The Difference in Accentuation between the Present and the Past Tenses of Verbs in Japanese

Kyoko Yamaguchi*

1. Introduction

Although many of the detailed studies on Japanese accentuation have paid attention to nouns (e.g. noun compounds, loanword nouns), some scholars have examined the accentuation of verbs and adjectives as well as that of nouns (McCawley 1968, Clark 1986, Yamada 1990a, b, Haraguchi 1999, Nishiyma 2009, 2010). One of the topics in their research is the different patterns of accentuation between the present tense and the past tense of accented verbs in Standard (Tokyo) Japanese (e.g. [ta.be'.ru] ‘eat’ vs. [ta'.be ta] ‘ate’), which was pointed out in McCawley (1968). Although two solutions have been proposed for this present-past asymmetry in accentuation, they do not seem to have strong independent evidence.

The aim of this paper is to propose another solution which has some independent evidence based on syllable structure of suffixes. First, it is pointed out that the accent position depends on whether a suffix has invariant syllable structure regardless of the shape of the root, based on the behavior of various suffixes. Second, based on ‘Uniform Exponence’ (Kenstowicz 1996, 1998), this study argues that the same pattern of accentuation across different types of the root (i.e. vowel-final or consonant-final) and that the requirement holds true even if the allomorphs of the suffix have different syllable structures. Specifically, the suffix of the present tense (i.e. -ru/-u) realizes as CV after vowel-final roots and as V after consonant-final roots, while that of the past tense (i.e. -ta[da]) always appears as CV₁. It is shown that this difference in allomorph and uniform exponence of affixes gives rise to the present-past asymmetry in accentuation.

This paper is organized as follows. First, Section 2 outlines the present-past asymmetry in accented verbs, giving some background information. Next, Section 3 reviews two approaches for the asymmetry in previous studies. Section 4 proposes another explanation based on the behavior of other suffixes, and Section 5 presents the analysis within the framework of Optimality Theory (OT) (Prince and Smolensky 1993/2004). Section 5 also deals with unaccented verbs, arguing that constraint-based OT analysis gives better explanation than a rule-based one. The last section offers concluding remarks.

Key words: accent, verb, suffix, allomorph, syllable structure, Optimality Theory, Uniform Exponence

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2. Preliminaries and present-past asymmetry

2.1. Verb roots and suffixes

Roots of Japanese verbs can be classified according to two criteria: accentedness and the segmental shape. First, roots are either accented or unaccented; the position of the accent is predictable. The main focus of this study is on accented roots because the position of the accent is at issue, but unaccented ones are also discussed in Section 5. Second, roots are either vowel-final or consonant-final (e.g. /tabe_xru/ ‘eat’ vs. /tukur_xru/ ‘make’). V-final roots are called ichidan-dooshi, while C-final roots are known as godan-dooshi. Some suffixes have allomorphs which differ in the syllable structure depending on the shape of the root. For example, the suffix of the present tense has two allomorphs: -ru in V-final roots and -u in C-final roots, as shown in (1). On the other hand, the suffix of the past tense (-ta[da]) has CV syllable in both cases, including the allomorph -da, which is the result of voicing assimilation.

(1) Allomorphy of -ru/-u and -ta[da]

<table>
<thead>
<tr>
<th>suffix</th>
<th>V-final</th>
<th>C-final</th>
<th>syllable structure</th>
</tr>
</thead>
<tbody>
<tr>
<td>present tense</td>
<td>-ru</td>
<td>-u</td>
<td>variable (-CV/-V)</td>
</tr>
<tr>
<td>past tense</td>
<td>-ta (da after /b, m, n, g/-final roots)</td>
<td></td>
<td>invariable (-CV)</td>
</tr>
</tbody>
</table>

With regard to -ta[da], suffixation results in consonant clusters after C-final roots. If the second segment of a consonant cluster is a stop, it should be preceded by a homorganic nasal or the identical consonant in Japanese. Therefore, phonological changes occur as shown in (2).

(2) Phonological changes in -ta[da] suffixation

a. assimilation [root-final=/b, m, w, r, (t, n)/]:
   e.g. /t anom_xen-ta/ → [ta.no’n.da] ‘asked’,
   b. V-epenthesis [root-final=/s/]:
   e.g. /hanas_xen-ta/ → [ha.na’i.ta] ‘talked’
   c. V-epenthesis + C-deletion [root-final=/k, g/]:
   e.g. /todok_xen-ta/ → [to.do’i.ta] ‘reached’

2.2. Present-past asymmetry in accented verbs

As pointed out in McCawley (1968), the present tense and the past tense show different accent patterns in Standard (Tokyo) Japanese. In the former, the penultimate syllable has the accent (e.g. /tabe_xen-ra/ → [ta.be’ru] ‘eat’, /tukur_xen-w/ → [tsu.ku’ru] ‘make’). In the latter, the antepenultimate syllable has the accent in V-final roots (/tabe_xen-ta/ → [ta’.be.ta] ‘ate’), while the penultimate syllable has the accent in C-final roots (/tukur_xen-ta/ → [tsu.ku’i.ta] ‘made’). Although these patterns seems complex, they can be generalized based on the notion of ‘head mora’ (Zec 2007), which refers to a segment in the nucleus of a syllable. For example, the first vowel is the head mora in (C)VV syllables (i.e. long vowels and diphthongs), while the second one is a non-head mora. The coda consonant in (C)VC syllables is also a non-head mora in Japanese.

