Nominalization and Adjectivization by Japanese Suffixes: *-sa, -sei, -na,* and *-teki*

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1   Introduction

This paper discusses the suffixation of the nominalization suffixes *-sa* and *-sei*, and the adjectivization suffixes *-na* and *-teki*. The examples we examine are shown below.

(1) Nominalizing suffix *-sa*:
zyuunan-**sa** 'flexibility', sinsetu-**sa** 'kindness', odayaka-**sa** 'calmness', kyuuto-**sa** 'cuteness'
(2) Nominalizing suffix *-sei*:
keikaku-**sei** 'plannability', zyuunan-**sei** 'flexibility', fuhen-**sei** 'universality', anzen-**sei** 'safty'
(3) Adjectivizing suffix *-na*: zyuunan-**na** 'flexible', sinsetu-**na** 'kind', odayaka-**na** 'calm', kyuuto-**na** 'cute'
(4) Adjectivizing suffix *-teki*: keikaku-**teki** 'planned', sekkyoku-**teki** 'active', fuhen-**teki** 'universal'

As indicated in (1)-(4), *-sa* and *-sei* are nominalizing suffixes, and *-na* and *-teki* are adjectivizing suffixes. Each of these suffixes has different systems of suffixation as follows.

(5)	*-sa* nominalization	*-sei* nominalization	
a.	sinsetu-**sa**	*sinsetu-**sei**	'kindness'
b.	odayaka-**sa**	*odayaka-**sei**	'calmness'
c.	kyuuto-**sa**	*kyuuto-**sei**	'cuteness'
d.	zyuunan-**sa**	zyuunan-**sei**	'flexibility'
e.	anzen-**sa**	anzen-**sei**	'safety'
f.	*keikaku-**sa**	keikaku-**sei**	'plannability'
g.	*fuhen-**sa**	fuhen-**sei**	'universality'

(5) shows the suffixation of *-sa* and *-sei*. As shown in (5), the suffix *-sa* can attach to the roots in (5a-e), whereas it cannot attach to the roots in (5f-g). Also, *-sei* can attach to the roots in (5d-g), but it cannot attach to the roots in (5a-c).

(6)	*-na* adjectivization	*-teki* adjectivization	
a.	zyuunan-**na**	*zyuunan-**teki**	'flexible'
b.	sinsetu-**na**	*sinsetu-**teki**	'kind'
c.	odayaka-**na**	*odayaka-**teki**	'calm'
d.	kyuuto-**na**	*kyuuto-**teki**	'cute'
e.	*keikaku-**na**	keikaku-**teki**	'planned'
f.	*sekkyoku-**na**	sekkyoku-**teki**	'active'
g.	*fuhen-**na**	fuhen-**teki**	'universal'

(6) shows the suffixation of *-na* and *-teki*. As shown in (6), *-na* can attach to the roots in (6a-d), but it cannot attach to the roots in (6e-g). On the other hand, *-teki* can attach to the roots which *-na* cannot attach to, and it cannot attach to the roots which *-na* can attach to.

Moreover, as in (7), *-na* suffixation can takes place in the base containing *-teki*.

(7) keikaku-**teki-na** 'planned', sekkyoku-**teki-na** 'active', fuhen-**teki-na** 'universal'

However, other suffixations to the base containing other suffixes cannot take place as below.

(8) *keikaku-**teki-sa**, *keikaku-**sei-sa**, *keikaku-**sei-na**

There are two issues of these suffixes to be analyzed in this paper. The first issue is the relation between the nominalization suffixes *-sa* and *-sei*, and between the adjectivization suffixes *-na* and *-teki*, which has to do with the examples (1)-(6). I will mainly discuss the origins of these suffixes and the roots, and show that blocking effects (Aronoff 1976) can be observed. The second issue is the different structure of the suffixed form, which has to do with the examples (7) and (8). I will analyze based on the assumption that the root is category-neutral (Embick and Marantz 2008).

2   Blocking Effects among Suffixes

2.1   *Blocking Effects among the Suffixes*   This section will show that blocking effects (Aronoff 1976) can be observed among Japanese suffixes. Especially, two blocking effects between the nominalization suffixes *-sa* and *-sei*, and between the adjectivizing suffixes *-na* and *-teki* are discussed. To discuss this point, let us focus on the lexicon of the Japanese language and the characteristics of the four suffixes depending on their origins. The Japanese lexicon has three groups in terms of their origins: Native Japanese (NJ) words, Sino-Japanese (SJ) words, and non-SJ foreign language (FL) words (Shibatani 1990). According to Shibatani (1990) and Nishio, Iwabuchi, and Mizutani (2011), NJ words are commonly known as *Yamato kotoba* or *wago* in Japanese, and are words of Japanese origin. SJ words are *kango* in Japanese, and they are loanwords from China in the ancient times, or words using the Chinese readings of Chinese characters. FL words are often called *gairaigo*, and they are loanwords mainly from European countries after the middle of the 16th century. Moreover, depending on the origin of the suffixes, each suffix can attach to the roots from the different origins.

