

琉球大学学術リポジトリ

日本語動詞接辞に伴うアクセント移動

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Accent Shift in Japanese Verbal Affixation*

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1. Introduction

New developments in the theories of phonology have tremendously progressed understanding of phonological phenomena in the last two decades. For instance, Autosegmental Phonology, according to which a tone is regarded as an autosegment independent of a bundle of features of a segment, has contributed to a better comprehension of tonal phonology in various languages (see Goldsmith (1976, 1982, 1990), Halle and Vergnaud (1982), van der Hulst and Smith (1988), and many others). The tonal phonology of Japanese has benefited from such theoretical developments. The tonal system or accentuation in Japanese has been studied in the theoretical framework of Autosegmental Phonology since the theory was established. See for example Haraguchi (1977, 1988), Abe (1986), and Clark (1986).

Furthermore, the development of Underspecification Theory has allowed for better understanding of the representation of segments, where values of some features may not be specified in the underlying representation (see Kiparsky (1982a, 1982b, 1985) and Archangeli (1984, 1988) among others). Pulleyblank (1983, 1986) applies the theory to the analyses of pitch accent system. He demonstrates that the tonal patterns in pitch-accent languages such as Japanese are attributed to the position of a high tone (or a low tone) linked to a tone bearing unit (TBU). Assuming Pulleyblank's theory of underspecification in tonal phonology, Ishihara (1991) presents accounts of the pitch accent system in Japanese verbs. Following these previous works, I assume in this paper that the position of a

linked high tone determines the tonal patterns in Japanese. I also assume, following Kurata (1986), Ishihara (1991), and Kubozono (1993) that the TBU in Japanese is a mora, not a syllable nor a vowel.

This paper presents an account of accent shift which is seen in some types of verbal affixation in Japanese. As reported in numerous dictionaries of accent in Japanese such as NHK (1985) and Kindaichi (1981), some types of verbal suffixation in Japanese are accompanied by accent shift as illustrated by the examples in (1). Vowels contained in accented moras are underlined in the figures. (In the text, I use expressions such as "accented vowels" and "the vowels are accented". However, it does not mean that high tones are directly linked to the vowels. They are rather indirectly linked to vowels: the high tones are associated with moras which dominate the vowels.)

(1) Accent shift

- a. sirabe "examine"
- b. sirabe-sase "examine-causative"
- c. sirabe-nagara "examine-while"
- d. sirabe-mas "examine-copulative"
- e. sirabe-reba "examine-subjunctive"
- f. sirabe-ru "examine-present"

Notice here that the position of TBU's differs. In some cases, the first vowel of the suffix is accented (1b-d), while in other cases the last vowel of the stem is accented (1e-f). In the following section, I will show why such variation occurs.

2. Two Types of Suffixes

There are two types of suffixes that trigger accent shift. Some

suffixed verbs are always accented, while others are accented only if the stem is accented. Poser (1984) states that suffixes of the former types are accented but those of the latter type are unaccented¹. What he means here is that an accented affix itself has an underlying high tone whereas an unaccented affix does not. I have provided examples of accentuation in words with an accented stem and an unaccented stem in (2) and (3), respectively.

(2) When the stem is accented

- a. sirabe-mas "examine-copulative"
- b. sirabe-yoo "examine-volitional"
- c. sirabe-reba "examine-subjunctive"
- d. sirabe-rare "examine-passive"
- e. sirabe-sase "examine-causative"
- f. sirabe-nagara "examine-while"
- g. sirabe-ru "examine-present"

(3) When the stem is unaccented

- a. kurabe-mas "compare-copulative"
- b. kurabe-yoo "compare-volitional"
- c. kurabe-reba "compare-subjunctive"
- d. kurabe-rare "compare-passive"
- e. kurabe-sase "compare-causative"
- f. kurabe-nagara "compare-while"
- g. kurabe-ru "compare-present"

These examples show that suffixes *-mas* "copulative", *-yoo* "volitional", and *-reba* "subjunctive" are accented, while *-rare* "passive", *-sase* "causative", *-nagara* "while", and *-ru* "present"

are unaccented. In the following two subsections I will discuss accentuation in words with accented suffixes and one in words with unaccented suffixes. The discussion is focused on accentuation in words with accented stems since our concern in this paper is with accent shift.