Taking the notion of ‘head mora’ into account makes the apparently complex pattern simple, as shown in (3).

(3) Present-past asymmetry in the position of μ-a-null

<table>
<thead>
<tr>
<th>root</th>
<th>tense</th>
<th>present</th>
<th>past</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-final</td>
<td>-2 (e.g. /tabe_xen-ra/ → [ta.be’ru])</td>
<td>-3 (e.g. /tabe_xen-ta/ → [ta’.be.ta])</td>
<td></td>
</tr>
<tr>
<td>C-final</td>
<td>-2 (e.g. /tukur_xen-w/ → [tsu.ku’ru])</td>
<td>-3 (e.g. /tukur_xen-ta/ → [tsu.ku’i.ta])</td>
<td></td>
</tr>
</tbody>
</table>

In the present tense, the head mora of the accented syllable (μ-a-null) is penultimate (‘-2’) in both V-final and C-final roots. In contrast, μ-a-null is antepenultimate (‘-3’) in both types of roots in the past tense. As discussed in Sections 4 and 5, the notion of ‘head mora’ also plays a crucial role in accounting for the present-past asymmetry as well as in making a clear generalization of the asymmetry.

3. Previous studies

This section reviews previous studies on the present-past asymmetry in accentuation. So far two solutions have been proposed for this problem: ‘level ordering’ approach (Clark 1986, Kitagawa 1986) and ‘extrametricality’ approach (Archangeli and Pulleyblank 1984, Haraguchi 1999, Nishiyama 2009, 2010). Although

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different theoretical devices are employed, each of them treats -ru/-u and -ta[da] differently in its framework to account for the asymmetry; specifically, the former affects the assignment of the accent, while the latter does not. However, the evidence for different treatment of the two suffixes does not seem to be so strong in both approaches.

3.1. Level-ordering approach
Clark (1986) and Kitagawa (1986) argue that the present-past asymmetry arises because suffixes of the present tense and the past tense belong to different levels. In this approach, -ru is suffixed before Penultimate Accent Assignment; therefore, the present form has the penultimate accent. On the other hand, the antepenultimate accent is assigned in the past tense because -ta is suffixed after Penultimate Accent Assignment. According to Kitagawa (1986, p. 206), Kurata (1984) argues that the level-ordering has independent motivation. In this argument, one allomorph is produced by applying a rule to the other allomorph. As shown in (4), Level i suffixation triggers consonant deletion in order to avoid non-homorganic consonant clusters when the root is C-final (e.g. /tanomac-ru/ → [ta.no.mu] ‘ask’). On the other hand, Level j suffixation triggers consonant assimilation (e.g. /tukurac-ta/ → [tsu.ku’t.ta] ‘made’). It is argued that this difference follows if the level-ordering is extended as follows.

(4) Independent motivation for level-ordering

<table>
<thead>
<tr>
<th>morphological process</th>
<th>phonological process</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level i:</td>
<td></td>
</tr>
<tr>
<td>-ru (present)</td>
<td>Penultimate Accent Assignment</td>
</tr>
<tr>
<td></td>
<td>Consonant Deletion</td>
</tr>
<tr>
<td>Level j:</td>
<td></td>
</tr>
<tr>
<td>-ta (past)</td>
<td>Consonant Assimilation</td>
</tr>
</tbody>
</table>

Although the observation that -ru and -ta trigger different processes is insightful, it is not clear why -ru/ suffixation triggers consonant deletion and -ta/ suffixation triggers consonant assimilation; positing two levels would allow the opposite situation. However, Japanese phonotactics gives a full explanation for the relationship between suffixes and phonological changes (deletion or assimilation). As Japanese prohibits the geminate rr in principle, the rule of assimilation cannot apply when the suffix-initial consonant is /t/, and so consonant deletion occurs. On the other hand, assimilation occurs when the suffix-initial consonant is /t/ because the geminate tt is possible in Japanese. Therefore, the relationship between suffixes and phonological changes can be analyzed in a unified way without positing two levels.