(9)	NJ roots	ooraka-sa/*-sei 'tolerance'	odayaka-sa/*-sei 'calmness'	wagamama-sa/*-sei 'selfishness'	atataka-sa/*-sei 'warmth'
	FL roots	kyuuto-sa/*-sei 'cuteness'	ereganto-sa/*-sei 'elegance'	risukii-sa/*-sei 'riskiness'	tafu-sa/*-sei 'toughness'
	SJ roots	zyuuan-sa 'flexibility'	sinsetu-sa 'kindness'	shakai-sei 'sociality'	ningen-sei 'humanity'

(9) shows the nominalization by *-sa* and *-sei*. As indicated, *-sa* can nominalize the NJ root, the FL root, and the SJ root, while *-sei* can nominalize only the SJ root. Similar suffixation is observed in the adjectivizing suffixes in (10).

(10)	NJ roots	ooraka-na/*-teki 'tolerant'	odayaka-na/*-teki 'calm'	wagamama-na/*-teki 'selfish'	atataka-na/*-teki 'warm'
	FL roots	kyuuto-na/*-teki 'cute'	risukii-na/*-teki 'risky'	ereganto-na/*-teki 'elegant'	tafu-na/*-teki 'tough'
	SJ roots	zyuuan-na 'flexible'	sinsen-na 'fresh'	honkaku-teki 'full-scale'	katei-teki 'homely'

In (10), *-teki* can adjectivize the SJ root, and it cannot adjectivizing the NJ root and the FL root. On the other hand, *-na* can adjectivize the NJ root, the FL root, and the SJ root.

In summary, the possible suffixation of the four suffixes is summarized in (11). From the description of the suffixation, it is possible to say that the productivity of the suffixation of the NJ suffixes is higher than the productivity of the suffixation of the SJ suffixes.

(11)

Suffixes	Functions	Origins of the suffixes	Origins of the roots
-sa	Nominalization	NJ	NJ, FL, SJ
-na	Adjectivization		
-sei	Nominalization	SJ	SJ[1]
-teki	Adjectivization		

Based on the observation above, we can say that *-sei* nominalization blocks *-sa* nominalization, and *-teki* adjectivization blocks *-na* adjectivization. (12) and (13) show the nominalizations and adjectivizations by the four suffixes.

(12)   a.   sinsetu-sa   'kindness'   *sinsetu-sei
       b.   sinsen-sa   'freshness'   *sinsen-sei
       c.   zyoobu-sa   'strongness'   *zyoobu-sei
       d.   majime-sa   'seriousness'   *majime-sei
       e.   *ningen-sa   ningen-sei   'humanity'
       f.   *shakai-sa   shakai-sei   'sociality'
       g.   *iden-sa   iden-sei   'hereditary'
       h.   *kyakkan-sa   kyakkan-sei   'objectivity'
       i.   *kinzoku-sa   kinzoku-sei   'metallicity'

From (12), we can observe that if the *-sa* nominalization takes place, the *-sei* nominalization cannot take place, and if the *-sei* nominalization take place, the *-sa* nominalization cannot take place.

(13)   a.   zyuunnan-na   'flexible'   *zyuunan-teki
       b.   sinsetu-na   'kind'   *sinsetu-teki
       c.   sinsen-na   'fresh'   *sinsen-teki
       d.   zyoobu-na   'strong'   *jyoobu-teki
       e.   majime-na   'serious'   *majime-teki
       f.   *ningen-na   ningen-teki   'human-like'
       g.   *shakai-na   shakai-teki   'social'
       h.   *katei-na   katei-teki   'homely'

Similarly, in (13), if *-na* adjectivizations take place, *-teki* adjectivizations cannot take place, and if *-teki* nominalizations take place, *-na* nominalizations cannot take place.[2] According to the section 2 above, *-sei* and *-teki* can attach only to the SJ roots, whereas *-sa* and *-na* can attach to the NJ roots and the FL roots as well as the SJ roots. Thus, the suffixations of *-sei* and *-teki* are more specific than the suffixations of *-sa* and *-na*. Also, once *-sei* or *-teki* suffixation is allowed, *-sa* or *-na* suffixation is not allowed, although *-sa* and *-na* can attach to the SJ roots. Therefore, it is possible to say that the suffixations of the SJ suffixes *-sei* and *-teki* block the suffixation of the NJ suffixes *-sa* and *-na*.[3]

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[1] In casual speech, *-teki* can attach to NJ nouns and FJ nouns. However, in this usage, *-teki* is used to obscure the subject of a sentence (Kitahara 2004).

a. **Watasi-teki** ni wa mondai nai. 'It is no problem **for me**.'

b. **Sukezyuuru-teki** ni wa doudesuka? 'Is it ok **as for the schedule**?'

