Complex verbs in English: the relationship between verb-forming suffix schemas and argument structure constructions

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The relationship between verb-forming suffix schemas and argument structure constructions

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This paper relates two levels of constructional analysis in accounting for the functions of verb-forming suffixation in English: argument structure constructions and suffix schemas. The function of verbal-forming suffixation expressed by the four suffixes in English *-ize*, *-ify*, *-en*, and *-ate*, has been shown to exhibit a wide range of semantic categories that correspond to a number of argument structure constructions (Laws 2023). The current paper extends that semantic analysis. Firstly, by using a Construction Morphology approach (Booij 2010) to formalize the relationship between argument structure and suffix schemas proposed by Laws. Secondly, a hierarchical view of verb-class and subclass argument structure constructions is articulated by using semantic rules that involve selection and enrichment by coercion within suffix subschemas. Thirdly, it is demonstrated that the motivation for partially opaque complex verbs with these suffixes can be expressed by referring to paradigmatic relationships between these complex verbs and other related words.

Keywords: argument structure construction, affix schema, semantic class, verb-forming suffix, coercion, paradigmatic relationship

1. Introduction

The English verb-forming suffixes *-ize*, *-ify*, *-en*, and *-ate* form transitive and intransitive complex verbs. These suffixes express a range of functions with respect to the base to which they attach. For example, the suffix *-ize* conveys the meaning 'put into' in (1a), i.e., the verbal derivative *palletize* can be interpreted as (1b), where the object argument (*bricks*) of the complex verb is 'put into' the base element (*pallet*), represented in square brackets.

https://doi.org/10.1075/cf.24009.law | Published online: 28 April 2025
Constructions and Frames ISSN 1876-1933 | E-ISSN 1876-1941

(1) a. *They palletized the bricks.*
b. They put the bricks into [pallets].

By contrast, the paraphrase of the verbal derivative *incentivize* in (2b) demonstrates that the function of the *-ize* suffix in (2a) is to express the notion that the object argument (*team*) of the complex verb is 'provided with' the base element (*incentive*).

(2) a. *They incentivized the team.*
b. They provided the team with [incentive].

Other complex verbs that express the constructional meaning conveyed in (1b) include *hospitalize, diarize*, and *classify*; whereas verbal derivatives such as *energize, glorify*, and *chlorinate* convey the constructional meaning conveyed in (2b). Thus, complex verbs fall into a constellation of meaning groups referred to as semantic categories, seven of which were originally documented by Plag (1999) and a further thirteen are reported in Laws (2023). Following Plag's terminology, verbs of types (1) and (2) are members, respectively, of the Locative and Ornative semantic categories.

The above examples demonstrate that the semantic analysis of verbal derivatives is accessible through a paraphrased expression that describes the relationship between the base of the complex verb and the other arguments that define the event denoted by that complex verb. From a Construction Grammar (CxG) perspective, the paraphrases in (1b) and (2b) represent argument structure constructions: the Caused-Motion and *with*-Applicative construction, respectively (Goldberg 1995; Perek 2015). Derived forms of all word classes (e.g., *un-shock-able, teach-er, long-wise*, and *pallet-ize*) consist of the morphological elements base, prefix and/or suffix. From a Construction Morphology (CxM) perspective, affix schemas arise from systematic form-meaning associations relating to the shared interpretation of complex words bearing the same affix (Booij 2010).

The current paper adopts a CxG approach to the semantic analysis of complex verbs. According to the CxG framework, a speaker's knowledge of language consists of form-meaning pairings that are stored in an inter-related network of constructions, known as the constructicon (Goldberg 1995: 5). It is proposed by Laws (2023) that in the case of complex verbs, semantic analysis requires linking argument structure constructions (Goldberg 1995) and suffix schemas (Booij 2010). The current paper builds on Laws' initial proposal by examining and defining in detail the relationship between these respective levels of representation.

This paper identifies and formalizes that relationship with respect to a selection of the primary semantic classes of complex verbs. Section 2 provides an overview of the nature of complex verb semantic categories and reports the details of an argument structure construction analysis of verb-forming suffixation

derived from Laws (2023). Section 3 proposes a novel CxM analysis of complex verbs that formalizes the relationship between argument structure constructions and suffix schemas; this account involves the coercive interpretative mechanisms of semantic selection and enrichment. In Section 4, the motivation for partially opaque complex verbs is demonstrated to be expressible by linking them to paradigmatically related words with similar stems. An overview of the paper's contributions and proposals for further work in this area are provided in Section 5. The conclusions are summarized in Section 6.

2. Background

2.1 Complex verb semantic categories and polysemy

Complex verbs in English exhibit an extensive variety of interpretations. Plag (1999) was the first to classify complex verbs in terms of semantic categories, of which seven were identified. The Locative and Ornative were mentioned in relation to examples (1) and (2); the remaining include the Causative, Inchoative, Resultative, Performative, and Similative, the interpretations of which are provided in Section 2.2. As part of an extensive corpus-based analysis of verbal derivatives, Laws (2023) extended Plag's set of semantic categories to twenty by including further meanings that emerged from the semantic analysis of the corpus data and from additional interpretations proposed by Marchand (1969) and Dixon (2014). The current study focuses on a subset of those semantic categories for illustrative purposes, but the full list of complex words analysed and their respective semantic categories can be accessed from Laws (2024).

For etymological reasons and owing to phonological constraints on certain base-suffix combinations, the four suffixes vary in productivity and the range of semantic categories they express. Laws (2023) reports that complex verbs bearing the most versatile suffix *-ize* were allocated to the greatest proportion of the twenty semantic categories (19), followed by *-ify* (18), *-ate* (12), and *-en* (6). Given that the main goal of the current paper is to formalize the semantic representation of complex verbs, and that such generalized schemas are independent of the morphological characteristics of the four suffixes, the reader is referred to Bauer et al. (2013) for information on the formal details of the suffixes and their constraints with respect to base-suffix attachment.

The observation that complex verbs bearing the same suffix can be assigned to more than one semantic category, as illustrated in (1) and (2), indicates that the four verb-forming suffixes are polysemous, or multi-functional. Furthermore, complex verbs themselves, like simplex words, may also be polysemous. For

example, Plag (1999) notes that the verbal derivative *computerize*, in the sentence *They computerized the data*, means 'to copy data into a computer', which has a Locative meaning, as in (1). On the other hand, in the sentence *They computerized the offices*, the complex verb means 'to provide the offices with computers', which has an Ornative reading, as in (2). The respective interpretation depends on whether the base of the complex verb (*computer*) is the 'location' to which something is moved, or the 'item' that is transferred. Thus, verbal derivatives may have more than one sense, and each sense reflects a different semantic function of the suffix.

