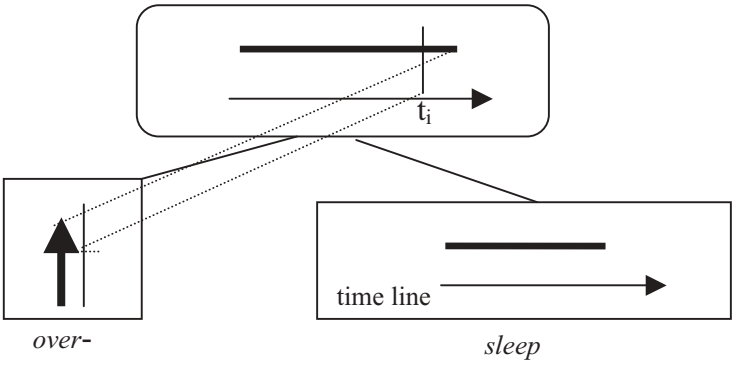


Figure 30

(96) (a) Ken often overstays his welcome.
(b) *Ken stays his welcome.

Both *oversleep* and *overstay* essentially mean that an activity is done beyond the proper time limit ('to sleep longer than you should have done' and 'to stay somewhere for longer than is appropriate', respectively), which means that their excess sense is defined relative to a time scale. It follows then that *oversleep* and *overstay* are instances of scale-based excess rather than container-based excess. Thus an oversleeping scene can be regarded as being composed as in figure 30.[26]

Now the direct objects of *oversleep* and *overstay* are not force recipients, as shown by the 'What X did to Y' test.

(97) (a) *What John did to the fixed time was oversleep it.
(b) *What John did to his welcome was overstay it.

Rather, the direct object expresses some landmark that can be located on a time line beyond which one is not supposed to sleep or stay any further. Other examples of *oversleep* and *overstay* below can be also analyzed along this line.

(98) (a) They're sleepers, they're dreamers, they *oversleep their life*
(http://www.greengrass.ch/lyrics.html)
(b) For sure we'd *oversleep the dawn* —
Your mother then would find us out,
And what a chiding we would get!
(http://www.croatia.net/html/medieval.html)
(c) This would cater for those of us who 'accidentally' *oversleep some of the lectures*
(both morning and afternoon).
(http://www.suslik.org/Humour/Computer/General/general.html)
(d) Moley seems to be having a good day today. For the first time in awhile, she let me *oversleep my alarm clock* (oops!),. . .
(http://www.ewee.net/dogmo/words/2000_11_words.html)

[26] Here verticality is irrelevant, for a time line does not seem to be conceptualized as involving a vertical orientation.

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(99) (a) The notion that a doctor is a very busy person who should not be detained, prevents most patients from *overstaying their welcome*.
(b) The US State Department also claimed that a third of the 36,000 Cubans admitted as tourists since Oct. 1 had *overstayed their visas* and might not be planning to return.
(c) He was advised not to *overstay his tenure* at the head of Esso in unusual circumstances.
(d) So the family *overstayed its permitted time* and then left, not for the United States but for Galway, without notifying the authorities.
(e) . . . *overstaying their allotted time* by 30 minutes on both occasions.
(f) Meanwhile the regulations applying to overseas study were tightened, especially for the USA, where the largest numbers of young Chinese *overstayed their official visit*.
(g) She intentionally *overstayed her visit*.
(h) She felt like Cinders having to decide whether to *overstay the deadline* and risk an embarrassing incident or do as Fairy Godmother had instructed and be back by twelve. (all from BNC)

Thus *oversleep* and *overstay*, while being excess *over*-verbs like *overload* and *overheat*, are nevertheless sanctioned by the 'landmark' construction.

8 Further issues

I have so far shown that the subcategorization changes induced by *over*-prefixation can be adequately handled by a theory that takes a usage-based view of constructions. But while the discussion so far has been concerned with productive aspects of *over*-prefixation, there is also an idiomatic nature to *over*-prefixation. In this section I will briefly address several issues that have been left out of my discussion up to this point.