3.2. Extrametricality approach
Another solution for the present-past asymmetry is employing extrametricality, as in Archangeli and Pulleyblank (1984), Haraguchi (1999) and Nishiyama (2009, 2010). In this approach, -ta is extrametrical, while -ru is not. In other words, -ta does not have influence on the assignment of the accent. In addition, the default accent position is penultimate, which is equivalent to Penultimate Accent Assignment in level-ordering approach. Thus, the present-past asymmetry is represented as follows: tabe’ru vs. ta’be<ta>.

First, Nishiyama (2009, 2010) argues that the default accent position is motivated by forms without any suffix, which are called ‘bare stem’ (e.g. ta’be ‘eat [and...’]). In these forms, the accent is on the penultimate position. Second, he argues that extrametricality of -ta allows the present tense and the past tense to have the accent on the same vowel in C-final verbs, as in the pair tsuku’ru and tsuku’t<ta>. On the other hand, the requirement of keeping the accent position does not hold true for V-final verbs, which is the present-past asymmetry itself. Nishiyama (2009, 2010) argues that the requirement is more important in C-final verbs because they outnumber V-final verbs. This would imply that V-final verbs and C-final verbs cannot be analyzed in a unified way.

Lastly, Nishiyama (2009, 2010) indicates that it is impossible to assign the accent on the penultimate mora in C-final verbs (e.g. the second [t] in [tsu.ku’t.ta]) and argues that shifting the accent to the antepenultimate position (e.g. the second [u] in [tsu.ku’t.ta]) has the effect of making -ta extrametrical. This point is closely related to the proposal in this paper, as discussed in 4.1.

4. Accent Identity
4.1. Correlation between accentuation and allomorphy
In each approach reviewed in the previous section, the default position of accent is penultimate, and the
exceptionality of -ta[da] is explained with some device.
This section argues that the default position of accent
and the apparently exceptional behavior of -ta[da] are
explained in terms of morpheme boundary and syllable
structure, respectively.

First, one characteristic of verb accentuation is that
the accent is located at a morpheme boundary, as point-
ed out in previous studies (Haraguchi 1991, Kubozono
2008). The alignment of the accent and the morpheme
boundary plays an important role in noun compounds
as well (Kubozono 1995) (e.g. /minami + amerika/ →
[mi.na.mi.a.me.ri.ka] ‘South America’). Therefore, it is
natural that the present tense of V-final roots should
have the head mora of the accented syllable (\( \mu_v \sigma \)) in
the root-final position, as exemplified in /tabea c c -ru/ →
[ta.be'.ru]. In contrast, \( \mu_v \sigma \) is the penultimate mora
of the root in the past tense (e.g. /tabea c c -ta/ → [ta'.be ta]):
it is not located at the morpheme boundary, unlike the
present tense (i.e. present-past asymmetry).

The solution suggested here is related to the behavior
of C-final roots. In the present tense of C-final roots,
\( \mu_v \sigma \) is the root-final mora although the morpheme
boundary and the syllable boundary do not coincide
because the root-final consonant is realized as an onset
(e.g. /tukura c c -u/ → [tsu.ku'.ru]). On the other hand,
\( \mu_v \sigma \) of the past tense is the penultimate mora in the
root (e.g. /tukuruc -ta/ → [tsu.ku't.ta]). Since the root-
final mora in [tsu.ku't.ta] is a coda, it cannot be the head
mora of the syllable (see Nishiyama 2009, 2010). The
root-penultimate pattern [ta'.be.ta] is accountable if we
consider that the position of \( \mu_v \sigma \) in [ta'.be.ta] and that
in [tsu.ku't.ta] should be identical (i.e. antepenultimate).
Similarly, the position of \( \mu_v \sigma \) in [ta'.be.ru] and that in
[tsu.ku'.ru] is the same (i.e. penultimate). In sum, the
position of \( \mu_v \sigma \) should be invariant whether the root is
V-final or C-final. In this paper, this invariance is called
‘Accent Identity’, which is defined in (5).

(5) Accent Identity: In the pair of {V-final root + suffix
\( \alpha \), C-final root + suffix \( \alpha \)}, the two forms have the
head mora of the accented syllable (\( \mu_v \sigma \)) in
the same position. This holds true even if the suffix has
allomorphs.

Next, why do the present tense and the past tense dif-
fer? As shown in (6), the difference arises due to the
difference in syllable structure, which results from the
difference in allomorphy: the suffix of the present tense
appears as different syllable structures depending on
the shape of the root, while that of the past tense always
appears as the same syllable structure.