2.2 An argument structure construction analysis of complex words

Construction types range in complexity and abstractness across the lexicon-syntax spectrum, from the least schematic structures at word, phrasal, and idiomatic levels, through to the most schematic clausal level, the argument structure construction (Croft 2001; Goldberg 2013b; Hoffmann 2022). Argument structure constructions are defined by Goldberg (2013a: 437) as "form-function pairings that relate abstract meanings with arrays of grammatical relations (Goldberg 1995, 2002, 2006; Jackendoff 2002)". Thus, like clauses, paraphrases that express the interpretation of complex verbs are argument structure constructions; they represent the form-meaning correspondence expressed by a lexical verb and its related arguments. The constructional analysis of complex verbs conducted by Laws (2023) proposed that the Locative paraphrase (1b) and the Ornative paraphrase (2b) correspond, respectively, to the Caused-Motion (Goldberg 1995) and the *with*-Applicative construction (Perek 2015; Iwata 2008). Further examples of the correspondence between semantic classes and argument structure constructions reported in Laws (2023) are presented in Table 1.

Constructional approaches view a speaker's knowledge of language as a network of constructions (Goldberg 1995; Croft & Cruse 2004) which vary with respect to their degree of schematicity. Croft (2003, 2012) illustrates this notion in relation to the Ditransitive construction (*John gave Mary a book*), the central sense of which is 'agent successfully causes recipient to receive patient'. The Ditransitive argument structure construction is presented in (3), adapted from Goldberg (1995: 50), where the left-hand formal component corresponds to (↔) the right-hand semantic component of the construction.

(3) [Subj V Obj1, Obj2] ↔ [Agent *causes* recipient *to receive* Patient].

Goldberg (1995) and Croft (2003) observe that verbs that enter the Ditransitive construction fall into a number of semantic groupings that reflect different but associated interpretations of the construction. For example, fusion with the verbs

Table 1. Examples of semantic categories, paraphrases, and argument structure constructions (the base of the complex verb is in square brackets)

Semantic category	Complex verb example	Paraphrase	Argument structure construction
Locative	*They palletized the bricks*	They put the bricks into [pallets]	Caused-Motion
Ornative	*They incentivized the team*	They provided the team with [incentive]	Cause-Have: *with*-Applicative
Causative	*They stabilized inflation*	They made inflation become more [stable]	Resultative
Inchoative-Causative	*Inflation stabilized*	Inflation became more [stable]	Inchoative-Resultative
Resultative	*They crystallized the solution*	They made the solution become [crystals]	Resultative
Performative	*They economized on fuel*	They practised [economy] on fuel	Trans/Intransitive
Similative	*They vandalized the bus-shelter*	They acted like [vandals] towards the bus-shelter	*like*-Predicative
Regardative	*They trivialized our concerns*	They regarded our concerns as [trivial]	*as*-Predicative
Representative	*They satirized the events*	They represented the events as [satire]	*as*-Predicative

give and *hand* maintain the central sense of 'inherent giving', whereas *bake* and *build* result in a construal of 'creation', and *refuse* and *deny* in one of 'refusal'. Thus, from these examples, three constructional schemas emerge that correspond to these three senses or constuals; these are illustrated in (4a) to (4c) using the [[form]/[meaning]] representations employed by Croft (2003: 57, item [18]).

(4) a. [[Subj GIVING.VERB Obj1 Obj2] / [actual transfer of possession]].
b. [[Subj CREATE.VERB Obj1 Obj2] / [intended transfer after creation]].
c. [[Subj REFUSE.VERB Obj1 Obj2] / [negative transfer of possession]].

Thus, for any particular argument structure construction, the highest, most abstract syntactic schemas contain no "specific lexical content (except for obligatory inflections and function words)" (Croft 2003: 59), as shown in (3), whereas construals of that abstract syntactic schema, exemplified in (4), are labelled 'verb-class-specific' constructions.

Furthermore, Goldberg (1995) and Croft (2003) also note that some verbs that are semantically related to a particular construal are not licensed by that construction. For example, the verbs *prevent, disallow*, and *forbid* do not fuse with the Ditransitive construction: Sally *refused* / *denied* / **prevented* / **disallowed* / **forbade* him a kiss (Goldberg 1995: 130, item [27]). Thus, Croft postulates a further level of granularity in such cases and proposes that the verbs *refuse* and *deny* be represented as 'verb-specific' constructions, as shown in (5), adapted from Croft (2003: 58, item [22]). For further details, the reader is referred to Croft (2012: 374–393).

(5) a. [[Subj *refuse* Obj1 Obj2] / [negative transfer of possession by refusing]].
b. [[Subj *deny* Obj1 Obj2] / [negative transfer of possession by denying]].

Laws (2023) adopted and extended Croft's (2003) categorization of verb-class-specific and verb-specific constructions to the analysis of subgroups of complex verbs in the same semantic class. In that study, the semantic class (termed 'verb class') of a complex verb represents the most abstract schema. For example, complex verbs in the Ornative class (see example [2]) are paraphrased by the *with*-Applicative argument structure construction, the generalized schema for which is presented in (6).

(6) [Subj V Obj *with*-Obl] ↔ [Cause *makes* Patient *have* Theme].

In a fashion similar to that described above for the Ditransitive construction, the Ornative class of complex verbs was attested to express four subclasses of verbs that express the way in which the Patient is 'caused to have' the Theme: *provide, cover, imbue*, and *endow*, as exemplified in (7)–(10).

(7) a. *They incentivized the team.*
b. They provided the team with [incentive].

(8) a. *They iodized the wound.*
b. They covered the wound with [iodine].

(9) a. *They oxygenated the water.*
b. They imbued the water with [oxygen].

(10) a. *They glorified their forefathers.*
b. They endowed their forefathers with [glory].

Complex verbs such as *energize* and *subsidize* form a subclass with *incentivize* (7), since they require the argument structure predicate 'provide', whereas verbal derivatives such as *bituminize* and *plasticize*, that require the predicate 'cover', form a subclass with *iodize* (8). Thus, Laws (2023) applies the term 'verb-class-specific' construction to these four subgroups of Ornative complex verbs since the

predicate entering the *with*-Applicative argument structure construction is shared by the members of the verb subclass. The four verb-class-specific constructions attested for the Ornative semantic class are presented in (11), adapted from Laws (2023:147).

(11) a. [[Subj PROVIDE.VERB Obj *with*-Obl] ↔ [Cause *provides* Patient *with* [Theme]]].
b. [[Subj COVER.VERB Obj *with*-Obl] ↔ [Cause *covers* Patient *with* [Theme]]].
c. [[Subj IMBUE.VERB Obj *with*-Obl] ↔ [Cause *imbues* Patient *with* [Theme]]].
d. [[Subj ENDOW.VERB Obj *with*-Obl] ↔ [Cause *endows* Patient *with* [Theme]]].

Further specificity is required for the precise interpretation of certain verb-class-specific complex verbs. In examples (12) and (13), the interpretation of the Ornative complex verbs *transistorize* and *gypsify* is facilitated, respectively, by the addition of 'operability' and 'characteristics'. In contrast to (7), where the *team* were provided with the base term [incentive], in (12) it is the 'operability' afforded by the base term [transistor] that was provided, not the transistor itself. Similarly, in (10), their *forefathers* were endowed with the base term [glory], whereas in (13), they endowed their *costumes* with 'characteristics' that pertain to the base term [gypsy], not gypsies themselves.