8.1 Idiomaticity/conventionalization

An anonymous reviewer points out that many *over*-verbs have meanings that are not fully predictable. Thus *overdo* has uses that are hardly related at all to uses of *do*, as in (100).

(100) Don't overdo it. (=Don't exaggerate)

This reviewer also notes that some *over*-verbs like *overwhelm* do not have their 'base verbs'.

It is true that both of these facts pose challenging problems to formal theories like Yumoto's. They are not problematic at all to my usage-based theory, however. In a usage-based theory, even if prefixed verbs are analyzable into component parts, thereby displaying regularities, those prefixed verbs are also stored in memory (the 'lexicon vs. rule' fallacy in Langacker, 1987). And it is no wonder that stored items develop an idiomatic meaning.

As to the second point, under a usage-based view of construction, constructions are nothing more than symbolic schemas. And schemas sanction their instances based on

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'surface forms' or 'output forms' alone (Langacker, 1987, 1991; Bybee, 2001; Taylor, 2002; Croft & Cruse, 2004), so that it is sufficient for *overwhelm* to fit one of the *over*-V schemas.

8.2 More than idiomaticity/conventionalization

The same reviewer also points out that some *over*-verbs are more acceptable in the passive form than in the active form, by observing that *an overbuilt area* is better than *to overbuild an area*. And many of the corpus data cited in section 6 are indeed passives.

(101) (a) And if you look up there that extremely *overbuilt* area there is called the crown post truss.
(b) Manila had no property boom in the 1980s and is now about the only significant capital in South-East Asia that is not *overbuilt*.
(102) (a) Environmentalists say Australia is already *overpopulated*.
(b) The city's hospitals are *overburdened* by casualties.
(c) The popular schools – the sort you really might drive across town for – tend to be heavily *oversubscribed*.

It is true that these facts pose a problem to formal, derivational approaches to *over*-prefixation. At the same time, however, notice that the problem cannot be fully solved by simply speaking of the idiomatic/conventional nature of *over*-prefixation. To say that the passive form *overbuilt* is more conventionalized than the active form *overbuild*, or that the passive form *overbuilt* is to some degree idiomatic, may describe the observed facts. But this begs the question of why *overbuilt* should be more often used than *overbuild*, and not the other way round, in the first place. In other words, more is involved than idiomaticity/conventionalization.

In my constructional account, the above facts are accounted for as follows. In a usage-based theory, passives and actives are different constructions (section 3.1), so even if certain expressions are found only in the passive form, they are not problematic. These expressions are simply sanctioned by the passive construction based upon the 'surface forms'. It is just that for some reason these expressions are more appropriate in the passive form,[27] one such reason being that passives are suited to describe resultant states.

In the case of *overbuild* and *overbuilt*, whether an action is done beyond the proper limit or not can be more easily judged by looking at the resultant state than at the action in progress: building too many buildings in an area is not normally done intentionally by a single person. Rather, it involves more than one person, takes a long time, and is usually nonintentional. Only after many buildings have been built do people begin to realize that the area has been 'overbuilt'. This is why the passive form *overbuilt* is better than the active form *overbuild*.

[27] See Bolinger (1975) for a number of arguments along this line that passives cannot be derived from actives.

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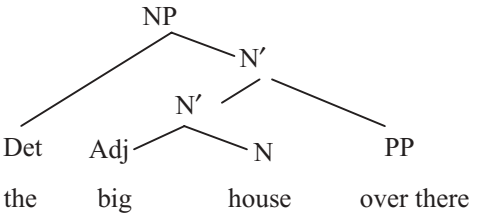


Figure 31

Another issue raised by the same reviewer in connection with my analysis of *overbuild* is the following contrast:

(103) (a) an overbuilt city
(b) *overbuilt hotels

Again, this contrast cannot be explained away simply by speaking of idiomaticity/conventionalization.

It has been claimed in Cognitive Grammar (Langacker, 1991; Taylor, 1992, 2002) that the internal, syntactic structure of a noun phrase reflects its conceptual organization. Thus in the constituency [[*big house*] *over there*], *house* first combines with *big*, to form the more specific concept [BIG HOUSE], which subsequently combines with *over there*, to form the even more specific concept [BIG HOUSE OVER THERE] (Taylor, 2002: 352). In other words, a prenominal adjective serves to create a new type specification.