[2] The limited exception for this blocking effect is the root *sizen*, *heiwa*, and *kenkou*, and these roots can take both *-na* and *-teki*. I will discuss these roots more in section 3.

[3] In Aronoff (1976), blocking takes place between elements in the lexicon. For example, *-ity* suffixation, which derives *curiosity* and *variety*, and the nouns *glory* and *fury* are listed in the lexicon. Since the nouns *glory* and *fury* already exists, *-ity* suffixed form, *gloriosity* and *furiosity* are blocked and cannot exist. Along with this analysis, suffixations of *-sa*, *-na*, *-sei* and *-teki* have to be listed in the lexicon. However, due to the high productivity of these suffixations, it is difficult to assume that these suffixations are in the lexicon. Therefore, this analysis is based on a loose interpretation of the Aronoff blocking, and I focus on the productivity of each suffix.

2.2   *No Blocking Effects: Nominalization by Both -sa and -sei*

2.2.1   *Suffixation of -na, -i, and -sa*   In this section, I will investigate the cases where no blocking effects are observed. The nouns in (14) are derived by the suffixation of *-sa* and *-sei*.

(14)   a.   zyuunan-sa   zyuunan-sei   'flexibility'
      b.   tayou-sa   tayou-sei   'variety'
      c.   tokui-sa   tokui-sei   'peculiarity'
      d.   kakuzitu-sa   kakuzitu-sei   'certainty'
      e.   kiken-sa   kiken-sei   'danger'
      f.   anzen-sa   anzen-sei   'safety'
      g.   hituyou-sa   hituyou-sei   'necessity'

As shown in (14), for a few roots, both *-sa* nominalized form and *-sei* nominalized form can exist, so blocking effects cannot be observed in these examples. This lack of blocking effect is related to the derivational patterns of the suffixation of *-na* and *-sa*. As shown in (15), the Japanese language has two NJ adjectivizing suffixes *-i* and *-na*. Also, as in (16), *-sa* can always nominalize the root which takes *-i* or *-na*.

(15)

NJ roots	oisi-i 'tasty'	tanoshi-i 'pleasant'	ooraka-na 'tolerant'	odayaka-na 'calm'
FL roots	kyuuto-na/*-i 'cute'	ereganto-na/*-i 'elegant'	risukii-na/*-i 'risky'	tafu-na/*-i 'tough'
SJ roots	zyuunan-na/*-i 'flexible'	sinsetu-na/*-i 'kind	sinsen-na/*-i 'fresh'	kouka-na/*-i 'expensive'

Here, *-i* can adjectivize only NJ roots, and it cannot attach to the FL roots and the SJ roots, whereas *-na* can attach to the FL roots and the SJ roots as well as the NJ roots. Also, these roots which take *-i* or *-na* to be adjectivized can always take *-sa* to be nominalized as below.

(16)   Adjectives   Nominalized form
      a.   oisi-**i**   oisi-**sa**   'tastiness'
      b.   kawai-**i**   kawai-**sa**   'prettiness'
      c.   tanoshi-**i**   tanoshi-**sa**   'pleasantness'
      d.   isogashi-**i**   isogashi-**sa**   'business'
      e.   ooraka-**na**   ooraka-**sa**   'tolerance'
      f.   odayaka-**na**   odayaka-**sa**   'calmness'
      g.   wagamama-**na**   wagamama-**sa**   'selfishness'
      h.   kyuuto-**na**   kyuuto-**sa**   'cuteness'
      i.   ereganto-**na**   ereganto-**sa**   'elegance'
      j.   risukii-**na**   risukii-**sa**   'riskiness'
      k.   tafu-**na**   tafu-**sa**   'toughness'
      l.   zyuunan-**na**   zyuunan-**sa**   'flexibility'
      m.   sinsetu-**na**   sinsetu-**sa**   'kindness'
      n.   sinsen-**na**   sinsen-**sa**   'freshness'

Since the roots in (16a-d) take *-i* to be adjectivized, they can take *-sa* as well to be nominalized. Also, since the roots in (16e-n) take *-na* to be adjectivized, they can take *-sa* to be nominalized. Therefore, we can observe a constant derivational pattern of the suffixation of *-na* and *-sa*: if *-na* adjectivization is possible, *-sa* nominalization is always possible.

2.2.2   *Analysis of the Lacking of Blocking Effects*   The lack of blocking effects in (14) (repeated below as (17)) can be explained by the derivational pattern of *-na* and *-sa* observed above.