(12) a. *They transistorized the system.*
b. They provided the system with [transistor] 'operability'.

(13) a. *They gypsyfied their costumes.*
b. They endowed their costumes with [gypsy]-like 'characteristics'.

Laws (2023) extends Croft's term 'verb-specific' construction to these cases, since constructions of this type are more restricted instances of verb-class-specific constructions. The two respective verb-specific constructions expressing the interpretations in (12b) and (13b) are presented in (14).

(14) a. [[Subj *provide* Obj *with*-Obl *operability*] ↔ [Cause *provides* Patient *with* [Theme] *operability*]].
b. [[Subj *endow* Obj *with*-Obl *characteristics*] ↔ [Cause *endows* Patient *with* [Theme] *characteristics*]].

Laws (2023, 2024)[1] documents the correspondence between the various semantic categories of verbal derivatives, their subclasses, and the argument structure constructions that represent them; thus providing the most comprehensive account of complex verb interpretations to date. That work is a necessary precursor to the deeper analysis reported in the current paper, which adopts a CxM approach (Booij 2010) to formalize the nature of the links between verbal derivative suffix schemas and the argument structure constructions that relate to those semantic categories and their subclasses. The details of that approach are described in the next section.

3. A construction morphology analysis of complex words

Construction Morphology is an extension of the CxG theoretical framework to the analysis of complex words, proposed by Booij (2010). In this approach, affix schemas represent the phonological, syntactic, and semantic relationship between a derived word and its base. In the following subsections, a novel CxM analysis is set out that accounts for the argument structure construction analysis of complex verbs described in Section 2.

3.1 The generalized affix schema for verb-forming suffixation

The multifunctionality of verb-forming suffixes was illustrated in Section 2.1. The English nominalizer *-er*, as in *baker*, 'one who bakes', is similarly polysemous and has attracted considerable interest in the morphological literature (Lieber 2004; Ryder 1999; *inter alia*), because of the spectrum of meanings it conveys. In addition, this suffix attaches to a wide range of base word classes (Verb, Noun, Quantifier Noun (QN), and Numeral (Num)), as shown in (15), and illustrated by Booij (2010: 80–4) in relation to the Dutch equivalent of this nominalizer (also *-er*).

(15)

singer	$[[x]_{Vi}\ \textit{-er}]_{Nj} \leftrightarrow$ [person involved in SEM_i]$_j$
stapler	$[[x]_{Vi}\ \textit{-er}]_{Nj} \leftrightarrow$ [entity involved in SEM_i]$_j$
prisoner	$[[x]_{Ni}\ \textit{-er}]_{Nj} \leftrightarrow$ [person with some relation to SEM_i]$_j$
Dubliner	$[[x]_{Ni}\ \textit{-er}]_{Nj} \leftrightarrow$ [inhabitant of SEM_i]$_j$
double-decker	$[[x]_{QNi}\ \textit{-er}]_{Nj} \leftrightarrow$ [entity with property SEM_i]$_j$
tenner	$[[x]_{Num,\,i}\ \textit{-er}]_{Nj} \leftrightarrow$ [entity with some relation to SEM_i]$_j$

1. In Laws (2024), verb-class-specific constructions are labelled in the VC column as integers (e.g., 1, 2 etc.) and verb-specific constructions are labelled as sublevels (e.g., 1.1, 1.2 etc.).

In (15), for each complex noun, the left-hand formal element of the *-er* nominal schema indexed *j* contains the base variable x, its associated word class indexed *i*, and the suffix *-er*. This corresponds (↔) to the *j* indexed meaning component on the right-hand side that expresses a paraphrase of the nominalized form in relation to the semantics of the base (SEM_i). Booij (2010: 84) proposes a generalized schema for *-er* derivatives that accounts for the range of individual schemas exemplified in (15), as shown in (16).

(16) $[[x]_{Yi}\ \textit{-er}]_{Nj} \leftrightarrow [\text{entity with relation R to } SEM_i]_j$

Booij defines the relation R in generalized affix schemas as an unspecified relationship determined by the meaning of the base, the suffix and associated conceptual and real-world knowledge, and that it "is filled in by specific subschemas and interpretation mechanisms based on the semantics of the base words" (Booij 2010: 17). Parallel to the schema for *-er* nominals in (16), Laws (2023: 113) proposed a generalized schema for verb-forming suffixation in English, a more refined version of which is presented in (17).

(17) $[x_i\ \textit{suffix}_q]_{Vj}, [NP_n\ V_j\ (NP_m)] \leftrightarrow [\text{Event with relation R to } SEM_i]_j$

The left-hand formal component of the schema in (17) defines the generic morphosyntactic features of complex verbs in terms of morphological composition and syntactic characteristics. The word class of the derivative base x, indexed *i*, is unspecified, since this element may be a noun (*hyphen-ate*), an adjective (*short-en*), a truncated stem (*synchron-ize*), or a bound stem (*bapt-ize*). A derivative verb V, indexed *j*, is formed through the attachment to the base of any of the four suffixes, which are indexed *q*. The complex verb can be either transitive or intransitive, thus, the brackets around the Object NP_m indicate optionality.[2]

The left-hand formal component of the schema corresponds to the right-hand meaning component, co-indexed *j*. This component denotes an Event involving the relation R and SEM_i, the meaning of the base. In the case of verbal derivatives, it is proposed in Laws (2023) that R represents the relationship encoded by the argument structure constructions that correspond to the various semantic categories described in Section 2. For example, derivatives such as *palletize* and

2. An anonymous reviewer notes that verb valency may be represented at higher levels in the hierarchy, thus rendering the specification of valency redundant in (17). For clarity, this information is included to help identify the syntactic argument that relates to the base of the complex verb, since it is a crucial element that is recovered in the semantic representation. Furthermore, redundancy is a characteristic of normal (default) inheritance models, as advocated by CxM, and in the current analysis it ensures that there are systematic correspondences between different levels of representation.

classify denote Events that have a Locative relation to the base; the semantic component can thus be specified by the Caused-Motion construction, as shown in (18), based on an initial proposal for Locative verbs reported in Laws (2023: 113).

(18) a. Locative: $[x_i$ *suffix*$_q]_{Vj} \leftrightarrow$ [Event with a Locative R to $SEM_i]_j$
b. Locative: $[x_i$ *suffix*$_q]_{Vj} \leftrightarrow$ [Cause *makes* Theme *move to/from* $Goal_{SEMi}]_j$

The following CxM analysis builds on this approach by adopting principles derived from Booij (2010). On the current account, the generalized schema for complex verbs presented in (17) generates a generalized schema for each semantic class; thus (19) represents the proposed generalized schema for complex verbs in the Locative verb class, where the variable R = Caused Motion:

(19) Morphosyntax: $[x_i$ *suffix*$_q]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(CAUSE\text{-}MOVE)_p\ (Causer_n\ Theme_m\ Goal_i)]_{Event\text{-}j}$

Verb-class generalized schemas permit the detailed analysis of the semantics of complex verb classes and subclasses, as demonstrated in the next section.

