

Examining the applicability of the righthand head rule: A discussion from *be-/out-* prefixation

Yuri TOGANO*

Graduate student, University of Tsukuba, Japan

*yuri.togano@gmail.com

Abstract: It is generally considered that some English verbal prefixes (e.g. *be-*, *en-*, *out-*, *un-*) determine the category of a morphologically complex word, violating the Righthand Head Rule (Williams, 1981). However, they are predicted to obey this rule under the analysis that assumes category-changing prefixation to be the combination of conversion and non-category-changing prefixation (i.e. the right-headed analysis). This approach seemingly enables us to analyse all the prefixed forms in the same way, but it has been found that some forms do not appear to follow the RHR (e.g. *out-technology*, *out-badge*; Kotowski, 2020). This paper re-examines the applicability of the RHR, focussing on *be-/out-*prefixation. It first introduces two main approaches to the relevant prefixes, and provides an overview of Nagano’s (2011, 2013) account. We then briefly survey Kotowski’s (2020) argument on *out-*prefixation, favouring the existence of category-determining prefixes. Finally, we observe data collected from dictionaries and corpora. It shows that there are *be-/out-*prefixed forms to which Nagano’s (2011, 2013) account based on lexical subordination (Levin & Rappaport, 1988) is not applicable, although it can apply to many cases.

Keywords: English prefixes, word-formation, verbal prefixation, the Righthand Head Rule

1. Introduction

A well-known rule in morphology called the Righthand Head Rule (RHR) states that the element in the rightmost position determines the syntactic category of a morphologically complex word (Williams, 1981, p. 248). This rule holds in English derivational morphology in many cases, but not all forms follow this rule, as has often been pointed out in the literature (e.g. Bauer et al., 2013). So-called category-determining prefixes are generally considered exceptions to the RHR. Consider the following derived forms with these prefixes in (1).

- | | | | |
|-----|----|--|---------------------------------|
| (1) | a. | <i>be-</i> : <i>befool, behead, becalm, belittle</i> | ‘make N/A’, ‘provide with N’ |
| | b. | <i>de-</i> : <i>deice, defrost, debug</i> | ‘deprive N’, ‘remove from N’ |
| | c. | <i>dis-</i> : <i>disbar, disable</i> | ‘deprive N’, ‘remove from N’ |
| | d. | <i>en-</i> : <i>encage, empower, ennoble, enable, enrich</i> | ‘put into N’, ‘make A’ |
| | e. | <i>out-</i> : <i>outdistance, outwit, outsmart</i> | ‘surpass in the quality of N/A’ |
| | f. | <i>un-</i> : <i>unsaddle, unbottle, unleash</i> | ‘deprive N’, ‘remove from N’ |
- (Namiki, 1985, pp. 21–22; Bauer & Huddleston, 2002, pp. 1667–1668, 1679, 1713–1715; Lieber, 1992, pp. 57–58; 2005, pp. 402–403; Plag, 2003, p. 183; Nagano, 2011, p. 61)

Befool in (1a) and *outsmart* in (1e), for example, appear to be derived from the noun *fool* and the adjective *smart* (i.e. [be-[fool]_N]_V, [out-[smart]_A]_V), respectively. The prefixes in these examples determine the category of the complex words, violating the RHR. However, they are predicted to obey the RHR under the analysis that such N/A-to-V prefixation is the combination of N/A-to-V conversion and V-to-V prefixation. This view predicts that there are no ‘category-determining’ prefixes in English, seemingly enabling us to analyse all the derived forms in the same way.

However, there are actually category-determining prefixes not following the RHR, as in (2).

- | | | | |
|-----|----|--|------------------|
| (2) | a. | <i>out-technology, out-badge, out-Ikea, out-priest</i> | (Kotowski, 2020) |
| | b. | <i>beknight, bebrother, bejewel, benight, beshame</i> | (OED) |

For example, it is not easy to assume that *out-technology* and *out-badge* in (2a) are formed by the combination of conversion and prefixation. This is because the base *technology* of *out-technology* is not recorded as a verb in dictionaries (Kotowski, 2020). *Out-badge* has a different meaning from the verb *badge* (Kotowski, 2020). We also find *be*-verbs in (2b) which upon a closer look demand another explanation. We need to reconsider whether the approach predicting no category-determining prefix is valid.

This paper aims to explore the nature of verb-forming prefixes in English. Focussing on *be-/out*-prefixation, we re-examines the generality of the RHR and shows that there are *be-/out*-prefixed forms to which Nagano's (2011, 2013) account is not applicable.

This rest of this paper is organised as follows: Section 2 introduces two approaches to so-called category-determining prefixes and provides an overview of Nagano's (2011, 2013) account, which this paper is based on. Section 3 takes up Kotowski (2020), a recent study favouring of the existence of category-changing prefixes. Section 4 presents data of complex verbs, focussing on *be-/out*- prefixation. Section 5 offers concluding remarks.