Now note that unlike *overbuilt* in (103a), *overbuilt* in (103b) does not contribute to the specification of the type designated by the noun *hotels*. Thus the contrast in (103) has to do with the functional role a prenominal adjective serves in NPs.

Still another issue raised by this reviewer concerns *overrated* in (104).

(104) The writer Kingsley Amis has said that Keats is *overrated* as a poet. (CIDE)

This reviewer has some doubts as to whether the subcategorization property is really shared between *rated* and *overrated*, on the ground that (105a) is acceptable but (105b) is not.

(105) (a) Keats is overrated.
(b) ?*Keats is rated.

But here, a different factor is involved. Quite often, the occurrence of adjunct phrases is conditioned by informativity (Ackerman & Goldberg, 1996; Iwata, 1999b; Goldberg & Ackerman, 2001; among others), and the *as*-phrase is one such adjunct. To say that someone or something is rated without specifying how good the rating goes is semantically incomplete. Therefore, the *as*-phrase, which determines the dimension in which the rating is done, needs to be informationally rich, as the contrast in (106) shows.

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(106) (a) ?*Keats is rated as a poet.
(b) Keats is rated as a first-class poet.

Now since the *as*-phrase is lacking in (105b), there is no way for (105b) to be semantically complete. On the other hand, in (105a) the notion of excess contributed by the prefix *over-* makes the whole expression informationally rich enough to be uttered, even in the absence of an *as*-phrase.

8.3 Overdone

Finally, the same reviewer observes that *overdone* may not be derived from *overdo*, by pointing out that 'Food can be overdone (=cooked too long), but you can't "overdo food" (=cook it too long)'.

Corpus data confirm this observation. Thus when followed by NPs which denote foods, *overdo* invariably means 'to use too much of'.

(107) (a) No, don't *overdo the spices*, it was a bit strong last time.
(b) Don't *overdo the ketchup*, it makes it all really rich and horrible!
(c) He *overdid the liquid lunches*.
(d) She would have hated him to see how her hands shook as she spooned the coffee into the mugs, *overdid the sugar* and had to start again.
(e) Perhaps you've been *overdoing the yoghurt and grapefruit*. (BNC)

In contrast, *overdone*, when predicated of foods, means 'to be cooked too long'.

(108) (a) You know you don't like roast potatoes if they're *overdone*.
(b) He watched silently and impassively, chewing *his overdone steak*, and retrieving his cigarette from the ashtray between courses. (BNC)

These facts are rather to be expected in a usage-based theory, according to which *overdo* and *overdone* are stored in memory as distinct lexical items. But again, to say that *overdone* means what it means simply because of conventionalization is simply describing the facts.

As has been repeatedly claimed, in a usage-based theory newly encountered expressions are acceptable, and meaningful, to the extent that they can be associated with linguistic structures that already have unit status. This means that *overdone* is sanctioned by being associated not with *overdo* but with something else. But what is that something?

Notice that *well-done* fits the bill: steaks can be well-done, but you can't well-do steaks.

(109) (a) Henry Tyler cast his mind back to the fatal evening. He was carving the fillet of beef. He'd just begun. He took off the first slice, you know the rather *well-done*, brown bit at the end,. . .
(b) Many a career has been cemented for a further twelve month over *well-done* rump steaks and bottles of Bulgarian wine. (BNC)

This suggests that *overdone* is sanctioned by a construction which is abstracted from *well-done*, as in figure 32. Interestingly enough, *underdone* may behave similarly to *overdone*: food can be underdone, but you can't underdo food.