3.2 The analysis of complex verb subclasses

As reported in Section 2.2, the classification system proposed by Croft (2003) for simplex verbs can be applied to subschemas of complex verbs within the same semantic class, i.e., verb-class-specific and verb-specific constructions (Laws 2023, 2024). From a CxM perspective, these verb subclassifications can be viewed as sub-specifications of generalized suffix schemas (e.g., [19]): they provide specific semantic information that permits finer interpretations of complex verbs. These interpretations derive from the predictable relationship between the meaning of the predicate that enters the argument structure construction, the meaning of the verb base and, potentially, the other postverbal argument role, as illustrated in (11) and (14). It is proposed here that, following a CxM approach, refinements of this kind can be articulated by means of semantic rules, and that the precise meaning of complex verb subclasses is realized through the interpretation mechanisms of coercion, such as selection and enrichment.

3.2.1 *Coercion mechanisms and semantic rules of interpretation*

Coercion is a process by which "the utterance context favours or enforces a particular reading of a word" (Audring & Booij 2016: 617). In their analysis of various kinds of coercive mechanisms reported in the linguistic literature, Audring & Booij (2016) propose a unified continuum that represents the degree to which the interpretation of a lexical item is influenced by context, where 'selection' is

deemed to reflect the mildest effect, followed by 'enrichment', and finally, 'override' provides the greatest coercive force. Coercion by selection and enrichment relate directly to the CxM analysis of complex verb subclasses covered here.

3.2.1.1 *Selection by coercion*

Selection involves the process of contextual adjustment. Example (20), adapted from Pustejovsky (1995: 47), illustrates how two senses of the verb *bake* are disambiguated by the characteristics of the object it takes.

(20) a. *John **baked** the potatoes.*
b. *Mary **baked** a cake.*

In (20a), *bake* reflects a 'change-of-state' event, whereas in (20b), it has a 'creation' reading. In these examples, the semantic properties of the grammatical objects (or *qualia* in Pustejovsky's terminology) provide the context that 'selects' the appropriate interpretation of the verb. Although the notion of selection is discussed in the literature as a ubiquitous linguistic phenomenon (Pustejovsky 2011; Pustejovsky & Ježek 2008), Audring & Booij (2016) justifiably elevate its status to that of a coercive mechanism, even though its force is deemed to be 'soft', compared with the other two types of coercion listed earlier.

It is proposed here that the four verb-class-specific constructions relating to the Ornative verb-class in (11) illustrate the process of selection by coercion. The precise interpretation of complex verbs in this semantic verb-class depends on the meaning of the predicate that is instantiated by the *with*-Applicative construction (*provide, cover, imbue*, and *endow*), the selection of which in turn depends on the properties of the base item and the grammatical object of the complex verb (see Examples [7] to [10]). Thus, the current analysis proposes that a series of semantic rules are required to distinguish between the four attested senses of the Ornative class of complex verbs.

The generalized schema for Ornative derivatives is presented in (21). This is derived from the alignment of the *with*-Applicative argument structure construction shown in (6) with the generalized schema for verb-forming suffixation (17); R = Cause-Have.

(21) Morphosyntax: $[x_i \textit{ suffix}_q]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{CAUSE-HAVE})_p\ (\text{Causer}_n\ \text{Patient}_m\ \text{Theme}_i)]_{\text{Event-j}}$

Taking first the example of *iodize* (see [8] and [11b]), the predicate COVER-WITH is selected by coercion in the semantic rule in (22), where the symbol '→' means "is interpreted as".

(22) Subcase where Theme_i is a CHEMICAL-SUBSTANCE and Patient_m is a SURFACE: CAUSE-HAVE → COVER-WITH

The representation of the COVER.VERB verb-class-specific construction is presented in (23).

(23) Morphosyntax: $[x_i \textit{ suffix}_q]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{COVER-WITH})_{(\text{CAUSE-HAVE})p}\ (\text{Causer}_n\ (\text{SURFACE})_{\text{Patient-m}}\ (\text{CHEMICAL-SUBSTANCE})_{\text{Theme-i}})]_{\text{Event-j}}$

Thus, the full instantiation of the complex verb *iodize* as used in the sentence *They iodized the wound* (sentence [8a]) is presented in (24).

(24) Morphosyntax: $[[\textit{iodine}]_{Ni}\ \textit{-ize}]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{COVER-WITH})_{(\text{CAUSE-HAVE})p}\ ((\text{THEY})_{\text{Causer-n}}\ (\text{WOUND})_{\text{Patient-m}}\ (\text{IODINE})_{\text{Theme-i}})]_{\text{Event-j}}$

Other complex verbs in this verb-class-specific construction group include *alkalize, bituminize*, and *plasticize*.

Turning now to the example of *oxygenate* (see [9] and [11c]), the predicate IMBUE-WITH is selected by coercion in the semantic rule in (25).

(25) Subcase where Theme_i is a CHEMICAL-SUBSTANCE and Patient_m is a MASS-ENTITY: CAUSE-HAVE → IMBUE-WITH

The representation of the IMBUE.VERB verb-class-specific construction is shown in (26).

(26) Morphosyntax: $[x_i \textit{ suffix}_q]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{IMBUE-WITH})_{(\text{CAUSE-HAVE})p}\ (\text{Causer}_n\ (\text{MASS-ENTITY})_{\text{Patient-m}}\ (\text{CHEMICAL-SUBSTANCE})_{\text{Theme-i}})]_{\text{Event-j}}$

The instantiation of the complex verb *oxygenate* as used in *They oxygenated the water* (sentence [9a]) is presented in (27).

(27) Morphosyntax: $[[\textit{oxygen}]_{Ni}\ \textit{-ate}]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{IMBUE-WITH})_{(\text{CAUSE-HAVE})p}\ ((\text{THEY})_{\text{Causer-n}}\ (\text{WATER})_{\text{Patient-m}}\ (\text{OXYGEN})_{\text{Theme-i}})]_{\text{Event-j}}$

This verb-class-specific construction group includes other complex verbs, such as *anaesthetize, mineralize, chlorinate*, and *salinate*.

In example (10), *They glorified their forefathers*, the semantic rule relates to the subcase where Theme_i is an ABSTRACT-ENTITY; here, the predicate ENDOW-WITH is selected by coercion for the verb-class-specific construction (11d). Other verbs in this subclass include *revitalize, mystify*, and *enliven*. No explicit semantic rule for the meaning of *incentivize*, as used in *They incentivized the team* (7), is required because the predicate PROVIDE-WITH is the default

entry for the Cause-Have argument structure construction (6), where Theme_i is in some way 'received and utilized' by the Patient. In this sense the subclasses *provide* and *endow* differ inasmuch as, in the latter case, Theme_i is 'granted' without actually being 'received and utilized'. The *provide* subclass is the largest Ornative verb-class-specific subgrouping (Laws 2024) and includes complex verbs such as *emphasize, energize, hyphenate*, and *pollinate*.