2. So-Called Category-Determining Prefixes in English and the Right-Headed Analysis

2.1 Two Types of Analysis towards So-called Category-Determining Prefixes

There are two views regarding so-called category-determining prefixes, depending on whether one considers them to have the ability to determine the category of complex words or not. One is the left-headed analysis (e.g. Lieber, 2004; Plag, 2003; Bauer & Huddleston, 2002, pp. 1667–1668; Bauer et al., 2013), under which the head of a word with a category-determining prefix is not the rightmost element but the prefix (i.e. [be-[fool]_N]_V, [en-[cage]_N]_V, [out-[smart]_A]_V). That is, the prefixes determine the category of complex words. Thus, they are treated as exceptions to the RHR. Morphologists differ concerning which prefixes are category-determining and prefixes such as *en-*, *be-*, and *de-* are often at issue.

Although the left-headed analysis above is popular, some morphologists argue for another approach to the verbal prefixes: the right-headed analysis (Marchand, 1969, pp. 134–137; Kastovsky, 1986, 2006, p. 215; Nagano, 2011, 2013, 2017), stemming from Marchand's and Kastovsky's view that languages have a typologically preferred order, and that the order in the Germanic languages is Determinant/Determinatum (Marchand, 1969, p. 11; Kastovsky, 1986, p. 98).¹ Based on Marchand's (1969) claim, Kastovsky (1986, pp. 105–106) argues that the second element of constituent of complex words such as *encage* (i.e. head) is not a noun but a conversion verb. Unlike the left-headed analysis, the right-headed analysis regards the base of a complex form as a denominal or deadjectival converted (or zero-derived) verb, not a noun or an adjective. "Category-determining" prefixation is construed to be a combination of two processes, conversion and prefixation on the converted verb (i.e. [be-[[fool]_N]_V]_V, [en-[[cage]_N]_V]_V, [out-[[smart]_A]_V]_V). Thus, it is the denominal or deadjectival converted verb that determines the category of a complex form. Therefore, so even the so-called category-determining prefixes are considered to follow the RHR and thus there are in general no category-determining prefixes. As this paper is based on Nagano's (2011, 2013) account, in the next subsection we accordingly overview Nagano's (2011, 2013) argument for the right-headed analysis.

2.2 Nagano's (2011, 2013) Account

Nagano (2011) provides strong evidence that the right-headed analysis is supported both diachronically and synchronically. In Nagano (2013), she restricts herself to an investigation as to *be*-prefixation. As mentioned above, this approach assumes that 'category-determining' prefixation (i.e. N/A-to-V prefixation) is comprised of two word-formation processes, N/A-to-V conversion and V-to-V prefixation. It thus predicts that "there should be no stage of grammar in which N/A-to-V prefixation is possible but N/A-to-V conversion or V-to-V prefixation is not" (Nagano, 2011, p. 67). Nagano (2011) presents two pieces of evidence that diachronically corroborate this hypothesis.

First, English verbal prefixes are those which initially derive verbs from verbs. They have the non-category-determining usages (e.g. intensive meaning, transitivity function) besides the ‘category-determining’ usage (e.g. transpositional use). Nagano (2011, pp. 67–69) summarises the primary meanings and functions of the verbal prefixes given in previous studies and shows that in both Germanic and Romance prefixes the former occur earlier than the latter. The historical data suggest that the relevant verbal prefixes do not originally have N/A-to-V usage. This confirms the prediction of the right-headed analysis that N/A-to-V prefixation is not possible without V-to-V prefixation.

Second, conversion has been an active process from Old English to Present English (Biese, 1941, chapter 2; Marchand, 1969, chapter 5; Kastovsky, 1985, 1996) and becomes more productive since the thirteenth century (Biese, 1941, chapter 3). Nagano (2011, p. 70) states that the high profitability of verb-deriving conversion is related to semantic sparseness of converted verbs (Clark & Clark, 1979; Aronoff, 1980; Lieber, 1992, section 5.2) and this is why they can express much more varied meanings than suffixed verbs (Plag, 1999; Lieber, 2004, chapter 3). She summarises the main meanings of converted verbs in each historical stage based on Marchand (1969, pp. 365–367), Clark & Clark (1979), and Plag (1999), and shows that converted verbs can have more varied meanings than suffixed verbs. They can express not only locative, ornative, and similitive meanings but also other meanings such as instrumental and privative meanings. That is, “suffixation is semantically fixed, whereas conversion is semantically versatile” (Nagano, *ibid.*, p. 71), which is why conversion has become very productive in verb formation. Nagano (*ibid.*) concludes based on these two points that the prediction of the right-headed analysis is diachronically plausible.