(6) Accent Identity and the syllable structure of suffixes

<table>
<thead>
<tr>
<th>root</th>
<th>suffix</th>
<th>-ru/-u ‘present’</th>
<th>-ta[da] ‘past’</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-final</td>
<td>/tabe_u/</td>
<td>[ta.be'ru]</td>
<td>[ta'.be.ta] (*[ta'.be.ta])</td>
</tr>
<tr>
<td>C-final</td>
<td>/tukur_u/</td>
<td>[tsu.ku'ru]</td>
<td>[tsu.ku't.ta]</td>
</tr>
</tbody>
</table>

In the past tense of C-final roots, CV structure of the
suffix can give rise to a CVC syllable at the root-final
position. As the coda of the CVC syllable, which is the
final consonant of the root, cannot be the head mora of the
syllable, \( \mu_v \sigma \) cannot be penultimate when the root is
C-final. Consequently, \( \mu_v \sigma \) is located on the preceding
mora, as in [tsu.ku't.ta]. Accent Identity requires that
\( \mu_v \sigma \) should be antepenultimate for the past tense
of V-final roots as well, although it is not located on the
morpheme boundary. In other words, Accent Identity
takes priority over alignment with a morpheme boundary.
In contrast, the present tense can satisfy these two
requirements at the same time, as in [ta.be'ru] and
[tsu.ku'.ru]. This also implies that Accent Identity holds
true even if the suffix has allomorphs.

If this argument is valid, the correlation between
allomorphy and accentuation should be observed in
other suffixes, which is exemplified in (7). If a suffix
has two allomorphs which differ in syllable structure,
\( \mu_v \sigma \) is located at the morpheme boundary (=7a). On
the other hand, \( \mu_v \sigma \) is not located at the morpheme
boundary if the syllable structure of a suffix is invariant
(=7b). In both cases, however, Accent Identity is always
observed.
The Difference in Accentuation between the Present and the Past Tenses of Verbs in Japanese

(7) The correlation between allomorphy and accentuation
a. Suffixes which have two allomorphs that differ in syllable structure (=ru/-u pattern)

<table>
<thead>
<tr>
<th></th>
<th>V-final (/tabe_[ι]/)</th>
<th>C-final (/tukur_[ο]/)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) -ro/-e ‘imperative’</td>
<td>-2 ([ta.be'.ro])</td>
<td>-2 ([tsu.ku'.re])</td>
</tr>
<tr>
<td>ii) -reba/-eba ‘provisional’</td>
<td>-3 ([ta.be'.re.ba])</td>
<td>-3 ([tsu.ku'.re.ba])</td>
</tr>
<tr>
<td>iii) -na1 -00 -0ü anaz ‘negative’</td>
<td>-3 ([ta.be'.na])</td>
<td>-3 ([tsu.ku'.ra'.nai])</td>
</tr>
</tbody>
</table>

b. Suffixes whose syllable structure is invariant (=ta[da] pattern)

<table>
<thead>
<tr>
<th></th>
<th>V-final (/tabe_[ι]/)</th>
<th>C-final (/tukur_[ο]/)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) -to[do] ‘conjunctive’</td>
<td>-3 ([ta'.to.te])</td>
<td>-3 ([tsu.ku'.to.te])</td>
</tr>
<tr>
<td>ii) -taral L dara] ‘conditional’</td>
<td>-4 ([ta'.to.ta.ra])</td>
<td>-4 ([tsu.ku'.to.ta.ra])</td>
</tr>
</tbody>
</table>

Another point to note is that the position of ÿu is not necessarily the same within each group in (7). For instance, the position of ÿu is antepenultimate in conjunctive forms, while it is pre-antepenultimate in conditional forms in (7b). In the framework proposed above, the position of ÿu is determined by Accent Identity and alignment with a morpheme boundary, so the difference between suffixes within the same group results from the difference of their length.

On the other hand, it seems difficult to deal with this issue in previous approaches. First, [ta.be're.ba] cannot be accounted for in level-ordering approach, which would predict *[ta.be'.re.ba] by Penultimate Accent Assignment. Second, in the extrametricality approach, the difference of the position of the accent implies the difference in extrametricality. As shown in (8), suffixes differ in the presence of extrametricality and the element which is considered to be extrametrical. As pointed out in Nishiya (2010), how to determine extrametricality is an issue for future research in this approach.

(8) a. No extrametricality: tsu.ku'.ru (‘present’), tsu.ku'.re (‘imperative’)
   b. One mora is extrametrical:
      tsu.ku'.ru<ba> (‘provisional’), tsu.ku'.na'<i> (‘negative’)
      tsu.ku'.ta> (‘past’), tsu.ku'.te> (‘conjunctive’)
   c. One foot is extrametrical: tsu.ku'.ta<ara> (‘conditional’)