Thus, the current analysis suggests that selection by coercion is the interpretation mechanism through which verb-class-specific constructions are derived from the generalized verb-forming suffix schema.

3.2.1.2 *Enrichment by coercion*

Semantic enrichment is a form of coercion that has been more widely discussed in the literature than selection, particularly in relation to the multifunctional characteristics of aspect (Talmy 2000; Jackendoff 1991) and predicate-argument constructions (Pustejovsky 1995; Pustejovsky & Ježek 2008). This kind of coercion involves the resolution of a semantic conflict through the "addition of unexpressed semantics to the utterance" (Audring & Booij 2016: 626). A classic example of enrichment by coercion is shown in (28), adapted from Nunberg (1979). The utterance is directed by one waitress to another.

(28) *The ham sandwich in the corner wants another coffee.*

In (28), the subject, the 'ham sandwich', refers to the 'person who ordered/is eating a ham sandwich'. The semantic conflict (i.e., the inability of a ham sandwich to want something) is resolved through a general principle of construal, where additional implicit information relating to the subject NP is implied by the speaker and inferred by the hearer. The role of the 'ham sandwich' is subordinated to modifier status and the NP is interpreted as the construction "individual contextually associated with a ham sandwich" (Jackendoff 1991: 17). Thus, example (28) is a typical case of 'reference transfer', where additional implicit information functions as a semantic operator without syntactic realization that is expressed in the meaning component of the subject NP construction (Jackendoff 2013: 82–3).

It is proposed here that the notion of enrichment by coercion also accounts for the elaboration of argument roles in the interpretation of complex verbs such as *transistorize* and *gypsyfy*, as exemplified in (12) and (13) and repeated here as (29) and (30).

(29) a. *They transistorized the system.*
b. They provided the system with [transistor] operability.

(30) a. *They gypsyfied their costumes.*
b. They endowed their costumes with [gypsy]-like characteristics.

The paraphrases of these Ornative verbs, provided in (29b) and (30b), reveal that it is the 'operability of a transistor', not a transistor *per se*, that the *system* was provided with, and it is the 'characteristics of gypsies' that the *costumes* were endowed with, not gypsies. These examples illustrate reference transfer: in each case, the base of the complex verb, [transistor] or [gypsy], is reinterpreted with the addition of the semantic operator 'attribute of', which corresponds to "operability of" or "characteristics of" the base, respectively.

The argument structure constructions that express semantically enriched interpretations of verb-class constructions, such as the *with*-Applicative construction relating to the Ornative class, were categorized as verb-specific by Laws (2023), as mentioned in Section 2.2, since they express semantically more restricted cases of the verb-class to which they belong. Thus, it is proposed here that a full CxM analysis of complex verbs such as *transistorize* and *gypsyfy* requires a semantic rule that accommodates reference transfer through enrichment by coercion, as illustrated below.

The generalized schema for Ornative derivatives presented in (21) is repeated as (31), and (32) represents the semantic rule that accounts for the semantic elaboration of the base Theme_i argument through the coercive mechanisms of enrichment.

(31) Morphosyntax: $[x_i \textit{ suffix}_q]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{CAUSE-HAVE})_p\ (\text{Causer}_n\ \text{Patient}_m\ \text{Theme}_i)]_{\text{Event-j}}$

(32) Subcase where the element X, which Patient_m is Caused-to-Have by Event_j, is an ATTRIBUTE_z *of* Theme_i: $\text{Theme}_i \rightarrow ((\text{ATTRIBUTE})_z \textit{ of } X)_{\text{Theme-i}}$

Item (32) represents the subcase where some ATTRIBUTE of Theme_i is 'acquired' by the Patient_m argument role. The ATTRIBUTE is indexed *z* because it may have a number of values depending on the verb-class argument structure construction. In the case of Ornative interpretations, the attested examples include 'operability' and 'characteristics', but other values, such as 'status', 'extent', 'appearance', and 'format' are attested for the Causative verb-class and other constructions (see Laws 2024 for further examples).

The full instantiations of *transistorize* and *gypsyfy* require that the predicate that enters the CAUSE-HAVE element of the Meaning component in (31) be identified. Items (29b) and (30b) state that the relevant predicates are *provide* and *endow*, respectively. As shown in (22) and (25) in relation to Ornative interpretations that involve the predicates COVER-WITH and IMBUE-WITH, the predicate that enters the argument structure construction is selected by coercion. As mentioned in Section 3.2.1.1, PROVIDE-WITH is the default predicate for the Cause-Have argument structure construction, so CAUSE-HAVE → PROVIDE-

WITH. Thus, the instantiation of the verb *transistorize* in *They transistorized the system* is shown in (33).

(33) Morphosyntax: $[[transistor]_{Ni}\ \textit{-ize}]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{PROVIDE-WITH})_{\text{(CAUSE-HAVE)p}}\ ((\text{THEY})_{\text{Causer-n}}\ (\text{SYSTEM})_{\text{Patient-m}}\ ((\text{OPERABILITY})_z\ \textit{of}\ \text{TRANSISTOR})_{\text{Theme-i}})]_{\text{Event-j}}$

With regards to *gypsify*, the predicate *endow* is selected by coercion in the semantic rule shown in (34). The full instantiation of the verb *gypsyfy* in the sentence *They gypsyfied their costumes* is presented in (35), derived from (31). Since the interpretation of (30a) is 'They endowed their costumes with [gypsy]-like characteristics', the head of Theme_i is reconstrued as the abstract entity 'characteristics', not the base [gypsy].

(34) Subcase where Theme_i is an ABSTRACT-ENTITY: CAUSE-HAVE → ENDOW-WITH

(35) Morphosyntax: $[[gypsy]_{Ni}\ \textit{-ify}]_{Vj}$, $[NP_n\ V_j\ NP_m]$
Meaning: $[(\text{ENDOW-WITH})_{\text{(CAUSE-HAVE)p}}\ ((\text{THEY})_{\text{Causer-n}}\ (\text{COSTUMES})_{\text{Patient-m}}\ ((\text{CHARACTERISTICS})_z\ \textit{of}\ \text{GYPSIES})_{\text{Theme-i}})]_{\text{Event-j}}$

Verb-specific argument schemas like (33) and (35) are semantically more restricted than verb-class-specific schemas; they are derived through enrichment by coercion which permits the expression of the precise aspect of an argument role involved in the Event. Furthermore, selection by coercion is relevant to all verb-class-specific and verb-specific schemas in relation to the interpretation of the predicate that instantiates the argument structure construction.

3.3 The alignment of argument structure constructions and suffix schemas

The two main aims of this paper are firstly to integrate (in a more formal fashion than that proposed by Laws 2023: 113) the representation of complex verbs as a combination of argument structure constructions and suffix schemas, in order to provide a complete semantic analysis of verbal derivatives. And secondly, to illustrate that distinct but parallel coercive mechanisms operate within these constructional elements at various levels of verb subclass specificity. This section summarizes these concepts by providing a diagrammatic representation in Figure 1; the example complex verbs *palletize* and *transistorize* from (1) and (12) are used for illustrative purposes, repeated here as (36) and (37).