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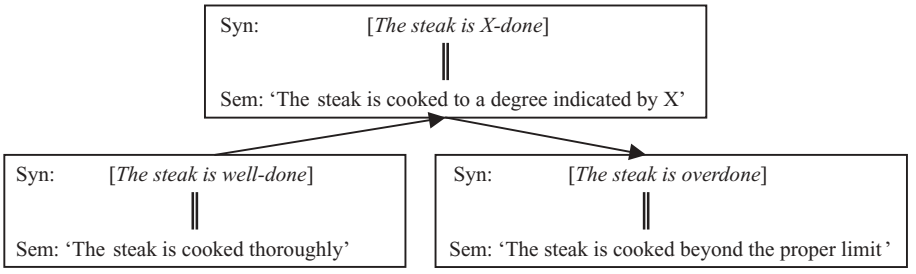


Figure 32

(110) (a) Then he realised that they were presumably so poor that even a choice of cornflakes or lumpy porridge, along with *underdone toast* and margarine, had the overwhelming attraction of being free.
(b) Mauleverer had then proceeded to snatch the cover off the dish on Amiss's tray, sniff disparagingly and explain to him that the ham was *underdone* and the eggs too hard.
(c) A Glasgow kiss is as *underdone* as a red meat steak? (BNC)

Quite probably, *underdone* is also sanctioned by the 'X-done' construction.

9 Summary and conclusions

The subcategorization changes that *over*-verbs exhibit from the base verbs, which are nonuniform and seemingly nonpredictable, appear to defy a principled explanation. But the apparently puzzling behaviors of *over*-verbs can be untangled once one identifies the type of an *over*-verb and the verb-class-specific construction which sanctions that *over*-verb.

First, *over*-verbs are subclassified as in figure 33. *Over*-verbs divide into spatial and excess types. The prefix *over-* may be assimilated to the preposition *over* with spatial *over*-verbs, but may not be with excess *over*-verbs. Rather, three schemas (i.e. excess-addition-to-container schema, excess-removal-from-container schema, and scale-based excess schema), which are distinct from those proposed for the preposition *over* in the cognitive linguistics literature, need to be recognized.

Next, there are three verb-class-specific constructions that may sanction the *over*-verbs discussed in this article. The 'damage'-class construction and the 'change-of-state' construction are based on force-transmission, in that both constructions identify the direct object as a force recipient. On the other hand, the 'landmark' construction is not based on force-transmission.

Now the observed facts are accounted for as follows. *Overload* and *overdraw* both involve a container-based understanding, and therefore their force transmission is changed from that of their base verbs *load* and *draw*. Accordingly, they are sanctioned by the 'damage'-class construction, differently from their base verbs. On the other hand, *overheat*, involving a scale-based understanding, shares the same force-transmission

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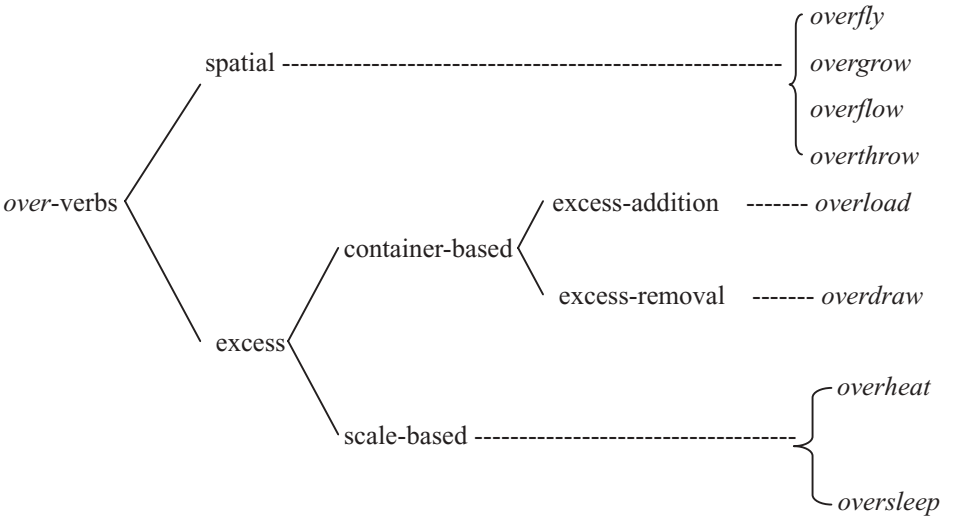


