

## Accentuation of Person Names in Japanese and Its Theoretical Implications\*

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### 1. Introduction

It is well-known that Japanese words usually have a single accent even when they consist of several independent words (i.e. compounds). Take, for example, the following words:

- |        |                   |   |            |   |                              |
|--------|-------------------|---|------------|---|------------------------------|
| (1) a. | ya'mato           | + | ta'mashii  | → | yamatoda'mashii <sup>1</sup> |
|        | 'Japan (archaic)' |   | 'spirit'   |   | 'the Japanese spirit'        |
| b.     | chi'ntai          | + | keiyaku    | → | chintaike'iyaku              |
|        | 'rent'            |   | 'contract' |   | 'rental contract'            |

In these examples, either the accent in the first noun is deleted and the one in the second survives (a), or a new accent is given to the whole sequence (b). In any case, it is important to note that the compound never contains two accents. In person names, however, this is not the case:<sup>2</sup>

- |        |         |   |              |   |                      |
|--------|---------|---|--------------|---|----------------------|
| (2) a. | No'gawa | + | Ken-i'chiroo | → | No'gawa Ken-i'chiroo |
| b.     | Ne'moto | + | No'riko      | → | Ne'moto No'riko      |
| c.     | Za'mma  | + | Hi'deki      | → | Za'mma Hi'deki       |

Clearly, both the accent of the family and the given name are preserved when they are combined. This rough comparison reveals that accentuation of person names is quite different from that of compounds.

In this paper, I will consider how this specific behavior of person names is analyzed in terms of Optimality Theory (cf. Prince and Smolensky (1993)). In the course of discussion it will become apparent that lexical strata play an important role in this phenomenon, thus recent theories of lexicon must be taken into account. I will argue that Reranking theory (cf. Itô & Mester (1995)) is superior to Multiple-correspondence theory (cf. Benua (1997), etc.), although the recent trend is to follow the latter. For this purpose, I will present the specific accentuation behavior of foreign names of a particular length.

The organization of the paper is as follows. In the next section, I will briefly review previous studies on compound accentuation, and present a tentative Optimality Theoretic

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\* An early version of this paper was presented at the annual meeting of PAIK (Phonological Association in Kansai) held at Kobe University on July 14, 2001. I would like to thank the audience for valuable comments and discussion, especially Junko Itô, Haruo Kubozono, Armin Mester, and Philip Spaelti. I am also grateful to Mark Campana, Yuko Yoshida, and TES reviewers for suggesting stylistic improvements.

<sup>1</sup> The first consonant of the latter noun in native compounds undergoes sequential voicing ('Rendaku'). See Itô and Mester (1986), among others.

<sup>2</sup> The name order in Japanese is the reverse of that in English; that is, the family name appears first and the given name second.



Input-Output Faithfulness constraint, I will instead employ **Faith-OO**, a type of Output-Output Faithfulness constraint (cf. Benua (1997)). This is because using I-O Faith implies that the accent for a word is specified in the input, whereas it is not certain whether such an assumption is true: as Kubozono himself says, the accent of most parts of Japanese words can be predicted to some extent, which suggests that the accent is assigned by phonology, not by lexical specification. OO-Faith, on the other hand, does not raise such a problem: satisfaction of the constraint means that the relevant output forms -- the base word and the derived word in this case -- have the accent on the same mora.

The ranking in (5) ensures that a word has a single accent even when each of the members which constitute the word has its own accent when it appears independently. The following tableau shows this:

(6)

yamato + tamashii	*Accent <sup>n</sup>	Faith-OO(accent)
ya'matoda'mashii	*!	
☞ yamatoda'mashii		*(ya'mato)

The first candidate with two accents loses because it violates **\*Accent<sup>n</sup>**, even though the accents are on the same mora as those in the independent words, i.e. *ya'mato* and *ta'mashii*, satisfying **Faith-OO(accent)**. Having a single accent, the second candidate wins.