(17)   a.   zyuunan-sa   zyuunan-sei   'flexibility'
       b.   tayou-sa   tayou-sei   'variety'
       c.   tokui-sa   tokui-sei   'peculiarity'
       d.   kakuzitu-sa   kakuzitu-sei   'certainty'
       e.   kiken-sa   kiken-sei   'danger'
       f.   anzen-sa   anzen-sei   'safety'
       g.   hituyou-sa   hituyou-sei   'necessity'

The roots in (17) are of SJ origin, so it can take *-sei* to be nominalized as (18) below.

(18)   a.   zyuunan-sei   'flexibility'   e.   kiken-sei   'danger'
       b.   tayou-sei   'variety'   f.   anzen-sei   'safety'
       c.   tokui-sei   'peculiarity'   g.   hituyou-sei   'necessity'
       d.   kakuzitu-sei   'certainty'

When these roots are adjectivized, they do not take *-teki*, so *-na* adjectivization is not blocked. Therefore, *-na* attaches to the roots in (17) as (19) below.

(19)   a.   zyuunan-na/*teki   'flexible'   e.   kiken-na/*teki   'dangerous'
       b.   tayou-na/*teki   'various'   f.   anzen-na/*teki   'safe'
       c.   tokui-na/*teki   'peculiar'   g.   hituyou-na/*teki   'necessary'
       d.   kakuzitu-na/*teki   'certain'

If *-na* adjectivization is possible, *-sa* nominalization is always possible, so as in (20), *-sa* nominalization can take place on the roots in (17) although these roots have already taken *-sei*.

(20)   a.   zyuunan-sa   'flexibility'   e.   kiken-sa   'danger'
       b.   tayou-sa   'variety'   f.   anzen-sa   'safety'
       c.   tokui-sa   'peculiarity'   g.   hituyou-sa   'necessity'
       d.   kakuzitu-sa   'certainty'

To summarize, the roots in (17) can take both *-sei* and *-sa* to be nominalized because they are nominalized by *-na*. In other words, the nominalizations by both *-sa* and *-sei* are possible only for those roots that allow *-na* adjectivization.

This section has discussed the relation between the nominalization suffixes *-sa* and *-sei*, and between the adjectivization suffixes *-na* and *-teki*, and showed that blocking effects can be observed among the suffixes. As for the cases that blocking effects are not observed, we can explain in terms of the derivational pattern of the suffixation of *-na* and *-sa*.
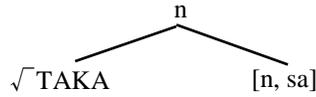
3   Categorization and Structure of the Suffixed Form

3.1 *Roots and Categories*   In this section, I will focus on the structure of the suffixed form of *-sa*, *-na*, *-sei*, and *-teki*, and explain why the NJ suffixes *-sa* and *-na* behave differently towards the SJ suffixes *-sei* and *-teki*. Before discussing the suffixed form, let us look at how roots are categorized based on the hypothesis of Embick and Marantz (2008), etc. It has been assumed that roots are category-neutral, and the category-defining head, which is for example n for a noun, a for an adjective, defines grammatical categories of roots (Embick and Marantz 2008, Arad 2005, etc.). For example, Embick and Marantz (2008) illustrate the representations of *cover* and *coverage* as below.

(21)
      a. Structure for *cover*   b. Structure for *coverage*

           n   n

 √ COVER   [n, Ø]   √ COVER   [n, age]

The root *cover* is devoid of the grammatical category in (21). In (21a) *cover* merges with the category-defining head of n, which is realized as a zero-morpheme, while in (21b), *cover* merges with the category-defining head of n, which is realized as *-age*. Based on this assumption, Japanese adjective and noun are represented as follows.
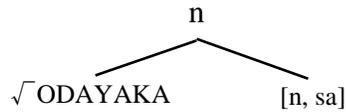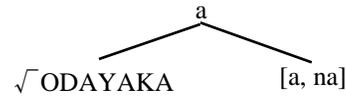
(22)   a. Structure for noun *takasa* 'height'   b. Structure for adjective *takai* 'high'

<div align="center">

n

√ TAKA   [n, sa]
</div>

<div align="center">

a
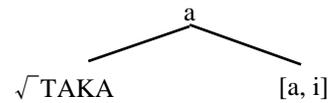
√ TAKA   [a, i]
</div>

(23)   a. Structure for noun *odayakasa* 'calmness'   b. Structure for adjective *odayakana* 'calm'

<div align="center">

n

√ ODAYAKA   [n, sa]
</div>

<div align="center">

a

√ ODAYAKA   [a, na]
</div>

As indicated above, the root *taka* and *odayaka* lack grammatical category. As in (22a) and (23a), the roots can exist as nouns *taka-sa* and *odayaka-sa*, by combining with the category-defining head, which is represented as *-sa*. Similarly, in (22b) and (23b), by combing with the category-defining head of a, these roots can exist as adjectives. In (22b), a is realized as *-i*, while in (23b), a is realized as *-na*.