4.2. /s, k, g/-final roots

The previous subsection adduces only the example of /r/-final roots, where assimilation occurs before the suffixes in (7b). Now let us turn to /s, k, g/-final roots. These roots undergo vowel epenthesis when these suffixes are attached (=2b, c) (e.g. /hanasa/to/ → [ha.na'.fi.ta] ‘talked’, /todoka/to/ → [to.doi.ta] ‘reached’). If the head mora of the accented syllable (µi) were on the epenthetic vowel, the pair *[ta.be'.ta] and *[ha.na'.fi.ta] would satisfy Accent Identity, for example. However, the actual output is [ta'.be.ta] and [ha.na'.fi.ta]. There are at least two ways to explain why *[ha.na'.fi.ta] is avoided. First, *[ha.na'.fi.ta] may be excluded because /i/ is devoiced. As discussed in Tanaka (2005), devoiced vowels tend not to carry the accent. With regard to [to.doi.ta], they also involve consonant deletion, which gives rise to VV sequences. If these sequences are diphthongs, µi should be the first vowel rather than the second one, and that is why *[to.doi.ta] is avoided. The second explanation is that epenthetic vowels tend not to carry the accent (See Shinohara 2000 for epenthetic vowels in loanwords). This analysis accounts for /s/-final verbs and /k, g/-final verbs in a unified way. It remains to be seen which analysis is more appropriate.

5. OT Analysis

5.1. Present-past asymmetry in accented roots

The previous section showed that whether the syllable structure of a suffix depends on the shape of the root or not is crucial for accentuation and proposed the notion of ‘Accent Identity’ in (5). This notion can be explained as one instance of Uniform Exponence (Kenstowicz 1996, 1998), which is shown in (9).

(9) Uniform Exponence (UE): a lexical item (root, affix, word) has the same realization for property P in its various contexts of occurrence.
To formalize the proposal of ‘Accent Identity’, this subsection analyzes the present-past asymmetry within the framework of OT. The three constraints in (10) are relevant as discussed in 4.1.

(10) Relevant constraints

a. **UNIFORM EXPONENTE (UE)-AFFIX**: Assign one violation mark for every pair of \{V-final root + suffix of a, C-final root + suffix of b\} where the two forms have the head mora of the accented syllables (\(\mu,\sigma\)) in different positions. (Suffix of a may or may not have allomorphs.)

b. ALIGN-R (accent, root): Assign one violation mark for every mora which stands between \(\mu,\sigma\) and the right edge of the root.

c. **CVX**: Assign one violation mark for every element on the right branch of a rhyme (i.e. a coda consonant or the second vowel in long vowels/diphthongs) which is a head mora of the accented syllable.

In the following tableaux, the representation \(<-n_1, -n_2>\) in candidates shows the position of \(\mu,\sigma\) in the pair. If \(n_1 = n_2\), the candidate satisfies UE-AFFIX.

(11) Analysis of the present-past asymmetry

**a. Tableau 1: Present tense**

<table>
<thead>
<tr>
<th>/tabe(<em>{ac})-ru/, /tukur(</em>{ac})-u/</th>
<th>*CVX'</th>
<th>UE-AFFIX</th>
<th>ALIGN-R (accent, root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt;-a. {ta'.be.-ru, tsu.ku'.r-u} &lt; 2, -2&gt;)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&lt;-b. {ta'.be.-ru, tsu.ku'.r-u} &lt; 3, -2&gt;)</td>
<td>*W</td>
<td>*W</td>
<td></td>
</tr>
<tr>
<td>(&lt;-c. {ta'.be.-ru, tsu'.ku.r-u} &lt; 2, -3&gt;)</td>
<td>*W</td>
<td>*W</td>
<td></td>
</tr>
<tr>
<td>(&lt;-d. {ta'.be.-ru, tsu'.ku.r-u} &lt; 3, -3&gt;)</td>
<td>**W</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

b. **Tableau 2: Past tense**

<table>
<thead>
<tr>
<th>/tabe(<em>{ac})-ta/, /tukur(</em>{ac})-ta/</th>
<th>*CVX'</th>
<th>UE-AFFIX</th>
<th>ALIGN-R (accent, root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(&lt;-a. {ta'.be.-ta, tsu.ku't.-ta} &lt; 2, -2&gt;)</td>
<td>*W</td>
<td></td>
<td>L</td>
</tr>
<tr>
<td>(&lt;-b. {ta'.be.-ta, tsu.ku't.-ta} &lt; 3, -2&gt;)</td>
<td>*W</td>
<td>*L</td>
<td></td>
</tr>
<tr>
<td>(&lt;-c. {ta'.be.-ta, tsu.ku't.-ta} &lt; 3, -3&gt;)</td>
<td>*W</td>
<td>*L</td>
<td></td>
</tr>
<tr>
<td>(&lt;-d. {ta'.be.-ta, tsu.ku't.-ta} &lt; 3, -3&gt;)</td>
<td>**</td>
<td>**</td>
<td></td>
</tr>
</tbody>
</table>

In Tableau 1, the winner \{ta'.be.-ru, tsu.ku'.r-u\} is optimal regardless of the ranking because it satisfies all the constraints\(^9\). On the other hand, \{ta'.be.-ta, tsu.ku't.-ta\} is the winner in Tableau 2, which indicates that *CVX’ and UE-AFFIX dominate ALIGN-R (accent, root). The ranking of *CVX’ and UE-AFFIX will be discussed in 5.3.