The right-headed analysis is supported synchronically, as well. Some pieces of evidence corroborate this hypothesis in terms of both input and output morphology. First, converted base verbs exist as actual words and occur earlier than their prefixed forms in most cases. The following pairs of prefixed forms and base verbs in (3) are a few instances from Nagano (2011, pp. 72–73). The numbers on the right are the years of the first attestation.

- (3) a. *be-*: (N > V) *bebrother* 1881/ *to brother* 1573, *bebutter* 1611/ *to butter* 1496, (A > V) *bedumb* 1615/ *to dumb* 1000, *befast* 1674/ *to fast* 1220
 b. *en-*: *enfree* 1599/ *to free* 1000, *enshelter* 1611/ *to shelter* 1590
 c. *out-*: *outbreast* 1612/ *to breast* 1599, *outfool* 1638/ *to fool* 1593
 (From Nagano, 2011, pp. 72–73, see also Nagano, 2014, 2017)

Bebrother in (3a), for instance, is first attested in 1881 while its converted base verb is first attested in 1573. In a similar vein, *enfree* in (3b) and *outbreast* in (3c) are attested later than their base verbs. This tendency is observed in most cases, which provides strong evidence favouring the right-headed analysis.

Second, prefixed verbs are subject to the same restriction as converted verbs. Referring to an observation by Hammond (1993), Nagano (2011, p. 73) shows that the prefixes concerned can be attached to suffixed bases in V-to-V usages (e.g. *bedarken*, *enlighten*, *outgastronomize*) but they can only be attached to simplex bases in N/A-to-V usages (e.g. *becalm*, *enturf*, *outpoison*). The right-headed analysis can account for this difference. As observed in previous studies, suffixed forms cannot become conversion inputs (Marchand, 1969, pp. 372–373; Bauer, 1983, pp. 226–227; Plag, 1999, p. 222; Farrell, 2001, pp. 118–120). Consider the examples below:

- (4) *to Acadian, *to abandonee, *to arrival, *to banality, *to guidance, *to kindness, *to improvement, *to organization, *to owlsh
 (Nagano, 2011, p. 73)

Suffixed forms such as *Acadian* and *abandonee* in (4) cannot become verbs through conversion. The restriction on conversion is reflected in the difference between the two usages of the relevant prefixes in this way.

In addition to these pieces of evidence from input morphology, output semantics offers evidence to support constituent of complex words. Nagano (2011) argues that converted verb bases determine the core semantics of outputs. She divides the English verbal prefixes into two types, internal and external prefixes, based on Di Sciullo’s (1997) classification. Internal prefixes affect the argument structure and Aktionsart of base verbs, while external prefixes instead only modify them adverbially. According to her, in English the former includes *be-* and *out-* and the latter *de-*, *dis-*, *en-*, and *un-*. She

explains the semantics of outputs with internal prefixes (i.e. *be/out-* prefixation) by the operation of lexical subordination (Levin & Rappaport, 1988).

Lexical subordination is a process at Lexical Conceptual Structure (LCS) proposed. They affirm that various types of extended meaning constructions, for example, the resultative construction and the verb-particle construction form a natural class in that “they all have paraphrases in which the base verb of the sentence is no longer the main verb” (Levin & Rappaport, 1988, p. 280). Further, they ascribe the extended meanings of such constructions to this process. Consider the schema of lexical subordination in (5). The representations to the left and right of the arrow are the original LCS and the new LCS of a verb.

- (5) LCS: manner/instr → LCS: [result BY manner/instr]
 (BY is used to represent ‘by means of’ or ‘in the manner of’)
 (Levin & Rappaport, 1988, p. 282)

The manner or instrument component in the original LCS is subordinated to the additional result component in the new LCS. That is, “[l]exical subordination takes a verb in its original, or basic, sense and subordinates it under a lexical predicate” (Levin & Rappaport, *ibid.*, p. 282).

Nagano (2011, section5; 2013) explains the output semantics of *be-/out-*prefixation with this operation. The LCSs in (6) are the schemata of ‘intensive/transitivising’ *be-*verbs and of ‘surpassing’ *out-*verbs.

