

Corpus-based Research into Derivational Morphology: A Comparative Study of Japanese and English Verbalization

Junya Morita

Kinjo Gakuin University
morita@kinjo-u.ac.jp

Abstract

As part of elucidating the syntax-morphology interaction, this study investigates where and how complex verbs are formed in Japanese and English. Focusing on the Japanese verb-forming suffix *-ka-suru* (e.g. *toshi-o gendai-ka-suru* ‘modernize city’), relevant verbs are extracted from a large-scale corpus and they receive an in-depth analysis from semantic, morphosyntactic, and functional viewpoints. The properties of *-ka-suru* and those of its English counterpart are then compared and contrasted. The result reveals three main points: (i) *-ka-suru* verbs are constantly created in syntactic settings to fulfill the functions of brevity and conceptualization, (ii) while denominal *-ize* derivatives have several submeanings such as ‘result,’ ‘ornative,’ and ‘agentive,’ *-ka-suru* equivalents retain the meaning ‘result,’ and (iii) *-ka-suru* can be combined with compound nouns, but *-ize* cannot. We will demonstrate that the above features originate in the underlying syntactic structure related to each suffix and their difference, thus supporting the thesis of syntactic word formation.

Keywords: verb derivation, corpus research, generalization, generative morphology, Japanese, English

1 Introduction

It is widely accepted that derived words are divided into two types: non-compositional/ fixed (e.g. *communicate*) and compositional/ productive (e.g. *Hegelianize*). Derived words of the latter type show not only word attributes but also the phrasal attribute of “free composition.” This naturally leads to lively debate on where their formation takes place: lexicalists hold that complex words are made in the lexicon to be inserted into the terminal nodes of a syntactic representation (Di Sciullo and Williams, 1987), while antilexicalists

advocate their direct syntactic derivation (Embick, 2010). As part of the investigation of the syntax-morphology relationship, the present study attempts to show where and how *-ka-suru* derivatives are produced in Japanese, exemplified in (1) and (2). They are picked out from Balanced Corpus of Contemporary Written Japanese (BCCWJ)¹.

- (1) *ji-kokumin-o moomai-ka-suru*
one’s-people-ACC ignorant-change-do
‘make one’s people ignorant’
- (2) *shinikaketa momiji-o bonsai-ka-suru*
dying maple-ACC bonsai-change-do
‘turn a dying maple into a bonsai’

The complex suffix *-ka-suru* consists of two bound forms, *-ka* and *-suru*. The verb *moomai-ka-suru* in (1) indicates that the complex suffix *-ka-suru* attaches to an adjective (*moomai*) to derive a verb which expresses a causative meaning. The example in (2) illustrates the same point: the causative verb *bonsai-ka-suru* implies that the object’s referent is affected in some way and becomes the resulting state indicated by the base noun. This causative construction is lexical in that the relevant verbal expression is derived by the addition of the bound morpheme *-ka-suru* to an adjective. Moreover, the derivatives *moomai-ka-suru* and *bonsai-ka-suru* are hapax legomena—token frequency 1—of the 105-million-word corpus, suggesting that they are constructed online in working memory. Verbalization by *-ka-sru* is therefore judged to be a compositional/productive type of word formation process.

Although there are a handful of representatives of descriptive studies like Takubo (1986), there has been no systematic analysis of *-ka-suru* verbs. The aim of this study is to make a comprehensive analysis of them. In section 2, we expose the

¹ All the well-formed *-ka-suru* derivatives given below are detected in BCCWJ, although their original sentences are often simplified for convenience. Additionally, the case

markers *Accusative* and *Nominative* are respectively abbreviated as *ACC* and *NOM*.

communicative functions performed by *-ka-suru* verbs. Section 3 deals with the productivity of *-ka-suru* verbalization and its English counterpart. Section 4 illuminates the semantic properties of verbs in *-ka-suru* and compares them with the properties of their English equivalents. After elucidating the differences in their base structures in section 5, section 6 explains the origin of the semantic and formal differences between these derived verbs from an antilexical standpoint.