3.2   *Categorization of SJ Suffixation*   Based on the categorization mentioned in 3.2, how are the categorization by the SJ suffixes explained? In section 2, we regarded SJ suffixes *-sei* and *-teki* are suffixes, which have the same grammatical function as *-sa* and *-na* respectively. It means that the structures of *sekkyoku-sei* and *sekkyoku-teki* are represented as below.

(24)   a. Hypothetical structure for   b. Hypothetical structure for
               noun *sekkyokusei* 'activeness'   adjective *sekkyokuteki* 'active'

<div align="center">

n

√ SEKKYOKU   [n, sei]
</div>

<div align="center">

a
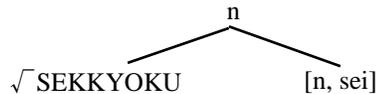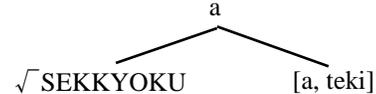
√ SEKKYOKU   [a, teki]
</div>

(24) shows that category-neutral root *sekkyoku* merges with the category-defining head n and a, and realize as *sekkyoku-sei* and *sekkyoku-teki*. However, the following examples show that *-sei* and *-teki* are more like elements of compounds rather than category-changing suffixes. One of the familiar phenomena of Japanese accentuation is the disappearance of the pitch falling of the first compound member (Kubozono 1998, Ito and Mester 2007). (25) shows the accentuation of compounds and simplex words.

(25)

Simplex word		Compound
a.	ge'ngo	kyouiku	gengo-kyo'uiku 'language education'
b.	ka'igai	ryokou	kaigai-ryokou 'overseas trip'
c.	ke'izi	do'rama	keizi-do'rama 'detective drama'
d.	a'sa	go'han	asa-go'han 'breakfast'

(" ' " indicates pitch falling)

In (25), the pitch falling disappears when the simplex word appears as the first member of the compound. On the basis of this observation, take a look at the following examples.

(26)	Zero suffixed	-*Sa* suffixed	-*Na* suffixed
a.	ziyu'u-∅	ziyu'u-sa	ziyu'u-na
b.	anzen-∅	anzen-sa	anzen-na
c.	hima-∅	hima-sa	hima-na
d.	si'nsetu-∅	sinsetu'-sa	si'nsetu-na
e.	me'iwaku-∅	meiwaku'-sa	me'iwaku-na

(27)	Zero suffixed	-*Sei* suffixed	-*Teki* suffixed
a.	sha'kai-∅	shakai-sei	shakai-teki
b.	ki'so-∅	kiso-sei	kiso-teki
c.	ki'soku-∅	kisoku-sei	kisoku-teki

-*Sa* has no effect on the accentuation of the root as in (26a-c) or moves the pitch fall to the final syllable of the root as in (26d-e)[4]. -*Na* has no effect on the accentuation of the root, and the pitch patterns of the root and -*na* adjectivized form are the same. On the other hand, as in (27), although the root has pitch falling, once the root combines with -*sei* and -*teki*, the pitch falling of the root disappears, which is in the same way as the first compound member loses the pitch falling when it compounds with the second member.

From these observations, it is assumed that -*sei* suffixed form and -*teki* suffixed form are compound-like elements. In this section, I postulate the following structure for -*sei* suffixed form and -*teki* suffixed form.

(28) a. Structure for noun *sekkyokusei* 'activeness'   b. Structure for adjective *sekkyokuteki* 'active'

Here, -*sei* and -*teki* do not have any grammatical function. The root *sekkyoku* combines with -*sei* first, after that category-defining head which is represented as the zero-morpheme merge with *sekkyoku-sei*. Similarly, after the combination of *sekkyoku* and -*teki, sekkyoku-teki* merge with the category-defining head, which is represented as the zero-morpheme in (28b). Since the -*sei* suffixed form and the -*teki* suffixed form are not the smallest unit of words, they are not roots. However, they can be regarded as "combined roots" (Yoshida and Hirose 2018) due to the lack of grammatical category.

3.3 *Analysis of Categorization*   In this section, I analyze the categorization by nominalizing suffixes, adjectivizing suffixes, and the zero-morpheme. Also, I will discuss the range of selecting category-defining head which the root has, and examine why there are differences of the possible categorization among the roots.

Let us begin with the analysis on the nominalization. As in (29), the productivity of the nominalization suffix -*sa* is high, and can attach to the compound as well as the root.