- (6) a. the LCS of ‘intensive/transitivizing’ *be-*verbs:
 [[x COMPLETELY AFFECT y] BY [x VERB (PREP) y]]
 (Booij, 1992, p. 56; 2002, p. 192; 2005, p. 210)
- b. the LCS of ‘surpassing’ *out-*verbs:
 [[x SURPASS y] IN [x/y VERB]] (see Yumoto, 1997, p. 194)
 (Nagano, 2011, p. 75)

The first embedded brackets represent the LCS introduced by the prefix and the second bracket the LCS of the base verb. As these schemata show, input verbs become semantically dependent elements in output forms by lexical subordination. This is why the number of arguments and Aktionsart of verbs is changed through *be/out-*prefixation, and on this point, *be-* and *out-* are different from the other verb-deriving prefixes. Unlike them, the prefixes *de-*, *dis-*, *en-*, and *un-* (i.e. external prefixes) modify base verbs without affecting their internal structures. They do not subordinate the verb bases on the LCSs of their outputs.²

Let us next see how the input and output LCSs of actual *be-/out-*verbs are represented. In V-to-V functions, they are described as follows:

- (7) a. *x* *beshout* y: [x COMPLETELY AFFECT y] BY [x SHOUT AT y]
 b. *x* *outlast* y: [x SURPASS y] IN [x/y LAST]
 (Nagano, 2011, p. 75)

Since in the lexical subordination process the base verb’s meanings (i.e. shouting and lasting) are subordinated to the semantic predicates introduced by *be-* and *out-*, the outputs *beshout* and *outlast* become transitive. They thus indicate ‘to affect Y completely by shouting’ (i.e. ‘to shout at Y’) and ‘to surpass Y in lasting’, respectively. Contrary to these LCSs of the internal prefixes, those of the external prefixes are represented as follows. Consider the LCS of an *en-*verb in V-to-V usage. The part in bold indicates the emphasis.

- (8) *x* *enwrap* y: [x CAUSE [BECOME [y BE **AT/IN** [WRAPPED]]]]
 (Nagano, 2011, p. 75)

The meaning of *en-* just modifies the base verb’s meaning adverbially, without subordinating it as *be-* and *out-* do. It emphasises “the prepositional function in the resultant-state component of the input LCS” (Nagano, 2011, p.75). This holds good for N/A-to-V functions since the base of prefixation is a denominal or deadjectival converted verb, not a noun or an adjective under the right-headed analysis.

This provides further derivational evidence for the right-headed analysis from a synchronic viewpoint. Nagano (2011) concludes that the right-headed analysis is supported both diachronically and synchronically, and that there is no ‘category-determining’ prefix in English.³ It seems that we can explain all the prefixed forms in the same way under this account. There has, however, been some recent researches against the right-headed analysis, as will be shown in the next section.

3. Observation in Kotowski (2020)

Some recent studies after Nagano (2011) maintain the left-headed analysis. Of such studies, this section takes up an argument in Kotowski (2020). Kotowski (2020) observes corpus data and discusses the semantics of *out*-prefixation from the perspectives of restriction on word-formation and the interpretation of outputs.⁴ For the categorial selection, he points out that there are many denominal/deadjectival *out*-verbs contra prior studies (e.g. Irube, 1984, fn.5; McIntyre, 2015). He claims that there are cases where the right-headed analysis is challenging to apply. Consider the following examples in (9):

- (9) a. Global big data competitors can out-technology you, but they can’t out-human you. (iWeb)
 b. [...] he outboxed, outpointed and outshowmanshipped a long-reigning middleweight champion despite serious disadvantages in height [...] (COCA)
 c. There was an old boy with ‘a lifetime of badges’ on his hat. Excuse me, but we have those too. (Step forward Lil Kemp who could outbadge him any day.)⁵
 d. I went downtown to check out the crime scene, but that douche from the FBI out-badged me!⁶

(Kotowski, 2020, p. 19, with slight modifications)

The *OED* does not have *technology* and *showmanship* as verbs and it is not easy to regard them as the base-converted verbs of the outputs in (9a) and (9b). *To badge*, the input of *outbadge* in (9c) and (9d) is listed in the *OED* as a verb meaning “mark with/attach/present a badge”, but the interpretation in (9d) of “have more badges” cannot be obtained from the right-headed analysis (Kotowski, 2020, p. 19). He thus rejects the claim of the right-headed analysis that there are no category-determining prefixes, referring to Nagano (2011).

Moreover, Kotowski (2020) points out that *out*- can attach to various nouns and adjectives. Regarding denominal forms, proper names, attitudinal nouns, and role nouns in particular can serve as inputs of *out*-prefixation. The *out*-verbs cited below are some of the examples he lists:

- (10) a. proper names: *out-Ikea*, *out-Columbine*, *out-Trump*, *out-Wal-Mart*
 b. attitudinal nouns: *out-macho*, *out-wonk*, *out-snob*, *outjunk*
 c. role nouns: *out-priest*, *out-bourgeois*, *out-lawyer*, *outjockey*, *outdaughter*
 (Kotowski, 2020, p. 20, with slight modifications)

The outputs of these three types bear “often underspecified stereotype meanings”, and roughly mean ‘exceed in some property typical for X’, ‘behave more like an X typically behaves’, and ‘act more stereotypically X-like’, respectively (Kotowski, 2020, p.20). For instance, *out-priest* in (10c) means that someone acts much more priest-like than stereotypical priests act. As for deadjectival *out*-verbs, he cites forms such as *out-sad*, *out-nice*, *out-funny*, *out-loud*, *outbitter*, and so on, and notes that evaluative or human propensity adjectives are the most common adjectival bases. He also points out that restrictions on verbal prefixation are looser than has been stated. The prefix *out*- permits as its inputs not only activity verbs, process verbs, and semelfactives but also result verbs and psychological verbs. Therefore, the corpus data indicate that the prefix *out*- can attach to nouns, adjectives, and verbs more freely, at least, than what has been stated. Consequently Kotowski (2020) argues that the categorial restriction on *out*-prefixation is not very strict, and thus rejects the right-headed approach that applies the RHR to all the category-determining prefixes.