2 Functional Properties

This section deals with the communicative functions fulfilled by *-ka-suru* verbalization. What motivates the use of complex words rather than corresponding phrases? Two functions are particularly important: brevity and conceptualization. The first function of *-ka-suru* verbalization is to serve as a device for indicating brevity: concise and sensible use of words (cf. Clark and Clark, 1979). In example (3), the action inferred from the preceding context is concisely expressed by the temporally constructed verbs *shihei-ka-suru* and *shitauxe-ka-suru*. A “brevity effect” thus results from this verbalization, which is not obtained from the related verbose paraphrase *kokuzeikyoku-o shihei-no (yoona) jootaini suru* ‘make NTB (like) private army.’

- (3) *kokuzeikyoku-o shihei-ka-shi,*
 NTB-ACC private.army-change-do
gyokai-o shitauxe-ka-suru
 industry-ACC subcontract-change-do
 ‘make National Tax Bureau private army,
 make the industry subcontracted’

We turn next to the second function of *-ka-suru* verbalization. A verb in *-ka-suru* has a lexical attribute in that it conceptualizes a causative action with a resulting state change for the patient. Conceptualization is achieved through naming. In example (4), a special conception is produced by compressing a predicate content into the verb *rittaikoosa-ka-suru*; the act of turning a road into a grade-separated intersection is labeled by the innovated verb. In contrast, the act of making one’s hands crossed is not lexicalized by a *-ka-suru* verb, as seen in (5). This is because the action at issue is not worthy of the name.

- (4) *dooro-o rittaikoosa-ka-suru*

road-ACC grade.separation-change-do
 ‘turn a road into a grade-separated intersection’

- (5) *ryoote-o koosa-ka-suru*
 both.hands-ACC cross-change-do
 ‘make one’s hands crossed’

To sum up, we have revealed two important communicative functions of *-ka-suru* verbalization: brevity and conceptualization. These functions demonstrate the lexical attributes of *-ka-suru* expressions.

3 Productivity

Productivity is defined as the extent to which a word formation device can give rise to new words (Lieber, 2010: 59). There are several approaches to quantifying productivity, the most reliable of which is one putting great importance to hapax legomena of a large-scale corpus (Baayen and Renouf, 1996). This rests on the view that complex forms that have been observed only once in a large corpus are highly likely to be lexical innovations and hence the capacity of a word formation rule to create neologisms crucially involves the degree to which the rule produces words with extremely low frequency (Hay, 2003). Baayen and Renouf (1996: 73) propose a productivity measure: $Productivity (P) = n_1/N$, where n_1 is the number of hapaxes and N is the total number of tokens. Here we revise it so as to place the total number of types (but not tokens) in the denominator; thus, $P = n_1/V$ (V : the number of word types). Our measure rests on the view that the productivity of a particular process is reflected in the type frequency of the process (Goldberg, 1995: 134-139).

According to the proposed measure, we calculate the productivity value of *-ka-suru* derivation, based on Balanced Corpus of Contemporary Written Japanese, a 105-million-word corpus. Our BCCWJ research has attested 130 hapaxes and 516 word types of *-ka-suru* derivatives, and so its productivity value is 0.252². In our view, the productivity of *-ka-suru* is defined as the potentiality of creating one new word when four types of *-ka-suru* verbs are used. It then turns out that *-ka-suru* verbalization is very productive; when we derive four types of verbs by adding *-ka-*

² For collecting *-ka-suru* verbs, I am indebted to the research engine of Chunagon (BCCWJ): <https://chunagon.ninjal.ac.jp/auth/login?service=https%3A>

https://chunagon.ninjal.ac.jp/2Fj_spring_cas_security_c heck.

suru to an adjective or noun, one of them is newly created.

In addition, words may be coined on the spot in the syntactic contexts of comparison and contrast. Specifically, a *-ka-suru* coinage may be constructed when similar activities are compared. In example (6), the verb *soo-heishi-ka-suru* ‘make themselves all soldiers’ is created in conjunction with the prior comparable phrase *buki-o tori* ‘take up arms.’ A similar observation holds for sentence (7): a series of related activities are conceptualized and lexicalized by four verbs in *-ka-suru*. Among them *kooshinrai-ka-suru* is a hapax, i.e. an innovated verb. As laid out in section 2, this *-ka-suru* verb is coined to carry out the functions of “brevity” and “conceptualization.” The fact that *-ka-suru* final verbs may be coined whenever these functions are required indicates the high creativity of the verb derivation.