**5.2. Unaccented roots**

The previous subsection analyzed the accentuation of accented roots, but unaccented roots show different patterns. This subsection shows that constraint-based approach accounts for both types of roots in a unified way.

Unlike the conjugated forms of accented roots, those of unaccented roots do not have the accent in the root; they have the accent in the suffix or are unaccented\(^7\). This section deals with the former case, which makes what must be solved clearer. For example, when -tara[dara] is attached to unaccented roots, the head mora of the accented syllables (\(\mu,\sigma\)) is the first mora of the suffix. On the other hand, \(\mu,\sigma\) is the penultimate mora in the root when the suffix is attached to accented roots, as shown in (12).

(12) Accented and unaccented roots with -tara[dara] ‘conditional’

<table>
<thead>
<tr>
<th>(\mu,\sigma)</th>
<th>Accented root</th>
<th>Unaccented root</th>
</tr>
</thead>
<tbody>
<tr>
<td>V-final root</td>
<td>-4 (/tabe(_{ac}) ‘eat’: [ta'.be.ta.ra])</td>
<td>-2 (/ake/ ‘open’: [a.ke.ta'ra])</td>
</tr>
<tr>
<td>C-final root</td>
<td>-4 (/tukur(_{ac}) ‘make’: [tsu.ku.ta.ra])</td>
<td>-2 (/nozom/ ‘wish’: [no.zon.da'ra])</td>
</tr>
</tbody>
</table>
The Difference in Accentuation between the Present and the Past Tenses of Verbs in Japanese

How is the difference between accented roots and unaccented ones analyzed? In level-ordering approach (3.1), -tara[dara] is attached after Penultimate Accent Assignment in order to predict [ta’.be.ta.ra] correctly. However, this system predicts the same pattern for unaccented roots, such as *[a’.ke.ta.ra]. In order to avoid this problem, the following stipulation is needed: -tara[dara] is attached before Penultimate Accent Assignment for unaccented roots. Similarly, it is necessary for extrametricality approach (3.2) to posit ‘selective extrametricality’ to exclude *[a’.ke.ta.ra], as Nishiya (2009, 2010) argues. That is, extrametricality holds true only for accented roots (e.g. ta’be<tarar>), while it does not apply in unaccented roots (e.g. aketa’ra). Such modifications indicate that the mechanism which predicts correct patterns in accented roots can be overridden in the case of unaccented roots.

As discussed in Ito and Mester (2003, p. 55ff), where OT analysis is proposed, the difference of accented roots and unaccented ones results from positional faithfulness (Beckman 1997): the existence of accent in the root should not be changed in the output. Let us assume the positional faithfulness constraint Faith-Accent_root, which penalizes deleting or inserting the accent in roots. Based on the analysis proposed in 5.1, the ranking where Faith-Accent_root dominates Uniform Exponent (UE)-Affix predict the correct pattern.

(13) Tableau 3: Accented roots and unaccented roots

<table>
<thead>
<tr>
<th>/ake-tara_ta/, /tukuruta-tara_ta/</th>
<th>Faith-Accent_root</th>
<th>*CVX’</th>
<th>UE-Affix</th>
<th>Align-R</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {a’.ke.-ta.ra, tsu.kut.-ta.rα}</td>
<td>-4, -4</td>
<td>*W</td>
<td>L</td>
<td>**W</td>
</tr>
<tr>
<td>b. {a.ke.-ta’ra, tsu.kut.-ta’ra}</td>
<td>-2, -2</td>
<td>*W</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>c. {a.ke.-ta’ra, tsu.ku’t.-ta.rα}</td>
<td>-2, -4</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

As shown in (13), candidate (a) violates Faith-Accent_root as *[a’.ke.ta.ra] has an epenthetic accent in the root. Similarly, candidate (b) violates the constraint because the accent of the root is deleted in *[tsu.kut.ta’.ra]. It should be noted that accent deletion/insertion in the suffix does not violate Faith-Accent_root. In this way, candidate (c) is optimal although it violates UE-Affix.

The difference between accented roots and unaccented roots is explained based on violability of constraints, which is one of the main tenets of OT, while rule-based analyses need to posit some stipulation.

5.3. Issues related to the violation of UE-Affix

The previous subsection argued that UE-Affix is violated in order to satisfy a higher-ranked constraint. There are two more instances which show the violability of UE-Affix. First, V-final roots which have only one mora do not show the present-past asymmetry, violating UE-Affix in the past tense. Consider the following examples.

(14) a. /mi_’/ ‘look’: [mi’.ru] (present) vs. [mi’.ta] (past) 
b. /de_’/ ‘go out’: [de’.ru] (present) vs. [de’.ta] (past)

As shown in these examples, both the present tense and the past tense place accent on the penultimate mora. This is because the past tense is too short to place accent on the antepenultimate mora, as shown in the following tableau.