(29) samu-sa 'coldness', taka-sa 'height', odayaka-sa 'calmness', oroka-sa 'foolish', sinsetu-sa 'kindness', zyuunan-sa 'flexibility', daitan-sa 'daring', riaru-sa 'reality', kuriin-sa 'cleanness', gaman-zuyo-sa [5]

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[4] Basically, the accentuation caused by -*sa* nominalization is the same with the accentuation caused by -*i* adjectivization: *kawai'-i* 'cute' and *kawa'-sa* 'cuteness', and *muzukasi'-i* 'difficult' and *muzukasi'-sa* 'difficulty'. However, if the root has two mora, the pitch falling occurs between the first mora and the second mora. For example, the nominalized form of *samu'-i* 'cold' is *sa'mu-sa* 'coldness', and the nominalized form of *nemu'-i* 'sleepy' is *ne'mu-sa* 'sleepiness' (See Akinaga (2014) for details). Whatever happens, accentuation by -*sa* suffixation is different from the accentuation of compounding and suffixation of the SJ suffixes.

[5] By the phenomenon *rendaku* (sequential voicing), the first consonant of the second member [ts] is voiced and pronounced as [dz].
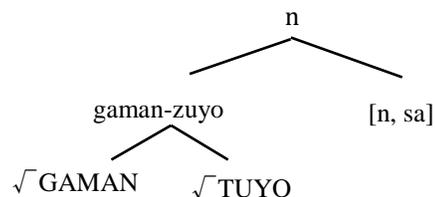
'patient-ness', ao-kusa-sa 'unskilled-ness', baka-teinei-sa 'awful politeness'

Based on the previous section, the structures of *-sa* nominalization is as in (30).

(30)   a. Structure for noun *nagasa* 'length'
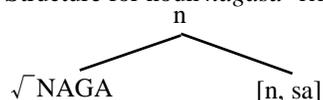
b. Structure for noun *gamanzuyosa* 'paitient-ness'

However, *-sa* cannot attach to the *X-sei* form as below.

(31) *sekkyoku-sei-sa, *sinpyoo-sei-sa, *anzen-sei-sa

Also, nouns in below cannot take *-sa*.

(32) *daigaku-sa, *yuuzyou-sa, *bizinesu-sa
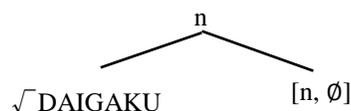(cf. daigaku 'university', yuuzyou 'friendship', bizinesu 'business')

Since they can exist as nouns without *-sa* or other suffixes, it is assumed that a zero-morpheme attach to the noun as a category-defining head of noun. The structures of them are as follows.

(33)   a. structure for noun *sekkyokusei* 'activeness'
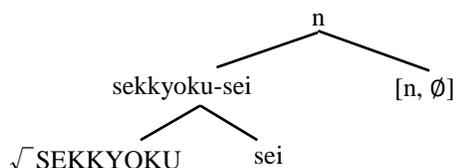
b. Structure for noun *daigaku* 'university'

Not all roots can take -∅ to be nominalized, and we cannot specify when -∅ nominalization can take place, it is assumed that the -∅ nominalization is more specific than *-sa* nominalization. Moreover, although *-sa* can attach to the compound as well as a single word, once zero-morpheme attach to the root or compound as a category-defining head, *-sa* cannot attach to them as a category-defining head of n. Therefore, zero-morpheme suffixation blocks *-sa* suffixation.

   Similarly, the adjectivization can be explained by the hypothesis that the root is category-neutral. As in (34), the productivity of the nominalization suffix *-na* is high, and can attach not only to a single word, but also to a compound.

(34) odayaka-na 'calm', oroka-na 'fool', sinsetu-na 'kind', daitan-na 'daring', riaru-na 'real', kuriin-na 'clean', oo-majime-na 'deadly serious', baka-teinei-na 'awfully polite'

The structure of *-na* suffixation is as follows.

(35)   Structure for adjective *odayakana* 'calm'
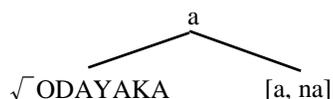
Also, as in (36), it can attach to the compound and the *X-teki* form word, though *-sa* cannot attach to the *X-sei* form word. Moreover, the *X-teki* form can exist without *-na* suffixation. Therefore, taking *sekkyoku-teki* and *sekkyoku-teki-na* for example, the suffixation of the *X-teki* form and the *X-teki-na* form can be

illustrated as follows.