2.1. Accentuation in Words with Accented Suffixes

Interaction of three factors is crucial for producing words with correct accentuation. They are delinking of a high tone in the stem, the representation of tones in the suffixes, and invisibility of some tone bearing units. The first factor is a result of a rule which I refer to as *High Tone Delinking* (HTD). This rule makes a high tone disassociated from a TBU when a new phonological domain is created due to suffixation. The HTD is formulated as in (4). In the figure, an "m" and an "H" stand for a mora and a high tone, respectively; "sfx" is an abbreviation of "suffix": The subscribed variable P_{n+1} indicates that a new prosodic (or phonological) domain -- where phonological rules apply -- is created due to affixation (see Inkelas (1989) and Ishihara (1991)).

(4) High Tone Delinking

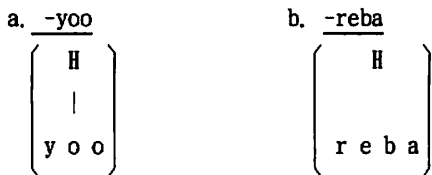
$$\left(\begin{array}{c} H \\ | \\ \dots m \end{array} \right)_{P_n} \quad \text{--->} \quad \left(\begin{array}{c} H \\ \dots m\text{-sfx} \end{array} \right)_{P_{n+1}}$$

As a consequence of this rule, the high tone in the stem is floating when a new phonological domain is created.

The second factor is the underlying representation of accented suffixes. These affixes are divided into two subsets with respect to

their underlying representations (URs). In one of them, the high tone is linked to a mora in the UR, while the high tone is floating underlyingly in the other type of accented suffixes. The former includes *-mas* "copulative", *-yoo* "volitional", and *-bakari* "only"; the latter includes *-reba* "subjunctive", and *-ro/e* "imperative"². For example, underlying tonal representations of suffixes *-yoo* and *-reba* are presented in (5a) and (5b), respectively³.

(5)



The motivation for such URs is the position of accent. For suffixes with linked high tones, the accent is always on TBU's in the suffixes (see (6a-c)). On the contrary, for suffixes with floating high tones, the accent may appear on a TBU in the stem (see (6d-e)).

(6)

- a. sirabe-mas "examine-copulative"
- b. sirabe-yoo "examine-volitional"
- c. sirabe-ru-bakari "examine-present-only"
- d. sirabe-reba "examine-subjunctive"
- e. sirabe-ro "examine-imperative"

The discussion below presents how the UR of the suffixes affects accentuation.

When a suffix has a linked high tone, the accent is always on

the tone bearing unit in the suffix as demonstrated by the forms in (7).

(7)

- a. tabe-yoo "eat-volitional"
- b. sirabe-yoo "examine-volitional"
- c. tabe-mas "eat-copulative"
- d. sirabe-mas "examine-copulative"
- e. tabe-ru-bakari "eat-present-only"
- f. sirabe-ru-bakari "examine-present-only"

I claim that accentuation in the complex words in (7) is the result of the interaction of two rules and the UR of the suffixes where the high tone is linked. One of the rules is HTD formulated in (4). The other rule, which I refer to as *Floating High Tone Deletion* (FHTD), is presented in (8). (In the representation of tonal rules, linked tones are underlined, while free tones are not marked at all.)

(8) *Floating High Tone Deletion*⁴

H --> 0 / H

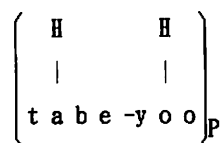
This rule deletes a floating high tone when it is adjacent to a linked high tone.

The interaction of the rules and the UR is illustrated by the derivation of *tabe-yoo* "eat-volitional" provided below in (9). What the derivation shows is how the suffix high tone, not the stem high tone, surfaces when the stem and the suffix are both accented and the suffix high tone is linked. First, suffixation triggers delinking of the high tone linked to the penultimate TBU in the stem (see (9a-b)).