(15) Tableau 4: Short V-final roots

<table>
<thead>
<tr>
<th>/mi_’-ta/, /tukur_’-ta/</th>
<th>*CVX’</th>
<th>UE-Affix</th>
<th>Align-R (accent, root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {mi’.-ta, tsu.kut.-ta}</td>
<td>-2, -2</td>
<td>*W</td>
<td>L</td>
</tr>
<tr>
<td>b. {mi’.-ta, tsu.ku’t.-ta}</td>
<td>-2, -3</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

This tableau also shows that *CVX’ should dominate UE-Affix.

However, one can argue that the length is not the crucial cause of the violation of UE-Affix in (14), based on the evidence of accentuation of complex verbs (V1-V2). Look at the following examples.
(16) a. /aogac-i-mi/ ‘look up’ :  
   [a.o.gi.mi.ru] (present)  
   vs. [a.o.gi.mi.ta], *[a.o.gi’.mi.ta] (past)  
b. /tob-i-dec/ ‘jump out’ :  
   [to.bi.de.ru] (present)  
   vs. [to.bi.de.ta], *[to.bi’.de.ta] (past)  

In these examples, the accent is placed on the penulti-
mate mora in the past tense although it is long enough  
to have the antepenultimate accent, which satisfies UE-
AFFIX. However, this can be accounted for if we hy-
pothesize that the accent should be placed on V2, which  
is the head of complex verbs.  

The second instance which involves the violation of  
UE-AFFIX is found in C-final roots. In C-final roots  
where a long vowel or a diphthong precedes the final  
consonant, the head mora of the accented syllable is  
antepenultimate in the present tense, while it is penulti-
mate in the generalization in (3)9). Consider the follow-
ing examples10).  

(17) a. /toorac-u/ → [toоро.ru] ‘pass’  
   /toosac-u/ → [toоро.su] ‘let a person pass’  
b. /maircac-u/ → [маир.ru] ‘go’  
   /hairac-u/ → [haи.ru] ‘enter’  
c. /kaercac-u/ → [каe.ru] ‘go back’  
   /kaescac-u/ → [каe.su] ‘return’11)  

Comparison with V-final roots (e.g. /ta.be’.ru/ ‘eat’)  
makes it clear that UE-AFFIX is violated in these exam-
pies. This apparent exceptionality arises because the  
second vowel in long vowels or diphthongs cannot be  
the head mora due to *CVX’. Tableau 5 shows how the  
pattern in (17) is selected.  

(18) Tableau 5: C-final roots which contain a vowel sequence I  

<table>
<thead>
<tr>
<th>/tabacac-ru/, /toorac-ac-u/</th>
<th>*CVX’</th>
<th>UE-AFFIX</th>
<th>ALIGN-R (accent, root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {ta.be’-ru, too’.r-u} &lt;2, -2&gt;</td>
<td>*W</td>
<td>L</td>
<td>L</td>
</tr>
<tr>
<td>←b. {ta.be’-ru, to.o’.r-u} &lt;2, -3&gt;</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

However, the correct winner cannot be selected if can-
didates (c) and (d) are taken into account.  

(19) Tableau 6: C-final roots which contain a vowel sequence II  

<table>
<thead>
<tr>
<th>/tabacac-ru/, /toorac-ac-u/</th>
<th>*CVX’</th>
<th>UE-AFFIX</th>
<th>ALIGN-R (accent, root)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. {ta.be’-ru, too’.r-u} &lt;2, -2&gt;</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>←b. {ta.be’-ru, to.o’.r-u} &lt;2, -3&gt;</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>c. {ta’be’.-ru, too’r’.-u} &lt;3, -2&gt;</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
<tr>
<td>←d. {ta’be’.-ru, to.o’r’.-u} &lt;3, -3&gt;</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

(→: wrongly selected, ←: desired)  

This implies that the correct pair {ta.be’-ru, to’o-ru} is  
selected only if the accent position of [ta.be’ru] has  
already been determined based on the comparison with  
the regular pattern (e.g. [tsu.ku’.ru]). In other words,  
UE-AFFIX between /tabacac-ru/ and /tukurac-ac-u/ takes  
priority over UE-AFFIX between /tabacac-ru/ and /toorac-ac-ru/.  
As C-final roots which show the irregular pattern in  
(17) are less frequent than those which show the regular  
pattern, this may not be so counter-intuitive. However,  
more detailed examination of UE-AFFIX is necessary in  
future studies.  