(36)   a. Structure for adjective *sekkyokuteki* 'active'   b. Structure for adjective *sekkyokutekina* 'active'

<div style="text-align:center">

a
/ \
sekkyoku-teki   [a, ∅]
/ \
√SEKKYOKU   teki

a
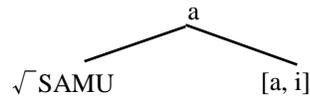/ \
sekkyoku-teki   [a, na]
/ \
√SEKKYOKU   teki

</div>
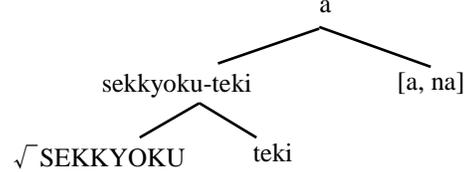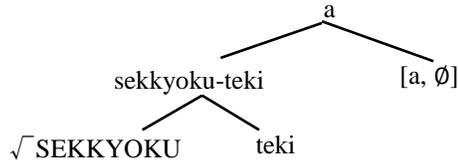
Let us investigate *-i* adjectivization, which is another NJ suffixation for adjectivize. As mentioned in 2.2.1, there are two NJ adjectivizing suffixes in Japanese, which are *-i* and *-na*.

(37)   <u>*-I* suffixation</u>   <u>*-Na* suffixation</u>
     a.   samu-i 'cold'   *samu-na
     b.   taka-i 'high'   *taka-na
     c.   utukusi-i 'beautiful'   *utukusi-na

The roots in (37) are words of NJ origin. Although *-na* can attach to the NJ origin root, once *-i* adjectivization takes place, *-na* adjectivization is not allowed, so *-i* suffixation blocks *-na* suffixation. The structure of the adjective in (37a) is as follows.

(38)   a. Structure for adjective *samui* 'cold'   b. Structure for *samuna*

<div style="text-align:center">

a
/ \
√SAMU   [a, i]

a
/ \
√SAMU   [a, na]

</div>
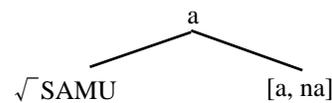
The root *samu* merges with the category-defining head of a. The category-defining head is realized *-i*, so *-na* cannot realize as the category-defining head of a.

3.4   *Range of Selecting the Category-Defining Head*   As analyzed in the previous section, it is the root that selects the category-defining head. The examples below show that the root can select the category-defining head of both n and a.

(39)   <u>Noun</u>   <u>Adjective</u>
     a.   samu-sa 'coldness'   samu-i 'cold'
     b.   utukusi-sa 'beauty'   utukusi-i 'beautiful'
     c.   zyoobu-sa 'strength'   zyoobu-na 'strong'
     d.   kanpeki-sa 'perfection'   kanpeki-na 'perfect'

The roots in (39) can merge with a and n, and can exist as a noun and an adjective. However, as in the example as the previous section, in which the *X-teki* form cannot take *-sa*, there are also roots that although they cannot select the category-defining head of n, they can select the category-defining head of a. Based on the assumption that the root and the combined root are category-neutral, the reason why *X-teki* cannot exist as a noun has to do with the range of the selection of the category-defining head. In other words, the category-defining head of n is not included in the possible selecting range of *X-teki*. The following examples will help clarify this analysis.

     As analyzed in the previous section, *-teki* suffixation blocks *-na* suffixation, but there are a few exceptions in which the root can take both *-na* and *-teki* as shown below.

(40)   <u>*-Na* suffixation</u>   <u>*-Teki* suffixation</u>

a.	sizen-na	sizen-teki	'natural'
b.	heiwa-na	heiwa-teki	'peaceful'
c.	kenkou-na	kenkou-teki	'healthy'

These roots can take *-sa* to be nominalized as in (41).

(41) sizen-sa 'naturalness', heiwa-sa 'peace', kenkou-sa 'health'

On the other hand, once the root take *-teki*, the *X-teki* form cannot take *-sa*, though it can take *-na*, as shown below.

(42) | | _-Na_ suffixation | _-Teki_ suffixation |
|-----|-------------------|---------------------|
| a. | *sizen-teki-sa | sizen-teki-na |
| b. | *heiwa-teki-sa | heiwa-teki-na |
| c. | *kenkou-teki-sa | kenkou-teki-na |

Therefore, these roots *sizen*, *heiwa*, *kenkou* can select the category-defining head of n, but after *-teki* suffixation takes place on them, the *X-teki* form cannot take *-sa*, because the *X-teki* form cannot select the category-defining head of n. Similarly, there are roots that can select only the category-defining head of n but cannot select a. Moreover, some roots cannot select either of them, as in (43).