(6) *shimin-ga buki-o tori, soo-heishi-ka-shita*
 citizens-NOM arms-ACC hold all-soldier-
 change-do.past
 ‘citizens took up arms and made themselves all soldiers’

(7) *tanmatsukiki-o takinoo-ka, koosoku-ka, kooshinrai-ka, kooseinoo-ka-suru*
 terminal.equipment-ACC multifunctional-
 change very.fast-change highly.releable-
 change highly.efficient-change-do
 ‘make terminal equipment more multi-
 functional, very fast, highly reliable, and highly efficient’

Following the calculation method just presented, the productivity values of English verb-forming processes were calculated, based on the British National Corpus (BNC), a 100-million-word corpus (Morita, 2022: 93). As a result, it turned out that the productivity values of *-ize*, *-ify*, *-en*, and *-ate* affixations are 0.323, 0.074, 0.035, and 0.058, respectively. The result shows that *-ize* verbalization is quite productive while the other three verbalizations are not. It is thus confirmed that the English equivalent of *-ka-suru* for productivity is *-ize*, and that creative verbalizers such as *-ka-suru* and *-ize* exist in Japanese and English³.

³ Although not discussed in this article, a group of unproductive verb-forming suffixes exist in Japanese: *-meru*, *-maru*, and *-mu* (cf. *shizu-meru* (calm-make ‘calm down’),

4 Semantic Properties

4.1 Adjective/Noun bases

The suffix *-ka-suru* attaches to adjectives, nouns, and VNs (verbal nouns). This section deals with some semantic aspects of *-ka-suru* derivatives, focusing on adjective and noun bases. The bound morpheme *-ka* has the meaning of ‘change’ or ‘conversion’ and bound morpheme *-suru* has no semantic content and simply functions as a verb-forming suffix. Hence, the complex suffix *-ka-suru* derives a causative verb that stands for ‘change the state or quality of an entity so that it becomes something different from what it was before.’

Let us first consider the case where *-ka-suru* attaches to adjectives. An example is *kaihatsukyoka-o danryoku-ka-suru* (development.permission-ACC flexible-change-do), where *-ka-suru* combines with the adjective *danryoku(-no)* ‘flexible’ to form the verb *danryoku-ka-suru* ‘change (development permission) into being flexible’ or ‘make (development permission) flexible.’ Thus, deadjectival *-ka-suru* verbs essentially convey transition to a resulting state by causation. We refer to this meaning as ‘result.’

This prototypical meaning of *-ka-suru* verbs leads to a semantic condition of the base; *-ka-suru* cannot attach to adjectives that signify an ‘unchangeable quality or state.’ Among them is a class of adjectives called *jootaigo* ‘emotional word’ such as *onwa(-na)* ‘gentle’ and *rippa(-na)* ‘respectable,’ which designates the condition of the mind (Morioka, 1986: 12). Thus, we cannot say **Taro-o shinsetsu-ka-suru* (Taro-ACC kind-change-do ‘make Taro kind’). The adjective *shinsetsu(-na)* ‘kind’ denotes an inherent quality of human beings and it generally cannot be changed, and hence it contradicts the causative meaning of *-ka-suru*.

Turning now to noun-based *-ka-suru* derivatives, they basically have the same meaning as those based on adjectives. For example, *namagomi-o taihi-ka-suru* (kitchen.waste-ACC compost-change-do) is interpreted as ‘change kitchen waste into compost.’ We can see here that the object’s referent is affected to become the resulting state expressed by the base noun.

In this context, it is interesting to compare Japanese verb formations with those in English. English has a set of suffixes that derive verbs from adjectives and nouns (*-ize*, *-ify*, *-en*, *-ate*). Among

atata-maru (warm-become ‘warm up’), and *yuru-mu* (loose-become ‘loosen’).

them, *-ize* is the most productive suffix (cf. §3) and hence we will compare *-ize* and *-ka-suru*. One notable semantic difference is that denominal *-ize* derivatives have several submeanings, whereas their Japanese counterparts essentially retain the original meaning. To confirm this point, look at Table 1⁴.