(36) a. *They palletized the bricks.*
b. They put the bricks into [pallets].

(37) a. *They transistorized the system.*
b. They provided the system with [transistor] 'operability'.

In Figure 1, boxes with a medium bold outline contain generalized suffix schemas; boxes with a strong bold outline contain full instantiations of the example complex verbs in (36) and (37); semantic rules relating to subcase instances are contained in boxes with a faint outline. Dotted lines indicate associative links between schemas, subcases and instantiations.

The central box at the top of Figure 1 presents the generalized verb-forming suffix schema from (17). R represents the relations expressed by the notion of semantic class (Locative, Ornative, etc.) used in the morphological literature (e.g., Plag 1999; Lieber 2004). R corresponds to the argument-structure-construction relationship embodied in the interpretation of those semantic classes (Caused-Motion construction, Resultative construction, etc.) derived from the work of Goldberg (1995), Perek (2015), Hampe (2014) amongst others. R encapsulates the relation between the meaning of the base, the suffix and real-world knowledge, the synthesis of which involves interpretation mechanisms such as coercion (Booij 2010; Audring & Booij 2016). Thus, as proposed by Laws (2023), the relation R constitutes the semantic pivot between the morphological and argument-structure-related elements pertaining to a verbal derivative.

In Figure 1, the examples provide an illustration of the instantiation of complex verbs where R has the values Locative and Ornative. As shown in Table 1, the argument structure constructions relating to these semantic categories are the Caused-Motion and *with*-Applicative (labelled Cause-Have here) constructions respectively, and constitute the top-level verb-class constructions for these semantic categories. The incorporation of these argument structure constructions is represented in respective generalized suffix schemas in Figure 1, where the representation for the Locative is repeated from (19), and the Ornative from (21).

Examining first the Locative example on the left-hand side of Figure 1, the middle box illustrates the subcase of the Caused-Motion verb-class construction where the Goal_i is a CONTAINER. The predicate PUT-INTO is selected by coercion and aligned with the suffix schema, thus generating the verb-class-specific construction for the Goal_i argument, *pallet*. The final box shows the full instantiation of *They palletized the bricks*.

In the Ornative example on the right-hand side of Figure 1, the default predicate for the Cause-Have (*with*-Applicative) verb-class construction is PROVIDE-WITH, which is selected by coercion and aligned with the suffix schema as the verb-class-specific construction. In the next box, enrichment by coercion is

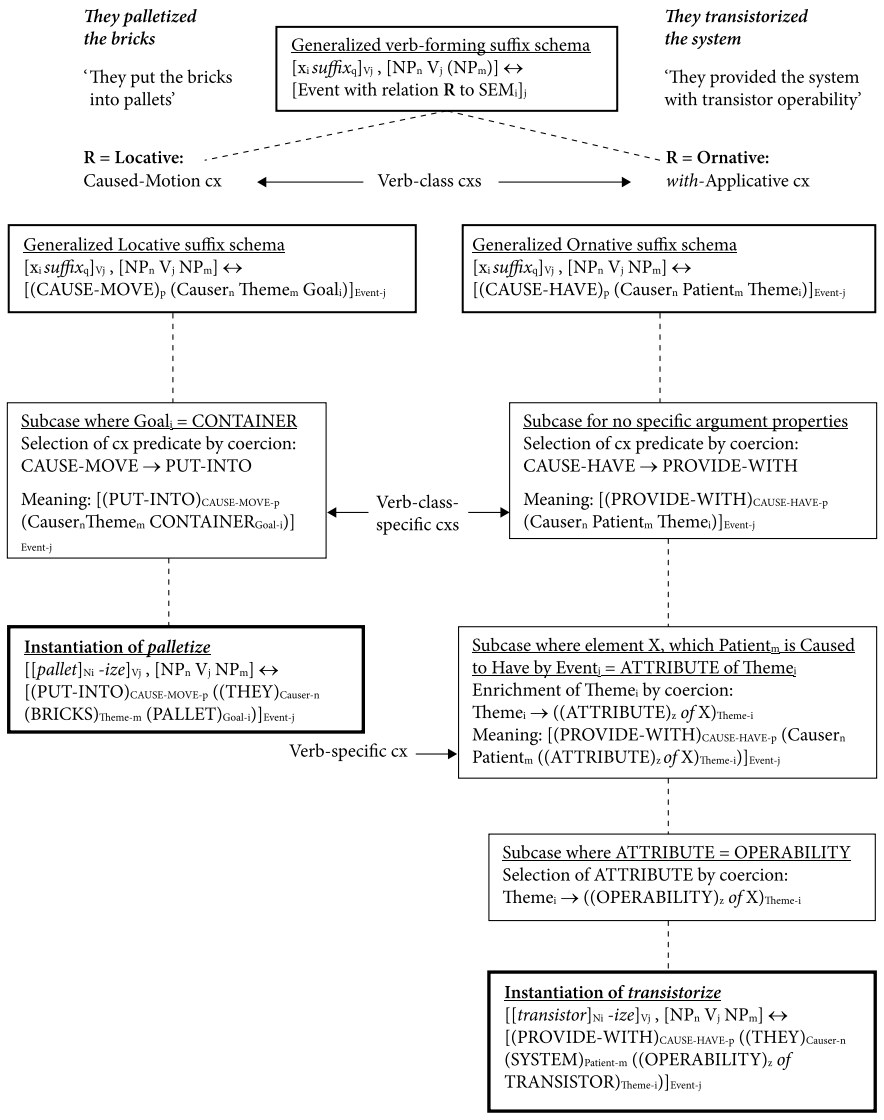

Figure 1. Semantic analysis of example Locative and Ornative complex verbs

invoked to transfer reference of the Theme$_i$ argument from the syntactic head of *transistor* to ATTRIBUTE, thus generating the verb-specific construction, as described in 3.2.1.2. In the box below this, ATTRIBUTE is realized as 'operability' through the coercive mechanisms of selection. The full instantiation of *They transistorized the system* is shown in the final box, as presented in (33).

In this section, a novel CxM account has been proposed that provides a parallel but more detailed semantic analysis of verbal derivatives than that based

on a purely argument-structure-construction approach (Laws 2023). As seen in Figure 1, the two accounts are compatible in terms of verb-class and subclass distinctions. However, the current CxM analysis specifies those subclasses more transparently by demonstrating the relevance of semantic rules, based on the relationship between the base of the complex verb base and its argument roles, and interpretative mechanisms such as coercion by selection and enrichment.