The constraints proposed here are interwoven with other constraints in Kubozono (1995a, 1997). Recall that most parts of a compound are assigned the accent anew, neglecting the original accent. This shows that **Faith-OO(accent)** is ranked lower than the constraints which assign a new accent. As I mentioned above, I will ignore the details of the interaction because they are beyond the scope of this paper. What is important here is the fact that **Faith-OO(accent)** is ranked lower in the constraint ranking for compound accentuation.

This is not the case for accentuation in Japanese-native person names, on the other hand. As shown in (7), person names can have multiple accents when both the family and given names have one:<sup>3</sup>

- (7) a. No'gawa + Ken-i'chiroo → No'gawa Ken-i'chiroo  
 b. Ne'moto + No'riko → Ne'moto No'riko  
 c. Za'mma + Hi'deki → Za'mma Hi'deki  
 d. Koi'zumi + Jun-i'chiroo → Koi'zumi Jun-i'chiroo  
 e. Shi'njoo + Tsu'yoshi → Shi'njoo Tsu'yoshi

<sup>3</sup> There are also cases where fewer than two accents appear in person names. When either the family name or the given name is accentless, there is only one accent; e.g. *Tanaka Ka'kuei*, *O'buchi Keizo*, etc. When both of them are accentless, the combined sequence is also accentless; e.g. *Suzuki Ichiroo*.

Clearly, the ranking of *\*Accent<sup>n</sup>* and *Faith-OO(accent)* is reversed for this accentuation.<sup>4</sup>

(8) *Faith-OO(accent)* » *\*Accent<sup>n</sup>*

(9)

Nogawa + Ken-ichiroo	<i>Faith-OO(accent)</i>	<i>*Accent<sup>n</sup></i>
☞ No'gawa Ken-i'chiroo		*(Noga'wa)
Nogawa Ken-i'chiroo	*!	

In this ranking, having multiple accents is better than losing the accent of the family name. Otherwise, the accent of the family name would be deleted as with the first member in compounds: e.g. *\*Nogawa Ken-i'chiroo*.

(10)

Nogawa + Ken-ichiroo	<i>*Accent<sup>n</sup></i>	<i>Faith-OO(accent)</i>
No'gawa Ken-i'chiroo	*!	
☛ Nogawa Ken-i'chiroo		*(No'gawa)

With the ranking for compounds, a wrong candidate (marked with '☛') would be chosen. Clearly, different ranking is necessary.

### 3. Accentuation of Foreign Names

Accentuation of foreign names differs significantly from that of Japanese native names, which we have seen in the previous section. Observe below:

- (11) a. Bi'ru + Kuri'nton → Biru Kuri'nton  
           'Bill'        'Clinton'        \*Bi'ru Kuri'nton
- b. Bo'risu + E'ritsin → Borisu E'ritsin  
           'Boris'        'Yeltsin'        \*Bo'risu E'ritsin
- c. Ju'rietto + Bi'noshu → Jurietto Bi'noshu  
           'Juliette'        'Binoche'        \*Ju'rietto Bi'noshu
- d. Yu'ssuu + Ndu'uru → Yussuu Ndu'uru  
           'Youssou'        'N'dour'        \*Yu'ssuu Ndu'uru

<sup>4</sup> It is possible to analyze the fact in (7) not by *\*Accent<sup>n</sup>* but by a constraint that requires an independent accentual phrase both for family and given names; e.g. *Lx≈Pr* (Prince and Smolensky (1993)). Note, however, that the main goal of this paper is to decide the appropriate approach for the lexicon, rather than the exact constraint ranking. For this purpose, it is necessary to posit a constraint ranking containing Faithfulness, because only Faith can be indexed in the Multiplying approach (cf. Section 6), and thus the ranking in (8).

Note also that it is equally necessary in 'different phrasing' analysis to account for why a single accentual phrase is constructed for compounds and foreign names (cf. Section 3), not two as in Japanese native names. Different ranking of constraints among strata is necessary in any case: for example, *Lx≈Pr* must be ranked in different positions. What is worse, a constraint other than Faith must be indexed in the Multiplying approach, which is impossible by definition (cf. Section 6).