Considering data found in recent researches, it becomes questionable whether *out*-verbs really follow the RHR or not. This means that *be*-verbs, which Nagano (2011, 2013) applies the same explanation, should also be re-examined. In the following section, we observe that her account based on lexical subordination operation cannot apply to some prefixed forms.

4. Data on *be*-/*out*-Verbs

4.1 The Case of *be*-Verbs

The right-headed analysis appears to give a reasonable explanation of *be*-prefixation. Apparent nominal/adjectival bases usually have converted-verb forms, as Nagano demonstrates (2011, 2013). Given that outputs are subject to the same morphological restriction as that of converted verbs, they are real prefixation inputs. Meanings of (converted-) verb bases are considered to be subordinated to the prefixal meaning under Nagano's (ibid.) approach, as illustrated in Section 2.2. When re-examining *be*-prefixation considering input and output semantics, however, we find many forms to which the lexical subordination analysis cannot apply. Take *beknight* 'to make X into a knight' (Nagano, 2013, p. 461), for example. According to her account, the meaning of *beknight* follows from the LCS in (6a), "to affect X completely by knighting it" by subordinating the original LCS of the input verb to the clause introduced by the prefix (Nagano, 2013, ibid.). This not work here, however. Consider the instances in (11), in which these verbs are used.

- (11) a. This man..was knighted by the king.
 b. Behold once-Quaker Benjamin be-knighted.
 (OED, with slight modifications)

Both the converted verb *knight* and the complex verb *beknight* have the same basic meaning 'to dub someone a knight', except that the latter involves a sense of ridicule (OED s.v. *be*- prefix, *knight*). The denominal verb *knight* becomes to mean 'to make someone into a knight' by conversion, as the description in (11a) above illustrates. Considering its meaning, it appears that *beknight* maintains the fundamental structure of the original LCS of its input and the prefix just adds the depreciatory sense. *Be*-prefixation does not seriously affect the LCS of a derivative form and thus the lexical subordination analysis wrongly predicts its output semantics.

Similarly, *be-brother* 'address X as brother' conveys (almost) the same meaning as its input verb *brother* and both take people as their objects, as shown in (12).

- (12) a. When we *have* done our Business..you may Brother me as much as you please
 b. The old gentleman was..much given to kissing and be-brothering his friends.
 (OED, with slight modifications)

The form *brother* in (12a) gains the sense of calling someone as "brother" by conversion, and thus it is difficult to interpret its *be*-prefixed form in (12b) based on the LCS representations in Nagano's (2011, 2013) account. The meaning of calling someone brother does not come from the description 'to affect X completely by brothering it'. Prefixation does not seem to produce an effect that noticeably changes its LCS, and we need to suppose a different semantic representation from hers. *Be-brother* is likely to give an interpretation 'to call someone brother' with a certain nuance introduced by the prefix considering its semantics. The prefixed forms below are other examples to which the lexical subordination analysis is not applicable. The derivative verbs in (13a) are forms whose prefix means 'make (into) A/N' and those in (13b) are forms whose prefix means 'call N'.

- (13) a. *bebaron, beblind, bebrave, becalm, becripple, belittle, bemoist, beslow, besot*
 b. *be-blockhead, be-coward, begrace, beknave, bemonster, berascal, berogue*
 (OED; Marchand, 1969, pp. 146–148; Nagano, 2013, p. 459)

The prefix *be*- in (13a) often adds the sense of ridicule in forms such as *belittle* 'make small' and *bedoctor* 'make X into a doctor' as well as *beknight*, and the meaning 'completely' in other forms as *beblind* 'make completely blind', depending on words. It also adds some negative nuance to derivative

forms in (13b). As Marchand (1969, p.146) states, verbs of this type in (13b) have a nuance of being “a mere mock title”. Although the prefix’s meaning or function is different in each case, the prefix’s function is the same in that it modifies the input verbs without changing their basic internal structures.

To briefly recapitulate, the right-headed analysis applies to *be*-prefixation. In many ‘category-changed’ forms, denominal or deadjectival converted verb become inputs of prefixation. However, there are cases where the lexical subordination analysis is not applicable. The prefix *be-* in such forms appears to adverbially modify the meaning of input verbs or adds a depreciatory nuance developed from its intensifying meaning, considering their input and output semantics.