As a result, the domain contains two high tones: a floating high tone and a linked high tone. The former is deleted by FHTD as illustrated by the derivation in (9b-c). In the figure, subscribed P's indicate prosodic or phonological domains where phonological rules apply (see Inkelas (1989) and Ishihara (1991)).

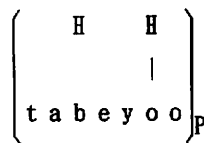
(9)

a.



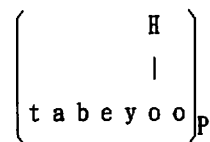
==>

b.



==>

c.



The output is, therefore, *tabeyoo* with the accent on the penultimate mora.

We have another set of accented suffixes which includes *-reba* "subjunctive", *-ro/e* "imperative", and *-rasi* "estimative". With this type of suffix, the underlying high tone is not linked to any TBU as illustrated in (5b). Instead, it is floating. If the stem is accented, the placement of the accent depends on whether or not any TBUs are invisible or extraprosodic. Examples of accentuation of this type of suffixation are presented in (10)⁵.

(10)

- a. tabereba "eat-subjunctive"
- b. sirabereba "examine-subjunctive"
- c. tabero "eat-imperative"
- d. sirabero "examine-imperative"
- e. taberu-rasi "eat-present-estimative"
- f. siraberu-rasi "examine-present-estimative"

Notice that the last mora of the subjunctive suffix *-reba* is invisible since the accent is on the antepenultimate mora -- the domain contains only two, not three, high tones. Concerning the invisibility, it is possible that the last mora is put out of the domain by a rule. Adopting *Derivational Simplicity Criterion* stated in (11), however, I propose that the mora is underlyingly out of the domain.

(11) *Derivational Simplicity Criterion* (Kiparsky (1982a:57))

Among alternatives, the grammar chooses the simplest derivation.

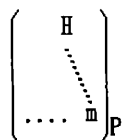
If invisibility is underlying, then the derivation does not require a rule to put the final mora out of the domain. In other words, the derivation with underlying invisibility is simpler than with a rule. I assume, following Inkelas (1989, 1990) and Ishihara (1991), that part of a suffix may be out of the domain in the UR. Thus, the subjunctive suffix *-reba* has the following underlying representation.

(12) (Phonological) representation of *-reba*

$$\left(\begin{array}{c} \text{H} \\ \text{r e} \end{array} \right)_{\text{p}} \text{ b a}$$

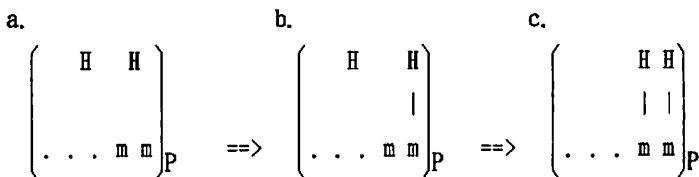
The accent pattern in the complex words in (10) are ascribable to the interaction of three tonal rules, invisibility (if any), and underlying representation of the suffixes. The effect of High Tone Delinking has already been demonstrated above. The other two rules are *High Tone Association* (HTA) and *Second Linked High Tone Deletion* (SLHTD). The former, formulated in (13), says that a floating high tone gets linked to the rightmost *available* TBU in the domain.

(13) *High Tone Association*



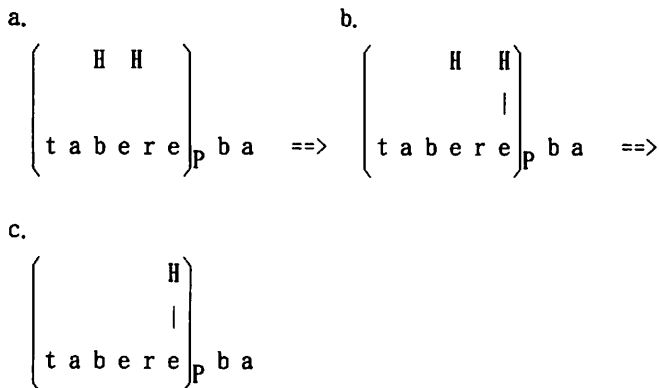
I assume that when the domain contains two floating high tones, they get associated with rightmost available moras by turns. Thus, the second high tone is linked to the final mora and the first high tone to the penultimate mora in the domain as shown in (14).