- e. Ta'kushin + Shinawa'tora → Takushin Shinawa'tora  
 'Thaksin' 'Shinawatra' \*Ta'kusin Shinawa'tora

(11) includes names in English (a), Russian (b), French (c), Wolof (spoken in Senegal) (d), and Thai (e). Interestingly enough, all of these have single accents when the whole sequence of the family and the given name is uttered: utterances with multiple accents are quite unnatural. Note also that the family and the given names in (11) all have independent accents. This fact shows that the accent in given names is not respected when uttered with family names, which means, in Optimality Theoretic terms, **Faith-OO(accent)** is violated.

On the basis of this observation, I propose the following ranking for foreign names:

- (12) \*Accent<sup>n</sup> » Faith-OO(accent)

This is the same ranking for compound accentuation. Due to the higher ranking of \*Accent<sup>n</sup> than Faith-OO(accent), the candidate with a single accent will be selected as optimal, as in the case of compounds:

- (13)

Biru + Kurinton	*Accent <sup>n</sup>	Faith-OO(accent)
Bi'ru Kuri'nton	*!	
☞ Biru Kuri'nton		* (Bi'ru)

Clearly, the ranking for accentuation of foreign names is different from that of Japanese native names.<sup>5</sup>

Chinese and Korean names, on the other hand, are very peculiar:

- (14) a. Chi'n + Su'ihen → Chi'n Su'ihen  
 'Chen' 'Shui-bian' Chin Su'ihen  
 b. Ko'u + Ta'kumin → Ko'u Ta'kumin  
 'Jiang' 'Ze-min' Kou Ta'kumin  
 c. Bo'ku + Se'iki → Bo'ku Se'iki  
 'Pak' 'Chong-hui' Boku Se'iki  
 d. Ki'n + Sho'onichi → Ki'n Sho'onichi  
 'Kim' 'Chong-il' Kin Sho'onichi

(14a-b) are examples of Chinese names, and (14c-d) Korean names. In this group, names can have both single and multiple accentuation patterns.<sup>6</sup> Therefore, the ranking between

<sup>5</sup> It is impossible to regard foreign names simply as compounds. When the family and the given names of a foreigner is reversed, (which sometimes occurs when a child misunderstands that foreign names must be reversed in translation so that it conform to the order of Japanese native names), the name would have two accents; e.g. *Kuri'nton Bi'ru*. A compound, on the other hand, does not show such a behavior: *diizeru-e'njin* 'diesel engine' would be *enjin-di'izeru*, not *e'njin-di'izeru*. This fact suggests that foreign names are distinct from compounds.

<sup>6</sup> This is not because the family name in this group is short. Note that short family names in Japanese are always accented; e.g. *Ka'n Na'oto*, *Ke'n Na'oko*, *Ha'n Ke'iko*, etc. It is very odd to pronounce these names with only one accent, e.g. \**Kan Na'oto*, while such an accentuation is quite natural in the case of

**\*Accent<sup>n</sup>** and **Faith-OO(accent)** must be unranked; that is, the ranking is not fixed with respect to each other for Chinese/Korean names.

(15) **\*Accent<sup>n</sup>, Faith-OO(accent)**

(16)

Chin + Suihen	*Accent <sup>n</sup>	Faith-OO(accent)
☞ Chi'n Su'ihen	*	
☞ Chin Su'ihen		*(Chi'n)

In this ranking, both candidates can be selected.