4.2 The Case of *out*-Verbs

The right-headed analysis is generally applicable to *out*-verbs and Nagano’s (2011, 2013) account based on lexical subordination can explain their output semantics. Even nominal or adjectival bases of the apparent counterexamples offered in Kotowski (2020) often have verb forms. Further, this provides input morphological evidence supporting the right-headed analysis in Nagano’s (ibid.) studies with further data. Yet there are cases where output semantics cannot be explained by lexical subordination. Consider the following examples:

- (14) ... An old mentor of mine, President Johnson, used to boast that he had “outmarried himself.” I never fully understood what he meant until I outmarried myself: my wife, Julia; ...⁷ (a website, with slight modifications)

Outmarry in (14) takes a reflexive as its object and means ‘to marry a person superior to (oneself)’ (Dictionary by Merriam Webster).⁸ The sentence in (14) has the interpretation that *President Johnson* and *I* married someone superior to themselves. The semantic and morphological head of this verb is the element on the right side (i.e. *marry*), and both the prefix and the verb contribute to the output semantics. It thus does not contradict the prediction of the right-headed analysis. However, its output semantics is not followed by Nagano’s (2011) account. Both *out-* and *marry* semantically contribute to the output, but the meaning of *outmarry* is not ‘surpass in marrying’. The ‘surpassing’ meaning introduced by *out-* is related to one’s marriage partner’s characteristics rather than the action of marriage itself. The lexical subordination analysis is thus not applicable to this form and its output semantics cannot be obtained from the sum of composing elements’ meanings.

The semantic noncompositionality of outputs seen in *outmarry* is also found in other several *out*-verbs. Take the *out-badge* in (9c, d) above for example, which Kotowski (2020, p. 19) cites in his paper. As we saw in Section 3, *out(-)badge* means ‘having more badges’ and ‘mark with/attach/present a badge’, respectively (ibid). To be more precise, *out-badge* in (9d) stands for ‘present a badge having more authority’ according to its definition on the website. The semantic and morphological heads in these forms are *badge*, that is, the right-side element. However, the way that the prefixal meaning is involved is complicated; the semantics of the outputs is neither equal to ‘surpass in badging’ nor to the simple composition of the components’ meanings.

Furthermore, more general forms also show the semantic non-compositionality. For example, *outsmart* in (15) has a complex meaning, though the degree of non-compositionality is not as high as that of *out*-verbs above.

- (15) It is such fun to outsmart a smart guy. (OED, with slight modifications)

This indicates ‘to defeat or get the better of (a person, etc.) through superior skill or ingenuity’ (OED). The output semantics certainly involves both meanings of *out-* and *smart*. However, the meaning of outdoing a person does not come from the mere compositional sum of the two meanings; an approach based on lexical subordination predicts that *outsmart* means to ‘surpass in smarting’ but it means more than surpassing in being smart. The meaning of *outwit* in (16) have non-compositional meaning, as well, a similar meaning to *outsmart*.

- (16) He could, if not outfight his enemies, outwit them. (OED, with slight modifications)

These examples also suggest that we need another explanation in order to account for the semantics of *out*-verbs.

Lexical subordination analysis is also problematic for other types of complex verbs. As Kotowski (2020, p. 20) observes, the forms in (17) do not seem to follow the RHR.

- (17) a. ... “Anybody who could consider their merchandise similar to Ikea's, they're surely going to try to figure out a way to out-Ikea Ikea,” said Mary Frye,
b. Your basic hairy-chested guy who wrangles rattlers may find himself out-machoed by a half-pound of cute, wiggly-nosed fluff.
c. “Out-priesting the priests” isn't the same as embracing the vocation to lead through service, as Jesus did.

(COCA, with slight modifications)

All of the output semantics of these types can neither be obtained by composition of the prefix and base meanings, nor paraphrased as ‘to surpass in X-ing’. One may think that such usages have developed in recent decades; this we should treat them differently from typical *out*-prefixed verbs. Most of the *out*-verbs above are recorded quite recently (e.g. *out-Ikea* 2011, *out-Wal-Mart* 2002, *out-macho* 1999, *out-priest* 2000). However, forms of such types should not be excluded as exceptions. According to Marchand (1969, p. 97), the first *out*-verb derived from the proper name is *out-Herod* attested in 1604, and such types of *out*-verbs are freely used in nineteenth century. *Out-* has been very productive since then; thus we should consider this when dealing with *out*-prefixation.

In summary, there are forms whose output semantics cannot be captured by Nagano's (2011) account, although the RHR and her account is applicable to many cases. They have more meanings than the sum of their component. The examination based on the present data reveals that we need another explanation to cover these different *out*-verbs.