base meaning of derivative	<i>-ka-suru</i>	<i>-ize</i>
Adj result	129 (25.0%)	215 (58.7%)
N result	325 (63.0%)	54 (14.7%)
ornative	2 (0.4%)	35 (9.6%)
agentive	0 (0%)	7 (1.9%)
instrumental	0 (0%)	5 (1.4%)
similative	6 (1.2%)	15 (4.1%)
VN result	54 (10.4%)	n/a
acN performative	n/a	35 (9.6%)
total num. of types	516 (100 %)	366 (100%)

Table 1: The submeanings of *-ka-suru* and *-ize*

Table 1 presents the semantic classification of the two suffixes attaching to three kinds of base forms: adjectives, (non-action) nouns, and VNs/action Ns. For instance, our BCCWJ survey has detected 129 word types of deadjectival *-ka-suru* verbs and a BNC survey has discerned 215 word types of deadjectival *-ize* verbs. Both derivatives refer to the ‘result’ meaning of ‘cause sth/sb to become X,’ as in *sutajio-o gendai-ka-suru/modernize studio* and this sense is the most commonly used⁵. The case where the suffixes in question are added to Japanese VNs or their English counterparts (acNs) will be discussed in the next section.

As can be seen from Table 1, the reading of ‘result’ is central to noun-based verbs in both languages. Now, what is noteworthy about the two kinds of denominal verbs is that while there are a certain number of *-ize* derivatives that express meanings other than ‘result,’ their Japanese equivalents are almost never attested. Firstly, *-ka-suru* verbs rarely express an ‘ornative’ meaning: ‘change Y so that X is given.’ While an *-ize* verb

expresses an ‘ornative’ meaning, as in *accessorize the dress* ‘change the dress so that accessory is given,’ its Japanese counterpart cannot, as in **doresu-o akusesari-ka-suru* (dress-ACC accessory-change-do). Secondly, *-ka-suru* verbs do not bear an ‘agentive’ sense: ‘change Y into a state where something is being done by X.’ Although *-ize* derivatives can bear an ‘agentive’ sense, as in *patronize the shop* ‘change the shop into a state where support is being done by patron,’ the comparable Japanese derivatives (**mise-o patoron-ka-suru*) are not acceptable. Finally, *-ka-suru* verbs do not indicate an ‘instrumental’ reading: ‘change Y into a state where something is being done with X.’ While verbs in *-ize* bear an ‘instrumental’ reading as in *cauterize the wounds* ‘change the wounds into a state where treatment is being given with cauter,’ verbs in *-ka-suru* cannot have this meaning as in **kizu-o yakigote-ka-suru* (wounds-ACC cauter-change-do)⁶.

Why is it that pertinent semantic extensions tend to take place in English but not in Japanese? The suffix *-ize* forms a causative verb that means ‘make Y (be) X,’ which entails that the surface object Y is made to have some relation to the base noun X. Here, several relationships such as ‘ornative’ and ‘agentive’ are possible, although the ‘result’ relationship is the most common and natural one. Regarding the comparable Japanese suffix, however, the situation is different. The Japanese causative suffix *-ka-suru* has the comparable content word *baker(u)*. They share the ideographic (Chinese) character 化, meaning ‘transform.’ This written form functions as a suffix when pronounced in a pseudo-Chinese manner (called *onyomi*), [ka], while it functions as an independent verb when pronounced in a Japanese manner (called *kunyomi*), [baker(u)]. The suffix under consideration can be understood to have developed from the cognate synonym *baker(u)* and the bound form itself signifies the meaning ‘transform.’ The verb *transform* entails a resulting state: ‘affect Y and change it to the state

⁴ The data on *-ize* suffixation rests on the BNC research done in a previous study (Morita, 2022: 90-91). Additionally, the data on *-ka-suru* suffixation is based on our BCCWJ survey.

⁵ Part of the resultative causatives can be intransitive verbs that mean ‘become X’ (inchoative), as in *seiji-o kotei-ka-suru* ‘make the politics fixed’ and *kengen-no sumiwake-ga koteika-suru* ‘the division of authority becomes fixed.’ This shift has been discussed as an alternation between transitive and inchoative verbs (Levin and Rappaport Hovav, 1995). We will not, though, discuss how to connect the two classes of verbs.