Figure 33. Subclassification of *over*-verbs

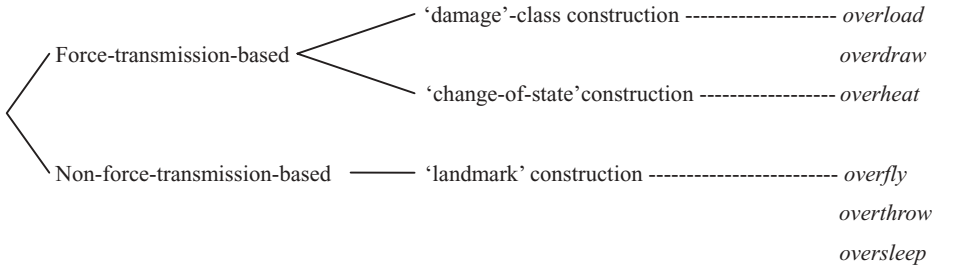


Figure 34. Types of argument-structure construction

with the base verb *heat*. As a consequence, *overheat* is sanctioned by the 'change-of-state' construction, similarly to *heat*. Hence the same syntactic frame. Spatial *over*-verbs (e.g. *overfly*, *overgrow*, *overflow*, and *overthrow*) and two excess *over*-verbs (*oversleep* and *overstay*) also exhibit subcategorization changes from their base verbs, but these *over*-verbs are sanctioned by the 'landmark' construction. Thus the varied subcategorization changes exhibited by *over*-verbs are combined effects of the type of an *over*-verb and the verb-class-specific construction involved.

Additionally, this case study of *over*-verbs has a number of theoretical implications, three of which will be briefly mentioned. First, while morphologically complex verbs tend to be analyzed by distinct mechanisms in the literature on morphology and word formation, the present article has shown that morphologically complex verbs are no different from morphologically simple verbs as to the form–meaning correlation, and that no special mechanisms are necessary.

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Second, while subcategorization changes or argument-structure alternations have been handled by formal mechanisms in the generative tradition, the present article has shown that these phenomena can be better handled by construction grammar as a usage-based theory.

And third, while in constructional approaches the role of constructions tends to be overemphasized (Goldberg, 1995) (or at least so it appears), a number of scholars have claimed that both verbs and constructions are essential in an account of argument-structure alternations, and that therefore a constructional analysis needs to pay far more attention to individual verbs (van der Leek, 1996, 2000; Nemoto, 1998; Iwata, 1998, 2002, to appear; Boas, 2003). The present article has given substance to this claim by demonstrating that a constructional analysis augmented with a detailed analysis of verb meanings can solve hitherto unsolved problems posed by prefixed verbs.

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Dictionaries

CIDE: *Cambridge International Dictionary of English* (1995) Cambridge: Cambridge University Press.
COBUILD: *Collins COBUILD English Dictionary* (1995) London: HarperCollins Publishers.

Appendix: Arc trajectory or proto-scene?



Figure 35. The proto-scene for *over* in Tyler & Evans (2001, 2003)

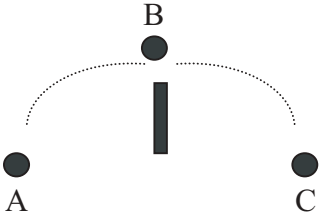


Figure 36

After the pioneering works by Brugman (1988) and Lakoff (1987), a number of researchers have approached the polysemy of *over* by means of imagistic representations. Some of them converge on the position that reference to a curved, arc trajectory is essential to *over* (Dewell, 1994; Tanaka, 1997; Kreitzer, 1997).

Against this trend, however, Tyler & Evans (2001, 2003) propose the proto-scene for *over* as in figure 35, which does not contain an arc trajectory. This proto-scene is intended to capture both configurational and functional aspects: configurationally, the TR (represented by the shaded sphere), is higher than but within potential contact of the LM (the thick horizontal line). Functionally, the LM is conceptualized as being within the sphere of influence of the TR (delimited by the dashed line).