Although there is a tendency toward a single accent pattern when the name has become familiar (as discussed below), the default seems to involve multiple accents. This pattern emerges when an imaginary name with a Chinese flavor is created:

(17) a. Shi'n Ka'nsen (from Shin-kansen, a name of express train line in Japanese)

b. Ho'u Re'nsou (from Hourensou 'spinach' in Japanese)

This may be due to the influence of Kanji (Chinese characters), which are used to express Chinese/Korean names as well as Japanese ones: since they are written with the same character and pronounced in a Japanese way, their accentuation is also calculated in the same way as for Japanese. Note that Chinese (18a) and Korean (18b) names have single accents when uttered in a way which is close to their native pronunciation:

(18) a. Wo'n + Ka'awai → Won Ka'awai  
'Wong' 'Kar-wai'

b. Ki'mu + De'jun → Kimu De'jun  
'Kim' 'Dae-jung'

In this case, the names are regarded as 'foreign,' and thus accentuation is computed by the ranking in (12).

#### 4. Familiarity and Accentuation

In the previous section, we saw that Japanese and Chinese/Korean names can have multiple accents, apart from the difference in acceptability of a single accent: only Chinese/Korean names allow it. There is, however, one case in which names in these language groups have a single accent even when both the family and the given names have a separate accent. Observe the following examples, where Japanese (19a), Chinese (19b) and Korean (19c) names are given:

(19) a. Toku'gawa + Ie'yasu → Tokugawa Ie'yasu

b. Mo'o + Ta'kutoo → Moo Ta'kutoo  
'Mao' 'Ze-dong'

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Chinese/Korean names. What counts, then, is the difference in type of names.

c. Ki'n            +    Da'ichuu    →    Kin Da'ichuu  
     'Kim'            'Dae-jung'

The key to this accentuation is the familiarity of the names. All of the names in (19) as well as others are familiar to ordinary Japanese. Note that Japanese names which are less familiar do not allow the single accent pattern; e.g. *Su'gita Ge'mpaku* but *\*Sugita Ge'mpaku*. As for Chinese/Korean names, the less familiar ones allow both single and multiple accent patterns, as we saw in (14). In order to account for these facts, I propose the following constraint ranking for familiar names:

(20) **\*Accent<sup>n</sup>** » **Faith-OO(accent)**

The effect of this ranking is vacuous for foreign names other than Chinese and Korean, as the ranking is same for them whether they are familiar or not: there is a single accent in any case.

The peculiar behavior of familiar names can be explained by assuming that the names in question are felt to be common names like compounds due to their familiarity. In this paper, however, I just suggest this possibility and leave it open to question, noting only that familiar names show a different behavior from unfamiliar ones; in Optimality Theoretic terms, the ranking of the relevant constraints is different.

### 5. Reranking or Multiple Faithfulness?

Before we proceed to the discussion on theoretical implications, I will summarize the constraint rankings for the name accentuation in Japanese:

- (21) a. Japanese native names: **Faith-OO(accent)** » **\*Accent<sup>n</sup>**  
       b. Chinese/Korean names: **Faith-OO(accent), \*Accent<sup>n</sup>**  
       c. Other foreign names: **\*Accent<sup>n</sup>** » **Faith-OO(accent)**  
       d. Familiar names: **\*Accent<sup>n</sup>** » **Faith-OO(accent)**

Because the accentual behavior is different among the types of names, it is inevitable that the ranking of relevant constraints differs among them. Naturally, then, a question arises: how can it be dealt with in Optimality Theory?

Two approaches are put forth to date in recent studies on the phonological lexicon. One of them divides the lexicon into several strata, each of which is assigned a specific ranking (cf. Itô and Mester (1995), among others). Every word is thus evaluated in terms of ranking according to the strata to which it belongs. The other approach, on the other hand, assumes no 'reranking' of the constraints. Instead, it splits faithfulness constraints and indexes them according to the stratum (cf. Benua (1997) and Fukazawa (1998), among others). A word is evaluated only in terms of the relevant faithfulness constraints, which might be ranked differently in the hierarchy. Let us review each of these approaches in turn.