5. Concluding Remarks

This paper has surveyed previous studies on so-called category-determining prefixes in English and re-examined whether prefixed verbs follow the RHR, focusing on *be-/out*-prefixation. We have shown that there are cases where Nagano's (2011, 2013) account is not applicable and seem to violate the RHR, although it enables us to explain the formation of many complex verbs. Lexical subordination sometimes cannot apply to *be-/out*-prefixed forms considering the semantics of outputs. *Be*-verbs typically follow the RHR, but meanings of derived forms cannot be gained from lexical subordination operation. As to *be*-verbs, prefixation does not change the basic semantic structure of a base (converted-) verb. In *out*-prefixation, the prefix affects the new LCSs of derived forms and plays the important role in output semantics. The lexical subordination analysis proposed by Nagano (2011) can cover the output semantics of most *out*-verbs. However, there are some forms to which it cannot apply. Another explanation is required to account for the semantics of such verbs.

Acknowledgements

I would like to express my gratitude to Akiko Nagano for invaluable comments on this study. My appreciation also goes to Ryohei Naya and Takashi Ishida for insightful comments and warm encouragement. I would like to thank Editage (www.editage.com) for English language editing.

Notes

[1] I use the terms the right-headed analysis and the conversion pre-prefixation approach interchangeably in this thesis to refer to the analysis assuming that N/A-to-V prefixation is a combination of N/A-to-V conversion and V-to-V prefixation.

[2] See Nagano (2017) for an analysis of *en*-verbs, in which she claims that *en-* is the prefix that emphasises resultant states.

[3] The only real exception to the RHR (i.e. the prefix determining the category) seems to be the adjective-forming prefix *a-* (e.g. *asleep*, *afoot*, *aloud*). See Nagano (2016) for details.

[4] There are two perspectives on the meaning of *out-*: the comparative approach (e.g. Irube, 1984) and the resultative approach (e.g. Nagano, 2011). In his paper, Kotowski (2020) observes that *out-* has resultative meaning while admitting that *out-* conveys comparative meaning in many cases. Based on corpus data and counterparts of *out-* verbs in other Germanic languages, he concludes that *out-* has both comparative and weak resultative senses.

[5] From pinkun.com/opinion/run-in-is-more-nail-biting-than-expected-1-642935.

[6] From urbandictionary.com/define.php?term=Out-badged.

[7]

https://books.google.co.jp/books?id=bZH35_IBK90C&pg=PA14&lpg=PA14&dq=%22outmarried+himself%22&source=bl&ots=0K-4MrUN5v&sig=ACfU3U3sWpXpwIH24IHyeIX5rkFIQFW_Ag&hl=j a&sa=X&ved=2ahUKEwiPm8Ht0oHsAhWCfd4KHW7cD-gQ6AEwDnoECAMQAQ#v=onepage&q=%22outmarried%20himself%22&f=false

[8] Note that the meaning of *outmarry* in (14) is different from that below.

- (i) Japanese women outmarry to other ethnicities (mostly white) by 3:1, according to a statistic I saw awhile back. (iWeb, with slight modifications)

The intransitive verb indicates that a person (*Japanese women* in this case) marries someone of a different ethnicity. Its output meaning can be obtained compositionally; thus it is not problematic for Nagano's (2011) explanation, although *out-* in this verb is not the one which this study takes up.