⁶ As exhibited in Table 1, two exceptions are discerned in BCCWJ, where verbs in *-ka-suru* are extended to denote the meaning of ‘ornative’ (cf. *dairekutomeeru-o raberu-ka-suru* (direct.mail-ACC label-change-do ‘give a label to direct mail’). Additionally, six ‘similative’ *-ka-suru* verbs are detected, as in *Tsubasa-ga ooji-ka-suru* (Tsubasa-NOM prince-change-do), meaning ‘Tsubasa becomes like a prince.’ The base noun seems involved in a kind of metaphorical extension: ‘change Y into someone with prince properties.’ Since the verbs in question express a ‘result’ reading, what they express is consistent with the fundamental meaning of *-ka-suru* verbs.

X, X representing an outcome state’ (cf. the movie *transformed* her overnight from an unknown schoolgirl into a megastar).

From the above observations, we are justified in asserting that the lack of the relevant semantic extension in Japanese stems from the fact that the suffix *-ka*, which originates in a Sino-Japanese ideographic free form, continues to retain its primal meaning.

4.2 VN bases

Let us go on to the case where the base of *-ka-suru* is VN (which stands for verbal noun). This Japanese-specific category is defined as a stem that has a predicate function and designates the meaning ‘action or process.’ The cardinal meaning of *VN-ka-suru* verbs has three component parts: ‘(a) make Y (b) be in the result of (c) being VN-ed.’ The *VN-ka-suru* construction then denotes causation, as derivable from the semantic element of (a) ‘make Y’: ‘cause Y to become.’ The semantic component of (b) ‘be in the result of’ implies that the patient Y becomes a certain state. And the semantic element of (c) ‘being VN-ed’ shows a passive sense in that the patient Y undergoes the action or process expressed by the base VN.

The meaning of the *VN-ka-suru* construction becomes clearer when contrasted with the meaning of the light verb construction, i.e. *VN-suru* construction. The light verb construction of (9) has a non-causative eventive reading: the object *yasei-shokubutsu* simply takes on the action expressed by the verb *saibai-suru*. In comparison, the *-ka-suru* construction of (8) has a causative eventive reading: the object (*yasei-shokubutsu*) receives the action of the verb (*saibai-ka-suru*) and changes to a certain state (*being grown in a field*). It focuses on the result of the process (Takubo, 1986: 82).

(8) *yasei-shokubutsu-o saibai-ka-suru*
 wild-plant-ACC grow-change-do
 ‘domesticate wild plants’

(9) *yasei-shokubutsu-o saibai-suru*
 wild-plant-ACC grow-do
 ‘grow wild plants’

Regarding the distinction of *-ka-suru* from *-suru*, there is a notable semantic correlation between Japanese and English verbalization. When

the base noun represents ‘action or process,’ an *-ize* verb has a ‘performative’ meaning (cf. Table 1), but not a causative meaning. (The base form *action noun* is abbreviated as *acN* in Table 1.) In the verb phrase *monopolize the soft drink market*, for instance, the verb *monopolize* has the reading of simple action ‘do monopoly’ and does not have the causative reading ‘make the market be in monopoly.’ Similarly, *anatomize (corpses)* stands for ‘do anatomy’ and *plagiarize (a work)* means ‘do plagiary,’ not ‘make (corpses) be in anatomy’ or ‘make (a work) be in plagiary.’ It can thus be seen that the *-ize* verbs in discussion correspond to the Japanese *-suru* light verb in (9), but not to the *-ka-suru* causative verb in (8).

To summarize, in deriving verbs from action nouns, Japanese distinguishes between causative (*VN-ka-suru*) and non-causative (*VN-suru*) forms. In English, on the other hand, there is no such distinction and the derived verbs are always non-causative verbs. Consequently, while *-ize* verbs formed from non-action nouns become causative verbs (‘make Y (be) X’ e.g. *atomize*), *-ize* verbs derived from action nouns express non-causative simple action (‘do X’ e.g. *anatomize*).

5 The Internal Structure of Bases

This section considers *-ka-suru*’s base from a structural viewpoint. Differences can be found between Japanese and English regarding the base structures of derived verbs. Let us first examine the Japanese case. The verbalizer *-ka -suru* can be attached to compound nouns. A good example of this is the verb phrase *NHK-o kyodai-seisaku-gaisha-ka-suru* (NHK-ACC huge-production-company-change-do ‘turn NHK into a huge production company’), where *-ka-suru* is added to the compound noun *kyodai-seisaku-gaisha*. *-Ka-suru* can also be affixed to a compound VN (*kooso-shuuyaku*), as in *tatemono-o koosoo-shuuyaku-ka-suru* (building-ACC high.rise-concentration-change-do ‘make buildings taller and more concentrated’)⁷.