Tyler & Evans claim that various types of information attributed to the lexical network of *over* in previous analyses are actually derived by on-line meaning construction processes (cf. Fauconnier & Turner, 1996, 1998). Thus they argue that while *The cat jumped over the wall* may describe the schematic scene in figure 36, much of it comes from the interpretation of the wall as an obstacle which the cat is attempting to overcome. In other words, the proto-scene in figure 35 is arrived at by stripping off all the information that could be traced back to contexts. And a curved, arc trajectory is included among those stripped away.

One serious shortcoming of this analysis is that it cannot capture the relatedness among distinct senses in a straightforward way. One reason why the Brugman–Lakoff

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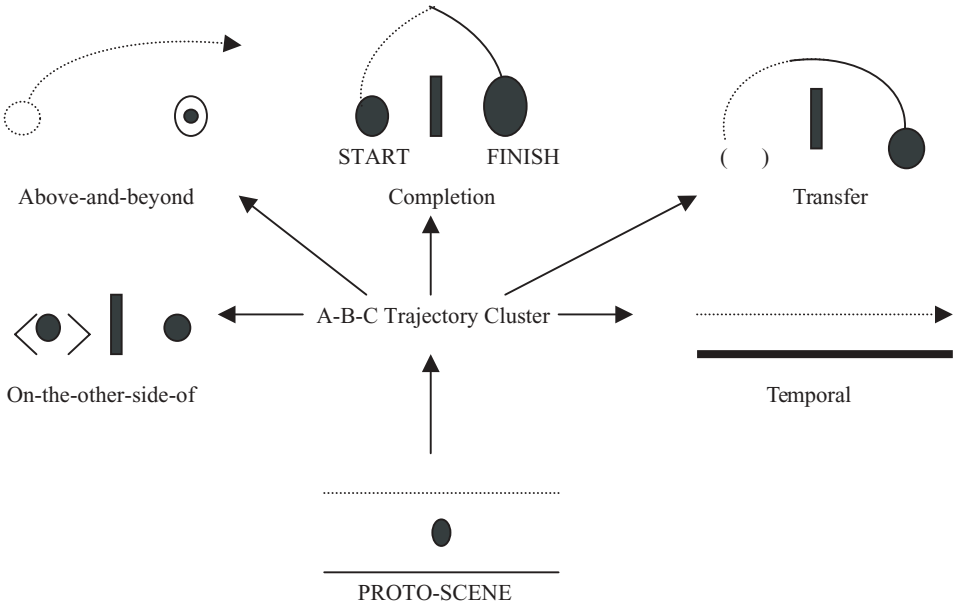


Figure 37. Part of Tyler & Evans' network structure for *over*

line of analysis looked so attractive lies in the fact that their proposed image schemas allow us to understand the relatedness among various senses of *over* in an intuitively appealing way, a feat which feature-based analyses (e.g. Bennett, 1975) cannot hope to achieve. But this very advantage of imagistic representations is lost in Tyler & Evans' analysis.

To appreciate this point, let us have a look at how Tyler & Evans' analysis fares from this point of view. Part of their network structure for *over* (Tyler & Evans, 2003: 80), when augmented with individual imagistic representations, looks like figure 37. The four schemas (above-and-beyond, completion, transfer, and on-the-other-side-of) are clearly motivated by a schema involving an arc trajectory, something like figure 36. But such a schema is entirely lacking in this network. (Notice that 'A-B-C Trajectory Cluster' is simply a label to group together the five senses.) Consequently, this analysis has nothing to say about how the above-mentioned four senses are related to the proto-scene, despite the fact that the relatedness is quite obvious.

And here lies the very reason why several researchers have come to believe that a curved trajectory is essential to *over*. Generally, words that make essential reference to the turning over of an object or a curved trajectory tend to develop a rich variety of related image schemas.[28] As Tanaka (1997) observes, the kind of network analysis along the Brugman–Lakoff line is most successful for *over*, but least for *by*. It is not a coincidence that the most impressive network analysis portrays a word that can be

[28] Iwata (2002) observes that among the manner-of-motion verbs (*roll*, *bounce*, *skid*, *slide*, etc.), *roll*, which involves rotation of a round object, exhibits the richest variety of related schemas.