6. Conclusion  

In order to explain the difference in accentuation  
between the present tense and the past tense, this study  
pointed out the correlation between accentuation and  
allomorphy and proposed the requirement that conju-
gated forms of different types of roots which have the  
same suffix should have the head mora of the accented  
syllable in the same position (i.e. UNIFORM EXPONENCE-
AFFIX), showing that this requirement holds true for  
allomorphs. Unlike the suffix of the present tense, the  
suffix of the past tense always appears as CV. This can
give rise to a CVC syllable in the root-final position in C-final verbs, and the coda of the CVC syllable cannot be the head mora of the syllable (i.e. *CVX'). Therefore, {ta.be'.-ta, tsu.ku't.-ta} is optimal under the ranking "*CVX' \Rightarrow UE-AFFIX \Rightarrow ALIGN-R (accent, root)". In contrast, the pair {ta.be'.-ru, tsu.ku't.-u} satisfies *CVX' and UE-AFFIX without violating ALIGN-R (accent, root). In sum, this paper showed that the present-past asymmetry follows from the interaction of the three constraints, based on the independent evidence of allomorphy, without employing level ordering or extrametricality.

The analysis proposed here has three more advantages. First, the accentuation of V-final roots and that of C-final roots are analyzed in a unified way. Second, the accentuation of unaccented verbs is also accounted for based on the violability of constraints. Third, the behavior of affixes other than -ru/-u and -ta[da] is also explained in the same way. In short, the analysis based on UE-AFFIX covers a wider range of roots and suffixes, which will contribute to analyzing accentuation in verbal inflection comprehensively.

In addition to giving a better understanding of the accentuation of verbs, this study will shed light on the accentuation of adjectives. Since less has been written on verbs and adjectives than nouns in the study of Japanese accentuation, it will be an important contribution. Furthermore, UE-AFFIX proposed in this paper will also be applicable to languages other than Japanese. Although more precise definition of UE-AFFIX is necessary in future studies, it will contribute to explaining accentual phenomena in various languages.

Acknowledgments

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Notes

1) This study represents the pair of allomorphs in two ways: A/B and C[D]. A/B shows that allomorph A appears after V-final roots and allomorph B after C-final roots. On the other hand, C[D] shows that the distribution of allomorph C and allomorph D depends on other reasons than the form of the root. For example, -ta becomes -da if the final consonant of the root is /b, m, n, g/ due to voicing assimilation (e.g. /tanom.a-\text{ta}/ \rightarrow /ta.no'\text{nd}a/ ‘asked’).

2) Although many researchers do not recognize diphthongs in Japanese, the pattern of accentuation indicates that [ai], [ui], and [oi] are diphthongs (Kubo and 1998). (See Note 10)

3) Other approaches are possible, as shown below.
   a. The underlying form is /-e/, and /e/-epenthesis occurs after V-final roots. (Nishiyama p.c.)
   b. All allomorphs are listed in the input and the appropriate one is selected by the interaction of constraints. (Ito and Mester 2004)

4) As pointed out Nishiyama (p.c.), -ta and -tara result from -te etymologically. -ta was historically -tari, which results from -te-ari. -tara was historically -tara-ba, which is also related to -tari.

5) In formulating these constraints, I follow McCarthy (2008), who suggests that the definition of constraints should take the form of ‘Assign one violation mark for every…’

6) In the discussion hereafter, the morpheme boundary is included in the representation of candidates for clarity.

7) There is an exception to this: if a dominant suffix is attached, the suffix has the accent whether the root is accentured or not. (e.g. -joo/-oo ‘cohortative’ : [ta.be.jo'\text{0}] ‘Let’s eat’, [no.zo.mo'\text{0}] ‘Let’s hope’).

8) The author thanks a reviewer for pointing out these two issues.

9) As pointed out by Shin-ichi Tanaka and Osamu Fujimura at the 5th Phonology Festa, some verbs which contain a vowel sequence show the regular pattern (e.g. [ha.e'.ru] ‘shine’). It seems that most of such cases are found in V-final roots (e.g. [ji.i'.ru] ‘force’, [ta.e'.ru] ‘cease’, [sa.e'.ru] ‘bright’, [o.i'.ru] ‘grow old’) though there are some counterexamples when the root is longer (e.g. [kan.ga.e'.ru] [kan.ga.e'.ru] ‘think’, [ko.ta.e'.ru] [ko.ta.e'.ru] ‘answer’). Although a close investigation is necessary, this might be accounted for by the following diachronic reason.

a. With regard to V-final verbs, the two vowels in nidan dooshi belonged to different morphemes historically, so they were less likely to form a diphthong (e.g. tay-gru \rightarrow ta-gru \rightarrow te-gru ‘cease’). In Old Japanese, the present form was tay-u, which is the reason for assuming the root to be tay.

b. With regard to C-final verbs, which were originally yodan dooshi, the two vowels belonged to the same morpheme, so they were more likely to form a diphthong (e.g.
10) Vance (1987) points out that the pattern in (17b, c) suggests that /ai/ and /ae/ sequences are diphthongs.
11) There is a counterexample [a.e'.gu] ‘pant’.

References


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