Furthermore, a base with which *-ka-suru* combines may be a prefixed adjective or noun. In the example of *osenbushitsu-o mu-gai-ka-suru* (pollutant-ACC un-harmful-change-do ‘make pollutants un-harmful’), *-ka-suru* is suffixed to the adjective *mu-gai(-no)* which includes the negative prefix *mu-*. By the same token, *-ka-suru* adjoins to the noun *hi-hanzai* with the negative prefix *hi-*, as

consequently they are difficult to appear inside *-ka-suru* verbs.

⁷ There are very few Sino-Japanese compound adjectives in Japanese (cf. **ganseki-kengo(-na)* ‘rock-solid’), and

in *tanjun-tobaku-o hi-hanzai-ka-suru* (simple-gambling-ACC non-crime-change-do ‘make simple gambling a non-crime’).

Turning now to the case of English, unlike Japanese, the bases of verb-forming suffixes are limited to smaller sizes. It has been pointed out that English verbalizers do not combine with compounds, and this is confirmed by a BNC survey (cf. Morita, 2022: 92). For example, the combination of *novel* and *-ize* makes *novelize*, whereas *-ize* cannot be associated with the compound *detective novel* to yield **detective novelize*. Likewise, with an *-ize* verb whose base is an action noun, the *-ize* construction does not allow the base noun to become a compound (cf. **foot-anatomize*). Additionally, a BNC survey indicates that English verb-forming suffixes generally do not attach to prefixed bases. For instance, a verbalizer cannot connect to *atypical*, *transcontinental*, or *ultratrendy* to produce **atypicalize*, **transcontinentalize*, or **ultratrendify*, respectively (Morita, 2022: 92).

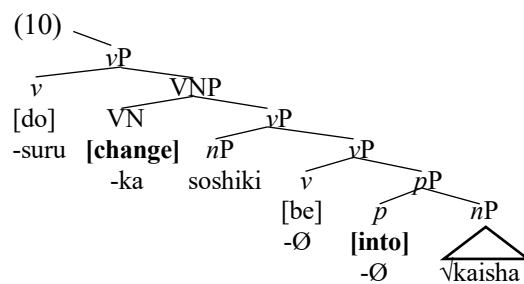
In sum, the corpus-based surveys show that Japanese and English verb-forming suffixes differ in a morphological respect: *-ka-suru* can incorporate compound nouns and prefixed adjectives/nouns, but English verbalizers cannot. The origin of this difference will be accounted for in the next section.

6 Theoretical Implications

In the generative theories ranging from the Standard model to the Government-Binding theory, an excessive role was given to the lexicon. It stores not only underived words and stems but also word formation rules for deriving complex words from them. Each simple word and derived word is inserted into a relevant node of a phrase structure to create a D-structure. The point is that word formation only takes place within the lexicon, hence this approach is called lexicalism. However, theoretical and empirical evidence contrary to lexicalism was pointed out (Marantz, 1997; Harley and Noyer, 2000), leading to the rise of antilexicalism. In antilexical Distributed Morphology (DM), a major part of word formation is located in syntax. Specifically, DM attributes the core characteristics of a complex word to its syntactic structure while entrusting the role of its

formal processing to the morphology module. In what follows, we will make an argument for supporting the DM model: after illustrating how the *-ka-suru* construction is realized syntactically, we will show that the properties of the construction observed above follow straightforwardly from the related underlying structure.

Given the DM theoretic viewpoint that derivational suffixes are the heads of phrases, the underlying configuration of *karera-ga soshiki-o kaisha-ka-suru* (they-Nom organization-ACC company-change-do ‘they turn an organization into a company’) are constructed by the merging of a root ($\sqrt{\text{kaisha}}$) and category-defining heads like *v*, *n*, and *p*, as depicted in (10)⁸.