The Reranking approach was first proposed by Itô and Mester to account for various stratal facts in Japanese. As they proved, Japanese words show some inconsistency as to

whether they are subject to a constraint. For example, Japanese has the following constraints:

(22) a. **SyllStruc:**

Constraints defining the basic syllable canons of Japanese, including **NoComplexOnset**, **NoComplexCoda**, **CodaCond**.

b. **NoVoiGem:**

Geminate obstruents must be voiceless.

c. **No-[p]:**

A Constraint against single (nongeminate) [p].

d. **PostNasVoi:**

Post-nasal obstruents must be voiced.

As Itô and Mester illustrate, some of the Japanese words are subject to all of the constraints, and some are not, depending on the class to which the word belongs. Below is a list which shows sensitivity to the constraints according to the word classes.

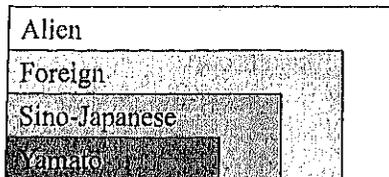
(23)

	<b>SyllStruc</b>	<b>NoVoiGem</b>	<b>No-[p]</b>	<b>PostNasVoi</b>
Yamato	√	√	√	√
Sino-Japanese	√	√	√	d.n.a.
Foreign	√	√	d.n.a.	d.n.a.
Unassimilated Foreign	√	d.n.a.	d.n.a.	d.n.a.

Yamato is the class which comprises Japanese native words. Sino-Japanese words are those that consist of Chinese characters (i.e. Kanji) which are read in non-native ways (i.e. On-yomi). Foreign and Unassimilated Foreign words are both loans from other languages; they differ in that Japanese is more accustomed to the former.

The facts in (23) imply that more nativized vocabulary items conforms to more constraints; thus, Yamato is subject to all the constraints while Unassimilated Foreign (a.k.a. Alien) satisfies only one. Based on this observation, Itô and Mester posit a core/periphery organization for the Japanese lexicon (24a), instead of just partitioning it (24b).

(24) a.



b.

Yamato	Sino-Japanese
Foreign	Alien

(24a) shows that Yamato is subject to many restrictions because it lies at the core of the Japanese lexicon, while Alien is at the peripheral and thus only a small number of constraints applies to it.

Itô and Mester further propose that the differences in (23) result from the different

ranking of the Faithfulness constraint among the strata. Recall that nonconformity to some structural constraint implies that some Faithfulness constraint overrides it. Thus, in the stratum for Yamato, where all constraints are satisfied, **Faith** is ranked in the lowest place. In Alien, on the other hand, where only **SyllStruc** is satisfied, **Faith** is ranked just below **SyllStruc**.

- (25) Yamato:           **SyllStruc** » **NoVoiGem** » **No-[p]** » **PostNasVoi** » **Faith**  
 Sino-Japanese: **SyllStruc** » **NoVoiGem** » **No-[p]** » **Faith** » **PostNasVoi**  
 Foreign:           **SyllStruc** » **NoVoiGem** » **Faith** » **No-[p]** » **PostNasVoi**  
 Alien:             **SyllStruc** » **Faith** » **NoVoiGem** » **No-[p]** » **PostNasVoi**

The facts in (23) can therefore be accounted for in the different rankings of the Faithfulness constraint among the strata. Moreover, they can be reduced to the organization of the lexicon, where a stratum closer to the core is subject to more restrictions.

The second approach to the stratal phenomena in Japanese is proposed by Fukazawa (1998) and Fukazawa et al. (1998). Following Benua's (1997) analysis for English, they propose that Faithfulness constraints can be split and indexed according to the stratum, and that such indexed **Faiths** are ranked in different positions within the hierarchy. Although Fukazawa (and her colleagues) do not specifically focus on the problems of (23), it is easy to apply their theory to (23) and assume the following ranking:

- (26) **SyllStruc** » **Faith-A** » **NoVoiGem** » **Faith-F** » **No-[p]** » **Faith-SJ** » **PostNasVoi**  
       » **Faith-Y**

In (26), the indexes A, F, SJ, and Y stand for 'Alien', 'Foreign', 'Sino-Japanese', and 'Yamato' respectively, and assure that the Faithfulness constraint to which they are assigned applies only at the relevant stratum. In this way, it is not necessary to assume a distinct ranking for each stratum in this approach: the single ranking in (26) does everything.