References

- Aronoff, M. (1980) Contextuals. *Language* 56, 744–758.
- Bauer, L., & R. Huddleston (2002). Lexical Word-Formation. In R. Huddleston & G. K. Pullum (Eds.), *The Cambridge grammar of the English language* (pp. 1621–1721). Cambridge: Cambridge University Press.
- Bauer, L. (1983). *English word-formation*. Cambridge University Press, Cambridge.
- Bauer, L., Lieber, R. & Plag, I. (2013). *The Oxford Reference Guide to English Morphology*. Oxford: Oxford University Press.
- Biese Y. M. J. (1941). *Origin and Development of Conversions in English*. Suomalainen Tiedekatemia, B XLV: Helsinki.
- Booij, G. (1992). Morphology, Semantics and Argument Structure. In I. M. Roca (Ed.), *Thematic Structure: Its Role in Grammar* (pp. 47–63). Berlin: Foris.
- Booij, G. (2002). *The Morphology of Dutch*. Oxford: Oxford University Press.
- Booij, G. (2005). *The Grammar of Words*. Oxford: Oxford University Press.
- Clark, E. V., & Clark, H. H. (1979). When Nouns Surface as Verbs, *Language* 55, 767–811.
- Davies, M. (2008-). *The Corpus of Contemporary American English (COCA)*: 560 million words, 1990-present. Available online at <https://www.english-corpora.org/coca/>.
- Davies, M. (2018). The 14 billion word iWeb corpus. Available online at <https://www.english-corpora.org/iweb/>.
- de la Cruz, J. M. (1975). Old English Pure Prefixes: Structure and Function. *Linguistics* 145, 47–81.
- Di Sciullo, A. (1997). Prefixed Verbs and Adjunct Identification. In Di Sciullo, A. (Eds.), *Projections and interface conditions* (pp. 52–73). Oxford: Oxford University Press.
- Farrell, P. (2001). Functional Shift as Category Underspecification. *English Language and Linguistics* 5, 109–30.
- Hammond, M. (1993). On the Absence of Category-Changing Prefixes in English. *Linguistic Inquiry* 24, 562–567.
- Irube, K. (1984). Argument Structure and the *out-*Prefixation. *English Linguistics* 1 (1), 105–122.
- Kastovsky, D. (1986). Problems in the Morphological Analysis of Complex Lexical Items. *Acta Linguistica Academiae Scientiarum Hungaricae, Tomus 36*, 93–107.
- Kastovsky, D. (2002). The Derivation of Ornative, Locative, Ablative, Privative and Reversative Verbs in English. In Fanego, T., Pérez-Guerra, J., & López-Couso, M. J. (Eds.), *English Historical Syntax and Morphology: Selected Papers from 11 ICEHL* (pp. 99–109). Amsterdam and Philadelphia: John Benjamins.
- Kastovsky, D. (2006). Vocabulary. In Hogg, R., & Denison, D. (Eds.), *A History of the English Language*, (pp. 199–270). Cambridge: Cambridge University Press.
- Kenkyusha's New English-Japanese Dictionary* (2002). Shigeru Takebayashi (Ed.). Tokyo: Kenkyusha.
- Kotowski, S. (2020). The Semantics of English *out-*Prefixation: A Corpus-Based Investigation, *English Language and Linguistics* 1, 1–29.
- Levin, B., & Rapoport, T. R. (1988). Lexical Subordination. *Proceedings of the Chicago Linguistics Society* 24, 275–289.
- Lieber, R. (1992). *Deconstructing morphology*. Chicago: University of Chicago Press.

- Lieber, R. (2004). *Morphology and lexical semantics*. Cambridge: Cambridge University Press.
- Lieber, R. (2005). English Word-Formation Processes: Observations, Issues, and Thoughts on Future Research. In P. Štekauer and R. Lieber (Eds.), *Handbook of word-formation* (pp. 375–427). Dordrecht: Springer.
- Lieber, R. (2005). English word-formation processes. In *Handbook of word-formation* (pp. 375–427). Springer, Dordrecht.
- Marchand, H. (1969). *The categories and types of present-day English word-formation: A synchronic-diachronic approach* (2nd Edition). Munich: C. H. Beck'sche.
- McIntyre, A. (2015). Denominal Verbs. In P. O. Müller, I. Ohnheiser, S. Olsen & F. Rainer (Eds.), *Word-Formation* (pp. 434–450). De Gruyter, Berlin and Boston.
- Nagano, A. (2011). The Right-Headedness of Morphology and the Status and Development of Category-Determining Prefixes in English. *English Language and Linguistics*, 15(1), 61–83.
- Nagano, A. (2013). Derivational Prefix *be-* in Modern English: The Oxford English Dictionary and Word-Formation Theory. *English Studies*, 94(4), 448–467.
- Nagano, A. (2016). The Category and Historical Development of the Prefix *a-*. *JELS* 33, 86–92.
- Nagano, A. (2017). Gendai Eigo no Hasei Settozi *en-* ha Hontoo ni RHR no Ihanka? (Does the derivative prefix *en-* in Present English really violate the RHR?). In T. Nishihara, S. Tanaka, N. Hayase, & T. Ono. (Eds.) *Gendaigengoriron no Saizensen (The Forefront of Contemporary Theoretical Linguistics)* (pp. 77–93). Tokyo: Kaitakusha.
- OED: *Oxford English Dictionary* [online]. Oxford University Press. Available online at <https://www.oed.com/>.
- Outmarry. (2020). In Merriam-Webster.com. Retrieved November 28, 2020, from <https://www.merriam-webster.com/dictionary/outmarry>
- Plag, Ingo (1999) *Morphological Productivity: Structural Constraints in English Derivation*, Mouton de Gruyter, Berlin.
- Plag, I. (2003). *Word-formation in English*. Cambridge: Cambridge University Press.
- Williams, E. (1981). On the notions 'lexically related' and 'head of a word'. *Linguistic Inquiry* 12(2), 245–274.
- Yumoto, Y. (1997). Verbal prefixation on the level of semantic structure. In T. Kageyama (Ed.) *Verb Semantics and Syntactic Structure* (pp. 177–204). Tokyo: Kuroshio Publisher.