Tree diagram (10) exhibits a causative construction, where the surface object *soshiki* has a predicative relationship with the underlying nominal root $\sqrt{\text{kaisha}}$ and the “small clause” is dominated by the causative element *-ka*. Thus, the core meaning of the *-ka-suru* construction, ‘change Y into X,’ is derived from its underlying structure (cf. §4.1).

In section 2, we discussed that *-ka-suru* expressions are generated in the comparison/contrast contexts in order to obtain the “brevity” effect (cf. (3)). This context-dependent word formation harmonizes with an approach of deriving *-ka-suru* expressions from their syntactic structure rather than forming them in the lexicon. It was also observed in section 2 that verbs in *-ka-suru* are produced to conceptualize and name causative actions with resulting states. This lexical function distinguishes between noteworthy expressions such as (4) and non-noteworthy expressions like (5). The structural features of the *-ka-suru* construction presented above (cf. (10)) are again the source of its lexical property—conceptualization by naming. Because the affix *-ka* inserted into VN is a category-

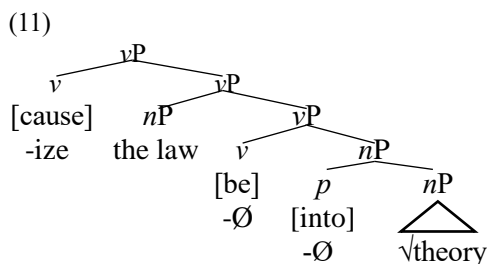
⁸ As evidence that the complex suffix *-ka-suru* is separated in underlying structure, we can point out a *-ka-suru* expression in which *-suru* incorporates a coordinate structure: [*koodo-ka•fukuzatsu-ka*]-*suru* ([advanced-change•complex-

change]-do ‘make (sth) advanced and complex’) (see also example (7)).

changing derivational affix, it plays the role of forming a verbal noun.

Furthermore, section 3 demonstrated the creativity of *-ka-suru* affixation: it has the potential to constantly create new expressions on the spot (cf. (6) and (7)). This is a corollary of the idea that syntactic computation is entirely productive and that the core structure of *-ka-suru* expressions is constructed at the syntactic level.

Section 4 clarified the semantic differences between Japanese and English verbal suffixes. A notable difference is that denominal *-ize* derivatives have several submeanings while their *-ka-suru* counterparts retain their prime meaning (cf. Table 1). For example, *-ize* can express the meaning ‘ornative,’ whereas its Japanese equivalent can hardly express it (cf. *accessorize the dress* and **doresu-o akusesarii-ka-suru*). This difference can be traced back to a structural distinction between the two languages. Let us now compare the related underlying structures. The underlying configuration of the *-ize* construction *they theorize the law* is presented in (11). From this representation, the *-ize* expression can be interpreted as ‘to cause the law to become a theory.’



What creates the semantic contrast between Japanese and English verbal suffixes is their structural difference, especially the difference in the features of the verbalizers. English verbalization structure (11) implies ‘to cause the object to be in a certain state’; the verbalizer *-ize* with the feature [cause] allows the referent of the object to be in several states. Such states are represented by the spatial and functional relationships expressed by specific prepositions in under-lying structures. Therefore, the reading of ‘ornative’ can be obtained from essentially the same configuration as (11), with the exception that the feature of *p* is changed from [into] to [with]. In Japanese, on the contrary, the

nominalizer *-ka* in (10) has the feature [change], and accordingly the feature of the associated preposition is determined to be [into]. Consequently, denominal *-ka-suru* verbs can only be interpreted as ‘result.’

Section 5 identified a difference in the size of the bases in Japanese and English verbal-ization: *-ka-suru* can be attached to compound nouns and prefixed adjectives/nouns, but its English counterpart cannot. We will show that this contrast is also attributable to the structural difference between *-ka-suru* and *-ize* expressions, focusing on the incorporation of compound nouns. As evidenced in (12), English compound nouns cannot be incorporated to form derived verbs. In contrast, the Japanese verb-forming suffix *-ka-suru* can incorporate compound nouns, as in (13).

(12) *They information-theorize the law.