The difference between the two approaches does not seem so great as Fukazawa et al. claim, however. Their arguments for single rankings such as in (26) are: (i) that multiple ranking complicates the grammar; (ii) that the core/periphery structure is not consistent; and (iii) that distinct ranking cannot account for hybrid words. In my view, the two approaches are on a par. First, it is true that splitting Faithfulness constraints can reduce the number of the constraint hierarchy to one. At the same time, however, the evaluation procedure gets more complicated: in order to see if a word is subject to the Faithfulness constraint, H-Eval (or Harmonic Evaluation, a function in OT) must check the diacritic assigned to the word, which may be present in the input.<sup>7</sup> In the Reranking approach, on the other hand, the

<sup>7</sup> Note that such a diacritic does not have a physical counterpart in the output form. It represents a kind of morphological information, and thus must be assigned to the input. In such a case, another problem arises: although it is assumed in OT that only output forms are evaluated by the constraints, the indexed Faith must also look into the input form.

evaluation is simple; whatever the word is, it is evaluated against the relevant Faithfulness constraint.

Second, as Fukazawa et al. show, some phenomena cannot be accounted for by the core/periphery organization of the lexicon. That is, in some cases, a structural constraint applies to the more peripheral words but not to the less peripheral ones, which means that **Faith** is ranked lower in the former than in the latter. This only shows, however, that ranking solely according to core/periphery is problematic: it does not nullify the assumption of reranking itself. Moreover, totally denying such organization leads to a lack of general mechanism for constraint ranking, even for the Multiplying approach.

Third, hybrid compounds are no longer a problem once we employ Output-Output correspondence constraints on them. The problem emerges when Input-Output Faithfulness constraints are assumed to be at work, but it is unnecessary to assume so because all compounds are, by definition, derived from two (or more) independent words. Thus, hybrids can be evaluated according to whether they match these independent forms.

Let us now go back to the problem of accentuation of person names. As summarized in (21), the ranking of relevant constraints differs according to the types of names. Comparing name-types to stratal phenomena in Japanese, we can regard each type as corresponding with the strata as in (27):

- (27) a. Japanese native names: Yamato  
 b. Chinese/Korean names: Sino-Japanese  
 c. Other foreign names: Alien  
 d. Familiar names: (no correspondent)

Although most Japanese native names are written in Chinese characters, they could be classified as Yamato because the letters are often read in the native Japanese way (i.e. Kun-yomi). Moreover, since foreign names which are not familiar to Japanese have the same accentuation pattern as familiar ones, their stratum can be regarded as Alien. The ranking in (21) can therefore be restated in terms of strata (except for (27d), which is omitted below):

- (28) a. Yamato: **Faith-OO(accent)** » **\*Accent<sup>n</sup>**  
 b. Sino-Japanese: **Faith-OO(accent), \*Accent<sup>n</sup>**  
 c. Alien: **\*Accent<sup>n</sup>** » **Faith-OO(accent)**

As argued earlier, this variance in ranking can be accounted for in both approaches. In the Reranking approach, the ranking would be as in (28). In the Multiplying approach, on the other hand, it would appear as in (29) below:

- (29) **Faith-OO(accent)-Y** » **\*Accent<sup>n</sup>**, **Faith-OO(accent)-SJ** » **Faith-OO(accent)-A**

It is clear from (28) and (29) that the ranking does not conform to the core/periphery organization of the lexicon: the order is reversed. As already mentioned, however, this fact

itself does not nullify the Reranking approach; both approaches can equally accommodate the accentual phenomena of person names in Japanese. Consequently, we must determine which approach is better by looking at other empirical evidence.