4. The relationship between the base of a complex verb and its argument role

The examples of complex verbs used in this paper so far have been deliberately chosen to demonstrate clearly the relationship between the base of the verbal derivative and the argument role with which it is co-indexed. For example, with Locative verbs like *palletize*, as illustrated in Figure 1, the base $[x_i]$, or *pallet*, in the Morphosyntax component, is coindexed with the $Goal_i$ argument in the Meaning component since, in the sentence *They palletized the bricks*, the *bricks* are caused to move to the *pallet*. Similarly, in (27) for Ornative verbs, such as *oxygenate* for the sentence *They oxygenated the water*, the base, $[oxygen]_{Ni}$, is coindexed with the $Theme_i$ argument role with which the *water* is imbued. These cases demonstrate a transparent one-to-one match in the form of the base and the argument role to which it corresponds.

However, it was mentioned in Section 3.1 that the base of the complex verb may consist of a truncated stem, as in *synchron-ize*, or a bound stem, as in *bapt-ize*. In addition, a base with an adjectival form, such as *departmental-ize*, may be interpreted as a noun in the Meaning component; a base may contain an extension, as in *dram-at-ize*; and finally, the base may be opaque, as in *hydr-ate* and *pulver-ize*. In these examples, there is no straightforward mapping between the base form in the morphosyntax of the complex verb and the element to which it corresponds in the paraphrased interpretation of that verb. Yet, these words are at least partially motivated, as they are recognizable as verbs through the presence of a verbalizing suffix. Moreover, the semantic role of the base may be accessible through the paradigmatic relations of the complex verbs with other words. This final section addresses these observations and illustrates how reference to paradigmatic relations can account for these phenomena.

The semantic analysis of the complex words *departmentalize, synchronize*, and *dramatize* reveals that the form of the base differs from the word that has an argument role in the corresponding paraphrase of that verbal derivative; the relationship between these different forms is paradigmatic and is expressed through

co-indexation (Booij 1997, 2010, 2023). Štekauer (2014:359) proposes that "... derivational paradigmatic relations are based on formal realization of a cognitive category by an affixation process. This cognitively founded process relates the stem as an input and the resulting derived word as an output". Booij (2023) outlines a range of phenomena where paradigmatic relations are involved. In CxM, paradigmatic relations are represented as 'second-order schemas' (Booij 2010, 2019; Booij & Masini 2015), or 'sister schemas' using the terminology of Relational Morphology (Jackendoff & Audring 2020). In the broader context of CxG, horizontal, i.e., paradigmatic relations, are an integral property of the constructicon (Diesel 2019; Ungerer 2024).

The complex verb *departmentalize* provides an example of the case where there is a mismatch between the adjectival base form (*departmental*) and the nominal form (*department*) of the corresponding argument role, as shown in the first line of (38). The second line defines the paradigmatic relationship (represented by the symbol ≈) between these two elements. Firstly, the meaning of the base of the complex verb (SEM_i) corresponds to (indicated by a comma symbol) the noun *department*, also indexed *i*. This first form-meaning pair is paradigmatically related to the next pair of corresponding items on that line: the adjective [[*department*]N_i *-al*]$_{At}$ the meaning of which is represented by SEM_t; both of these elements are coindexed *t*. Finally, the second form-meaning pair is paradigmatically related to the third pair: the morphologically analysed complex verb [[*department*]$_{Ni}$ *-al*]$_{At}$ *-ize*]$_{Vj}$, indexed *j*, the meaning of which corresponds to the coindexed $EVENT_j$. The Morphosyntax line specifies the paradigmatic relation of the base of *departmentalize* with the adjective *departmental*. The Meaning line illustrates the coindexing (*i*) of the element of the stem (*department*) that relates to the $Result_i$ argument role in the argument structure construction of this Resultative complex verb schema.

(38) *They departmentalized subject areas* → 'They divided the subject areas into departments$_i$':

Paradigmatic rels:	[*department*] $_{Ni}$, SEM_i ≈ [[*department*]$_{Ni}$ *-al*]$_{At}$, SEM_t ≈ [[*department*]$_{Ni}$ *-al*]$_{At}$ *-ize*]$_{Vj}$, $EVENT_j$
Morphosyntax:	[[*department*] $_{Ni}$ *-al*]$_{At}$ *-ize*]$_{Vj}$, [NP_n V_j NP_m]
Meaning:	[(DIVIDE INTO) $_{(MAKE\text{-}BECOME)p}$ ((THEY)$_{Causer\text{-}n}$ (SUBJECT AREAS)$_{Patient\text{-}m}$ (DEPARTMENTS)$_{Result\text{-}i}$)] $_{Event\text{-}j}$

Other examples of verbal derivatives that exhibit a similar pattern of paradigmatic relations include *regionalize, contextualize, institutionalize*, and *marginalize*.

A form-meaning mismatch in combination with stem allomorphy is illustrated in example (39) with respect to the Causative complex verb *synchronize*;

here the noun base is paradigmatically related to the adjectival argument role. In this case, the nominal form-meaning pair *synchrony* and SEM_t is paradigmatically related to the adjectival form-meaning pair *synchronous* and SEM_i, the latter of which constitutes the $State_i$ argument role in the Meaning line. The truncated noun base *synchrony* of *synchronize* results from the deletion of the final sound /i/.

(39) *They synchronized their watches* → 'They made their watches become synchronous$_i$':

Paradigmatic rels:	[*synchrony*]N_t, SEM_t ≈ [[*synchron~~y~~*]$_{Nt}$ *-ous*]$_{Ai,}$ SEM_i ≈ [[*synchron~~y~~*]$_{Nt}$ *-ize*]$_{Vj}$, $EVENT_j$
Morphosyntax:	[[*synchron~~y~~*]$_{Nt}$ *-ize*]$_{Vj}$, [NP_n V_j NP_m]
Meaning:	[(MAKE-BECOME)$_{(MAKE-BECOME)p}$ ((THEY)$_{Causer-n}$ (WATCHES)$_{Patient-m}$ (SYNCHRONOUS)$_{State-i}$)] $_{Event-j}$

Other complex verbs that follow this pattern include *apologize, memorize, fantasize*, and *philosophize*. It is important to note that the morphological analysis of complex verbs that undergo base truncation on the attachment of a suffix may vary from that shown in (39) (Bauer et al. 2013: 276).

Item (40), the Resultative complex verb *dramatize*, is an example of stem allomorphy through extension. The nominal base *drama* has two allomorphs: the default form *drama*, attested in native derivative processes, such as suffixation (*drama-free*) and compounding (*drama-documentary*), and the form extended with the intermorph *-at-* that occurs in non-native derivations, such as *dramatize, dramatist*, and *dramatic* (Booij 1997). Thus, as shown in the second line of (40), the nominal form-meaning pair *drama* and SEM_i is paradigmatically related to the adjectival pair [[*dram-at*]$_{Ni}$*-ic*]$_{At}$ and SEM_t, which is in turn paradigmatically related to the pair [[*dram-at*] $_{Ni}$ *-ize*]$_{Vj}$ and $EVENT_j$.