(13) B-sha-o tokushu-gaisha-ka-suru
 B-Company-ACC special-company-change-do
 ‘turn B Company into a special company’

Verbalization in English is subject to stronger restrictions than other categorizations. As is commonly known, English verbs cannot generally be combined with other lexical categories to form compound verbs (cf. **rock-throw/*fast-walk*). This point is similar in Japanese; it is generally not possible to directly form a compound verb by combining a noun or adjective with a verb. Therefore, just like in English, you cannot say **ishi-nageru* (rock-throw) or **haya-aruku* (fast-walk)⁹.

Interestingly, Marchand (1969: 100-101) states that English compound verbs cannot be directly constructed, but can be built from compound nouns through the processes of zero-derivation and backformation. For example, we can derive the compound verb *spotlight* by adding a zero-morpheme to the compound noun *spotlight* and we can also form the compound verb *window-shop* by removing the ending *-ing* from the compound noun *window-shopping*. Note that zero-morpheme and *-ing* are pure category changers, which have no lexicosemantic content and only serve to transform one category into another.

Verbs ending in *-ka-suru* are derived in a

(see-lose ‘fail to notice’), where the second verb is limited to a specific verb and the entire compound is not necessarily compositional.

⁹ In English, two verbs are sometimes combined to form a compound verb, as in *push-walk her* (J. Rossner, *Looking for Mr. Goodbar*, p. 71). Japanese also has V-V type compound verbs, as in *oki-wasureru* (put-forget ‘mislays’) and *mi-otosu*

similar way to this. It is worth noting here that the verbalizer *-ka-suru* is a complex suffix. In structure (10) above, the verb is not directly formed by adding the complex suffix to a complex noun, but rather the nominal suffix *-ka* is used first to form a (verbal) nominal and then it is verbalized by the suffix *-suru*. Example (14) illustrates a case in point: the complex verb *kanzen-kogaisha-ka-suru* is formed by adding the semantically empty category changer *-suru* to the compound noun *kanzen-kogaisha-ka*.

- (14) B-sha-o kanzen-kogaisha-ka-suru
 B-Company-ACC complete-subsiary-
 change-do
 ‘make B Company a wholly owned company’

To summarize this section, Japanese and English have a common feature in that verbs are built from compound nouns by suffixing semantically empty category-changers (zero-morpheme/*-suru*) to them. Since a pure category changer does not cause a semantic change in the base, it functions to change only the category while leaving the base in its original form. Contrastively, the suffix *-ize* in (11) has a causative meaning and is not a simple category changer. Accordingly, *-ize* suffixation is restricted to smaller units.

7 Conclusion

Based on an in-depth analysis of Japanese *-ka-suru* derivatives extracted from a large-scale corpus, we have uncovered their semantic, morphological, and functional properties. Specifically, it is revealed that (i) *-ka-suru* derivation gives rise to the causative meaning ‘to bring the object’s referent into a certain resulting state,’ (ii) it is creative enough to coin a variety of neologisms depending on the context, and (iii) it has the functions of conceptualization and naming.

Moreover, comparing them with those of *-ize* verbs, their semantic and morphological differences have been identified. Semantically, *-ka-suru* verbs retain the basic meaning of ‘result,’ while verbs in *-ize* have several submeanings such as ‘ornative’ and ‘agentive’ besides the basic meaning. Morphologically, *-ka-suru* can be attached to larger-sized bases such as compounds or prefixed forms, whereas *-ize* cannot be attached to them.

Then we have demonstrated that the characteristics of *-ka-suru* verbs and the differences of both verbalizations are derived in a unified manner from their underlying syntactic

structures. The core meaning, creativity, and naming function of *-ka-suru* derivation come respectively from its underlying structure, syntactic formation, and the suffix (*-ka-suru*) that governs a verb phrase. Turning to the differences in verbalization between Japanese and English, the fact that only *-ka-suru* verbs retain the meaning of ‘result’ has its origin in the difference in the underlying representations of the two verbalizations; only the Japanese suffix involves the feature [change]. The second difference regarding the size of the base is deduced from whether the verbalizers are pure category-changers or not, that is, from the difference in features between *-suru* ([do]) and *-ize* ([cause]).

This study thus provides strong support for the antilexicalist position, which claims that major properties of complex words can be traced back to the syntactic level, with the power to generate infinite set of sentences. How a syntactic output is constructed into a word form awaits further investigation; there is a need for elucidation of the lexical entries of the verbalizer *-ka-suru* and morphological operations for word make-up.

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