(43) | | Noun | Adjective |
|-----|------|-----------|
| a. | daigaku-∅ 'university' | *daigaku-na/-teki |
| b. | sekkyoku-sei-∅ 'activeness' | *sekkyoku-sei-na/-teki |
| c. | *tabe-∅/-sa | *tabe-teki/-na |
| | | (cf. tabe-ru is a verb meaning 'to eat'.) |

The root *daigaku* and the combined root *sekkyoku-sei* have the choice of selecting the category-defining head of n, so they can merge with n, which is represented as zero-morpheme. However, they do not have the choice of selecting the category-defining head of a, so they cannot merge with a. In the case of (43c), the root *tabe* cannot select either a or n. However, it can select the category-defining head of v (verb), so it merges with v which is represented as *-ru*, and exists as the verb *tabe-ru* 'to eat'.

3.5 *Analysis of the Lacking of Blocking Effects*   In this section, let us explore the cases where no blocking effect is observed. As in (44), there are roots that can take both zero-morpheme and *-sa* to be nominalized, and can take both zero-morpheme and *-na* to be adjectivized.

(44)
   a.   keikaku-∅/-sa, sinsetu-∅/-sa, zyuunan-∅/-sa
   b.   sekkyoku-teki-∅/-na, fuhen-teki-∅/-na, koten-teki-∅/-na

We can explain these examples in terms of the different meaning of the suffixed forms, as shown below.

(45)
   a.   keikaku-∅ ga aru. 'to have a plan.'
   b.   keikaku-sei ga aru 'be good at planning ahead.'

(46)
   a.   kimi no sinsetu-∅ 'your kind action'
   b.   kimi no sinsetu-sa 'your kind personality'

In these examples, the meanings of the zero-morpheme nominalized form and the *-sa* nominalized form are different, so they are not counterexamples for blocking effects. A similar observation is made by Takahashi (2005), as in the examples below.

(47)
  a. sekkyoku-teki-na hito 'friendly person'
  b. *sekkyoku-teki-Ø hito (cf. sekkyoku-teki-Ø zinbutu 'friendly person' is acceptable.)
(48)
  a. fuhen-teki-na kimari 'universal rule'
  b. *fuhen-teki-Ø kimari   (cf. fuhen-teki-Ø kisoku 'universal rule' is acceptable.)

In (47), *hito* is a NJ origin word for 'person', and *zinbutu* is a SJ origin word for 'person'. In (48), both *kimari* and *kisoku* mean 'rule', but *kimari* is a word of NJ origin, and *kisoku* is a word of SJ origin. From these observations we can conclude that, the *X-teki-na* form can modify both NJ origin nouns and SJ origin nouns, but it is difficult for the *X-teki-Ø* form to modify NJ origin nouns. Therefore, the *X-teki-Ø* adjective and the *X-teki-na* adjective do not share the same function[6].

  This section has discussed the suffixation of *-sa*, *-sei*, *-na*, and *-teki* in terms of the structure of the suffixed form by these suffixes. From the observation of the accentuation of *-sei* suffixation and *-teki* suffixation, we can call the *X-sei* form and the *X-teki* form "combined roots", and explain why *-sa* and *-na* suffixations behave differently when used with *-sei* and *-teki* suffixations. The assumption that the root is category-neutral shows that the root can exist as a noun, an adjective or other categories, because the root selects and merges with the category-defining head. On the other hand, the root cannot exist as a noun or an adjective because the root cannot select the category-defining head. Also, the semantic difference can explain the cases where no blocking effect is observed.

4 Conclusion

  This paper has investigated the category-changing suffixes in Japanese, which are *-sa*, *-sei*, *-na*, and *-teki*. We have pointed out that the origins of these suffixes and the roots are one of the factors in the acceptability for the suffixation, and the suffixation of the SJ suffixes *-sei* and *-teki* blocks the suffixation of the NJ suffixes *-sa* and *-teki*. As for the cases where no blocking effect is observed, we have shown that the constant derivation patterns of *-na* and *-sa* causes the coexistence of the *-sa* nominalized forms and *-sei* nominalized form. Also, based on the assumption that the root is category-neutral, we have explained why only the *-na* suffixation to the *X-teki* form is possible, although other suffixes cannot attach to the base containing different suffixes. Moreover, under the assumption that the root is devoid of a category, we have discussed that the root selects the category-defining head. Hence, if a root can select the category-defining head of n, the root can exist as a noun, but if the root cannot select n, the root cannot exist as a noun. The semantic difference affects the coexistence of words which have the same structure and the category-defining head. Through this study, we have revealed that the suffixation of the category-changing suffixes in Japanese takes place systemically, and can be explained based on the linguistics framework. However, Japanese has other category-changing suffixes, which their origins are not only NJ and SJ, but also FL. The analysis would benefit from further research on these suffixes.

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[6] For a more detailed analysis of the difference between *X-teki-Ø* and *X-teki-na*, see Kageyama (1993) and Takahashi (2005).

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