(14)



The representation in (14b) leads us to a prediction that Floating High Tone Deletion applies and the free tone in the domain will be deleted. If this is the case, the output would be as illustrated in (15).

(15)



As the examples in (10) show, however, this is not the case: the accent should be on the final mora of the stem, not on the first mora of the suffix. In other words, it appears that FHTD does not take effect in (15b). Thus, I conclude that HTA applies after FHTD.

The last rule involved in the accentuation of the complex words in (10) is *Second Linked High Tone Deletion*. As shown in the formulation of the rule in (16), when the domain has two linked high tones, the second deletes.

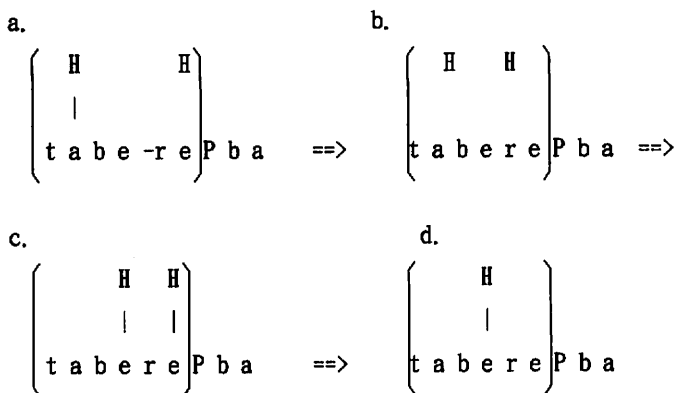
(16) *Second Linked High Tone Deletion*

$\underline{H} \quad \text{---} \rightarrow \quad 0 / \underline{H} _$

The following derivation of accent of the word *tabereba* "eat-subjunctive" shows how the stem high tone, not the suffix high tone, surfaces when the stem and the suffix are both accented and the suffix high tone is floating. First, suffixation triggers delinking of the high tone in the stem (see (17a-b)). At this stage, delinking results in two floating high tones, as illustrated in (17b), since

the suffix tone is not linked. Neither of the two high tones is deleted by FHTD; since neither high tone is linked, the structural description of the deletion rule is not met. Then, High Tone Association links the two floating high tones to TBU's from right to left (see (17b-c)). Finally, the second linked high tone is deleted by SLHTD as illustrated by the derivation in (17c-d).

(17)



The output is, therefore, *tabereba* with accent on the antepenultimate mora.

In summary, in accentuation of words with accented suffixes, several factors interact in order to derive the correct accent. They are the following: delinking of the stem high tone, the underlying representation of suffixes (i.e. whether or not the suffix high tone is underlyingly linked), and three other tonal rules (Floating High Tone Deletion, Second Linked High Tone Deletion, and High Tone Association). Each deletion rule deletes a high tone when the domain contains two high tones. Which rule applies depends on which tones are linked. In the next section, I will present an account of

accentuation in words with unaccented suffixes, which also trigger delinking of the stem high tone.

2.2. Accentuation in Words with Unaccented Suffixes

As briefly mentioned above, some suffixes do not have underlying high tones. Words with such suffixes are accented only if the stems are accented. Their accentuation depends on invisibility of some TBU's as demonstrated by the examples in (18).

(18) Accented stem

- a. sirabe "examine"
- b. sirabe-ru "examine-present"
- c. sirabe-sase "examine-causative"
- d. sirabe-nagara "examine-while"
- e. sirabe-sase-ru "examine-causative-present"
- f. sirabe-sase-nagara "examine-causative-while"

Notice that forms in (18e-f) have more than one suffixes. By contrast, if the stem is unaccented, the suffixed word is also unaccented as shown in (19).