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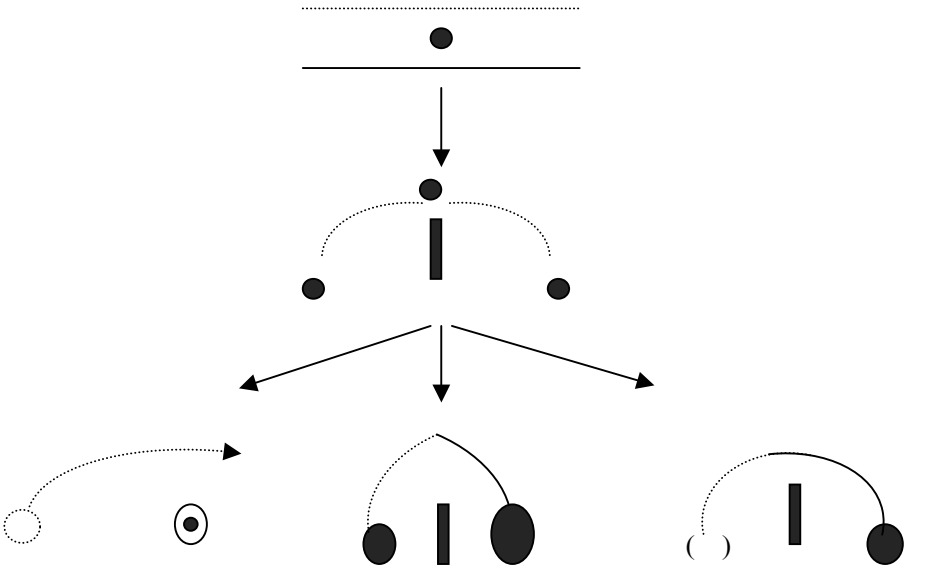


Figure 38

analyzed as involving a core image of a curved trajectory rather than a straight line or an area.

Now where the fundamental problem lies is clear: in abstracting the proto-scene for *over*, Tyler & Evans are actually throwing the arc-trajectory baby out with the bath-water. This in turn can be traced back to their methodology. While Tyler & Evans claim that they are endorsing a usage-based model, they fail to realize that a strictly usage-based view entails that lexically encoded meanings cannot always be delimited in an either-or fashion: just because certain information could be contextually derived does not mean that information cannot be stored in memory as part of the lexical item's meaning. There may well be overlaps between the lexical meaning of *over* and contextual contributions. And this is exactly the view which a usage-based theory endorses.

Evidently, when Tyler & Evans try to arrive at a proto-scene by stripping off all the contextual contributions, they seem to have in mind a consideration for parsimony. But as Croft (2003) convincingly argues, parsimony is not a criterion for mental representations. While in the generative tradition *storage parsimony* has been held as a decree, one could argue for *computing parsimony* (Croft, 2003; Croft & Cruse, 2004): both computation and storage of knowledge are necessary, and neither can be completely eliminated.

Besides, the fact that Tyler & Evans need to posit fourteen distinct senses for *over*, despite their charge against previous analyses for proliferating senses, seems to suggest that they cannot justify their proto-scene on the grounds of storage parsimony.

Another methodological problem is that Tyler & Evans fail to take into consideration a degree of schematicity. Clearly, the proto-scene is highly abstract, and should be kept

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separate from less schematic entities. In a usage-based theory, Tyler & Evans' proto-scene can alternatively be regarded as the highest-level schema, which is instantiated by a schema involving a curved trajectory, which in turn is further instantiated by lower-level schemas, as in figure 38. This way, the proto-scene finds its place in the lexical network for *over*, along with a schema involving an arc trajectory. But, as noted in section 3.1, it is lower-level schemas that are more essential to language, just as in a taxonomic hierarchy the basic-level category tends to be a prototype.[29]

[29] There are other problems with Tyler & Evans' analysis. Thus, a lexical network does not necessarily start with a single, central sense (Vandeloise, 1990), and it is not necessarily the case that the polysemy structure starts with physical senses (Rakova, 2002, 2003), and so on. But this is not a place to pursue these issues.

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