(40) *They dramatized the book* → 'They made the book into a drama$_i$':

Paradigmatic rels:	[*drama*]$_{Ni}$, SEM_i ≈ [[*dram-at*]$_{Ni}$*-ic*]$_{At}$, SEM_t ≈ [[*dram-at*]$_{Ni}$ *-ize*]$_{Vj}$, $EVENT_j$
Morphosyntax:	[[*dram-at*]$_{Ni}$ *-ize*]$_{Vj}$, [NP_n V_j NP_m]
Meaning:	[(CONVERT INTO)$_{(MAKE-BECOME)p}$ ((THEY)$_{Causer-n}$ (BOOK)$_{Patient-m}$ (DRAMA)$_{Result-i}$)] $_{Event-j}$

Similar patterns of stem allomorphy occur with complex verbs such as *stigmatize, traumatize, problematize*, and *systematize*. Again, it will be noted that, depending on the form a base may have, morphological analyses involving extensions may vary (Bauer et al. 2013: 270).

Example (41) relates to the case where the base of the complex verb is a bound stem, but the verbal derivative is paradigmatically related to the word that emerges as the argument role of the paraphrase of the verb. The example of the Performative complex verb *baptize* presented in (41) requires two second-order schemas, as opposed to three required in items (38) to (40). The paradigmatic relation between *baptism* and *baptist* has been discussed extensively in the literature (Booij 2010; Booij & Masini 2015). In this example, the nominal form-meaning pair $[\textit{bapt-ism}]_{Ni}$ and $[\text{BAPTISM}]_i$ is directly paradigmatically related to the verbal form-meaning pair $[\textit{bapt-ize}]_{Vj}$ and $[\text{EVENT}]_j$, and so there is no need in this example for the semantic variable SEM_i which, in the previous examples, has encoded both the meaning of the base and the corresponding argument role in the Meaning line.

(41) *They baptized the orphan*: → 'They performed baptism_i on the orphan':
Paradigmatic rels: $[\textit{bapt-ism}]_{Ni}$, $[\text{BAPTISM}]_i \approx [\textit{bapt-ize}]_{Vj}$, $[\text{EVENT}]_j$
Morphosyntax: $[\textit{bapt-ize}]_{Vj}$, $[\text{NP}_n\ \text{V}_j\ \text{NP}_m]$
Meaning: $[(\text{PERFORM})_{\text{PERFORM-p}}\ ((\text{THEY})_{\text{Agent-n}}\ (\text{BAPTISM})_{\text{Theme-i}}\ (\text{ORPHAN})_{\text{Patient-m}})]_{\text{Event-j}}$

Other examples of complex verbs that can be analysed in this way include *criticize, ostracize, mesmerize*, and *dignify*.

The final example, (42), illustrates the importance of paradigmatic relations in the semantic analysis of complex verbs containing non-native bases; in this case, the base of *hydrate* does not form a recognizable lexeme, as it does in (38) to (40), nor is it paradigmatically related to the lexical item that corresponds to the argument role in the paraphrase of the complex verb, as seen in (41).

The Ornative verbal derivative *hydrate* is composed of the combining form (*hydr-*) and the verb-forming suffix *-ate*. As shown in (42), the meaning of the base-related Theme_i argument *water* is accessible from the form-meaning pair $[\textit{hydr-aul-ic}]_{At}$ and $[\text{Pertaining to WATER}_i]_t$. This pair is paradigmatically related to the complex verb form-meaning pair $[\textit{hydr-ate}]_{Vj}$, EVENT_j.

(42) *They hydrated the mixture*: → 'They imbued the mixture with water_i':
Paradigmatic rels: $[\textit{hydr-aul-ic}]_{At}$, $[\text{Pertaining to WATER}_i]_t \approx [\textit{hydr-ate}]_{Vj}$, EVENT_j
Morphosyntax: $[\textit{hydr-ate}]_{Vj}$, $[\text{NP}_n\ \text{V}_j\ \text{NP}_m]$
Meaning: $[(\text{IMBUE-WITH})_{\text{CAUSE-HAVE-p}}\ ((\text{THEY})_{\text{Causer-n}}\ (\text{MIXTURE})_{\text{Patient-m}}\ (\text{WATER})_{\text{Theme-i}})]_{\text{Event-j}}$

Other examples of verbal derivatives that show this pattern include *fortify, facilitate, recognize*, and *insulate*.

To conclude this section, examples (38) to (42) demonstrate the importance of paradigmatic relationships: they express the association between the element that constitutes the base of the complex verb and the argument role it relates to in the argument structure construction, regardless of whether that element is an independently occurring word or not.

5. Summary and future directions

The current paper offers three contributions to our understanding of the semantics of complex verb formation in English. Firstly, the novel CxM analysis reported here formalizes the link proposed by Laws (2023) between two discrete constructional units that are related in verb-forming suffixation: the suffix schema and the argument structure construction that captures the relationship among the elements of that schema (the alignment of these constructional units having been determined by the semantic relation R). Secondly, the analysis reported here accounts for the various subtypes of argument structure constructions that underly the meanings of complex verbs through the processes of selection and enrichment by coercion, which are mediated by semantic rules related to the properties of argument roles. Thirdly, the analysis accounts for the formation of partially opaque complex verbs through paradigmatic relations between the verb base and other lexical units in the constructional network.

The present paper has been formulated from a mainly theoretical perspective; however, future work in the area of complex verb formation could complement this approach by evaluating the current proposals from an empirical perspective. For example, with reference to the current debate on the nature of links within the constructicon (Diesel 2019; Sommerer & Smirnova 2020; Ungerer 2024), it is argued that both vertical and horizontal associations may be relevant. Therefore, future work on verbal derivative formation could evaluate the strength of associative links between the construction types that correspond to the twenty semantic categories (Laws 2023), by employing a priming paradigm similar to that used by Ungerer (2021) to assess the nature of the relationship between the Caused-Motion and the Resultative constructions. Such an endeavour may, on the one hand, reveal that some semantic categories can be considered subtypes of a single superordinate category, or, on the other, that the distinct status of the current categories is fully justified. Furthermore, priming studies may also prove a useful method for testing the associative links between verb-class-specific and verb-specific constructions that emerge through coercive mechanisms, as documented here. Finally, the lexical decision task, in combination with semantic priming, may yield useful insights into the nature of paradigmatic links between complex

verb bases and related word types, as proposed here. It is for future research to explore these potentially relevant methodologies in order to supplement the current work from an empirical perspective.

6. Conclusions

The analysis of complex verbs requires the alignment of suffix schemas and argument structure constructions (Laws 2023); this alignment is brought about through the relation R, which constitutes the semantic pivot between the morphological and argument structure aspects of a verbal derivative schema. The analysis reported here has formalized Laws' combinatorial account and extended it by identifying the semantic rules and coercive mechanisms that permit the specification of semantic subclasses of verbal derivatives. Furthermore, the approach illustrates the crucial role of paradigmatic relations in the motivation of complex verbs. By applying an in-depth CxM approach to verb-forming suffixation, this paper provides a more complete analysis of the range of meanings conveyed by complex verbs than has hitherto been proposed.

Funding

Open Access publication of this article was funded through a Transformative Agreement with University of Reading.

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Publication history

Date received: 23 April 2024
Date accepted: 17 January 2025
Published online: 28 April 2025