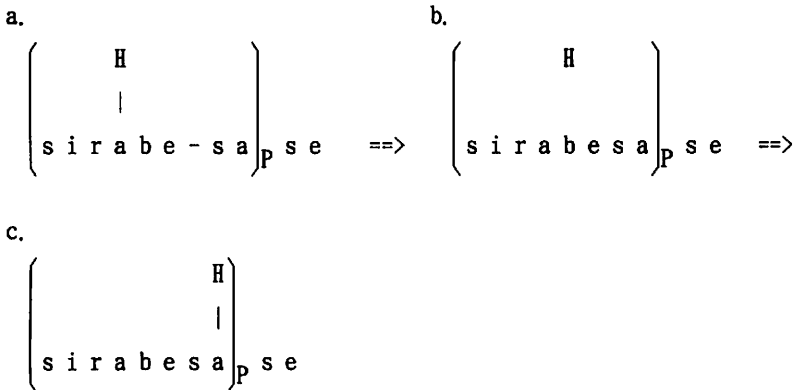
(19) Unaccented stem

- a. kurabe "compare"
- b. kurabe-ru "compare-present"
- c. kurabe-sase "compare-causative"
- d. kurabe-nagara "compare-while"
- e. kurabe-sase-ru "compare-causative-present"
- f. kurabe-sase-nagara "compare-causative-while"

This type of suffixes includes *-sase* "causative", *-ru* "present", *-nagara* "while", and many others. The discussion in this section is focused on how invisibility, or extraprosodicity, affects accentuation. The forms in (19) demonstrate two kinds of invisibility. The words with *-sase* and *-ru* show examples of extraprosodicity of a single mora; the words with *-nagara* demonstrates that two moras are out of the domain. In this section, I will discuss only accentuation in words with *-sase* suffixation since the purpose of this paper is to show how accent shift takes place.

Concerning invisibility of a single mora in the causative suffix, I assume that invisible part is out of the domain in underlying representation (cf. discussion of the underlying invisibility in *-reba* above). Accent placement of *sirabe-sase* "examine-causative" has been provided below to illustrate accentuation in words with an unaccented suffix.

(20)



First, suffixation triggers delinking of the stem high tone, as shown

in (20a-b). Then, High Tone Association links the floating high tone to the rightmost tone bearing unit in the domain, which is the first mora of the suffix, as presented in (20b-c). Thus, the outcome is *sirabesase* with the accent on the penultimate TBU.

2.3. Rule Ordering

Four tonal rules -- High Tone Delinking, Floating High Tone Deletion, High Tone Association, and Second Linked High Tone Deletion -- have been postulated in the preceding sections. These rules, I argue, should be ordered in order to derive correct accentuation. I propose the following ordering for the tonal rules.

(21) Ordering of Tonal Rules

1. High Tone Delinking
2. Floating High Tone Deletion
3. High Tone Association
4. Second Linked High Tone Deletion

First, HTD must precede FHTD. The following discussion argues for the ordering. As shown above, some suffixes such *-reba* "subjunctive" and *-ro/e* "imperative" have floating high tones in the underlying representation. That is, as illustrated in (22) the suffixation of *-reba*, for instance, creates the environment where a floating high tone and a linked high tone coexist in the same domain.

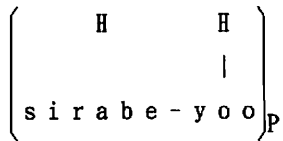
(22)

$$\left(\begin{array}{ccc} & \text{H} & \text{H} \\ & | & \\ \text{s i r a b e - r e} & & \end{array} \right) \text{p b a}$$

Notice that the structural description of FHTD is satisfied. If this rule were to precede delinking, the floating high tone would delete. Then, there would be no distinction between accented suffixes with floating high tones and unaccented suffixes because the domain contains the stem high tone only. However, this is not what happens. The deletion rule does not apply, as indicated in the derivation laid out in (17) above. The derivation shows that before the deletion rule takes effect, the stem high tone is delinked. As a consequence, neither tone in the domain is linked when FHTD applies. Thus the deletion rule does not take effect since the structural description is not met.

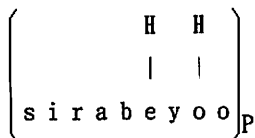
Secondly, HTA must follow FHTD. The ordering between the two tonal rules is asserted by accentuation of words with suffixes such as *-yoo*, which has an underlyingly linked high tone. Figure (23) below depicts the tonal representation after delinking of the stem high tone has taken effect.

(23)



If HTA precedes the deletion rule, the free high tone would be linked to the stem final mora as shown in (24).

(24)



Notice that the environment in (24) predicts SLHTD, not FHTD, to apply because both high tones are linked. Thus the conclusion here is that in order for a floating high tone to be deleted when it is adjacent to a linked high tone, FHTD must precede HTA.

Finally, SLHTD must follow HTA. As shown above, the deletion rule deletes a linked high tone following another linked high tone. That is, all the tones in the domain -- as suggested by the discussion in the preceding sections, every domain has no more than two high tones -- must be linked before this deletion rule applies. Thus, the conclusion is that HTA precedes SLHTD.

3. Conclusion

As demonstrated in the preceding sections, the pitch accent system in Japanese verbs is relatively simple according to the account in terms of Autosegmental Phonology and Underspecification Theory. Accent shift seen in some affixed words is a result of interaction of three factors: the underlying representation of suffixation (*i.e.* if any TBU is invisible); the underlying representation of tone (*i.e.* if the suffix tone is linked or not); and the application of four tonal rules having certain ordering among themselves.

Notes

* I am grateful to Diana Archangeli and Mike Hammond at the University of Arizona for their comments on the previous drafts of this work. The idea laid out in this paper was originally developed in Ishihara (1991).

¹ According to Poser (1984) and Ishihara (1991), there are

suffixes that do not trigger accent shift. Ishihara calls these suffixes noncyclic suffixes and those triggering accent shift cyclic suffixes.

² There are two variants of the imperative suffix: *-ro* and *-e*. The former is attached to vowel-final stems and the latter to consonant-final stems.

sirabe-ro "examine-imperative"	tabe-ro "eat-imperative"
kak-e "write-imperative"	tob-e "jump-imperative"

³ In this paper, moras, which are TBU's, are not included in the graphic representations unless it is relevant to include them. Therefore, high tones are linked to vowels just for the sake of simple representation. However, it should be noted that vowels are not tone-bearing units, but moras are.

⁴ With the assumption that phonological rules apply only within a prosodic (or phonological) domain, neither the structural description nor the structural change of the rule has to contain the domain boundary (see Inkelas (1989) and Ishihara (1991)).

⁵ The forms in (10e-f) do not surface without an additional suffix such as *-i* "adjectival present tense" or *-ku* "KU".

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日本語動詞接辞に伴うアクセント移動

石原昌英

この20年の間に発展した新しい音韻理論は、様々な言語現象に対する理解を深めてきた。自律分節理論(Autosegmental Phonology)と不完全指定理論(Underspecification Theory)は近年発展した音韻理論を代表する理論である。本稿では、これらの音韻理論を用いて日本語動詞の接辞による語形成に見られるアクセント移動の現象を分析する。アクセント移動とは語幹のアクセントが接辞によって右側に移動することを指しているが、アクセントの位置は幾つかの要素が影響しあって決定される。まず、語幹のモラに連結していたハイトーン(high tone)が接辞によりそのモラから引き離され自由になることが重要である。次に、声調に関する四個の規則が適用され、最終的にハイトーンが連結しているモラがアクセントを持つようになる。更に、接辞がどのような基底表示(Underlying Representation)を有しているのかもアクセント移動にとり重要な要素である。本稿での分析は、日本語動詞の接辞による語形成に見られるアクセント移動の現象が比較的単純な現象であることを示している。