## 6. Foreign Names with Four Morae

The data I will examine for the purpose of determining the proper model involves accentuation of foreign names with four morae. This class of names is of particular interest because it deviates from the regular pattern. Although most foreign names have accent (usually on the default antepenultimate mora), the names in (30) and (31) do not have: they are unaccented.

(30)	Supinoza	'Spynoza'	Arubini	'Albini'
	Dekaruto	'Descartes'	Ashimofu	'Asimov'
	Orutega	'Ortega'	Asutea	'Astaire'
	Suharuto	'Suharto'	Sumetana	'Smetana'
	Karutie	'Cartier'	Porupoto	'Pol Pot'
(31)	Kampana	'Campana'	Attira	'Attila'

These exceptional words have one important characteristics in common: they consist of four morae.<sup>8</sup> Words of a different length do not show this pattern:

(32)	De'rida	'Derrida'	Ka'fuka	'Kafka'
	A'bebe	'Abebe'	Sa'dato	'Sadat'
	Na'seru	'Nasir'	Go'mesu	'Gomez'
(33)	Asupa'shia	'Aspasia'	Kusena'kisu	'Xenakis'
	Dorakuro'wa	'Delacroix'	Heraku'resu	'Herakles'

The words in (32) consist of three morae, those in (33) of five. Apparently, these words are accented and differ from those in (30) and (31). Interestingly, however, not all four-mora names show this pattern.

(34)	a.	Ka'awan	'Kirwan'	Jo'nson	'Johnson'
	b.	Kuro'odo	'Claude'	Fura'nku	'Frank'
	c.	O'ribaa	'Oliver'	Ha'rison	'Harrison'

Studying on accentuation of foreign place names, Kubozono (1996) claims that the difference between accented and unaccented loans lies in the syllable structure of the last two morae. He observes that four-mora place names are unaccented when the last two morae constitute distinct light syllables, and that they are accented when one or both of the morae

<sup>8</sup> When these names are pronounced with the family or the given name, the accentuation varies depending on the speaker; e.g. *Fura'niku Sinatora*, *Furanku Sinatora* or *Furanku Sina'tora* 'Frank Sinatra.' Note that such a variation cannot be found in compound, e.g. *Minami-A'idaho* 'South Idaho' from *Aidaho*, suggesting that accentuation of person names differs from that of compounds.

are included in a heavy syllable; e.g. *amerika* 'America,' *aidaho* 'Idaho' vs. *a'mazon* 'Amazon,' *oha'io* 'Ohio,' etc. The same generalization seems to apply here: the words in (30) and (31) are unaccented because they end with two light syllables, while those in (34) have a heavy syllable which contains one or both of the last two morae and thus accented.<sup>9</sup> The syllable weight of the first two morae is irrelevant as the examples in (31) show.

In order to account for these phenomena, I will posit the following constraint:

(35) **No-Accent-(F)(F<sub>σσ</sub>)**

Accent does not appear in a word with the shape of (F)(F<sub>σσ</sub>).

The formulation in (35) is purely descriptive and would need to be formalized; nevertheless, it seems enough for our purpose here: to militate against a word of a particular shape having an accent. When this constraint is ranked higher than one which requires an accent on a word, as in (36), the words in (30) and (31) become unaccented.

(36) **Antepenultimate Accent (APA)**

A word must have an accent on the antepenultimate mora.

(37) Alien: **No-Accent-(F)(F<sub>σσ</sub>) » APA**

Note that most words of the Alien class have the default antepenultimate accent. Of course, the descriptive constraint in (36) can be subdivided into several others which are more natural, such as **Nonfinality** and **Alignment**. Kubozono (1995a, 1996) in fact does this, but the formulation given above is sufficient for us. By the ranking in (37), the facts in (30)-(34) can be accounted for in the following tableaux:

(38)

Supinoza	No-Accent-(F)(F <sub>σσ</sub> )	APA
(Supi)'(noza)	*!	
☞ (Supi)(noza)		*

(39)

Furanku	No-Accent-(F)(F <sub>σσ</sub> )	APA
☞ Fu(ra'n)ku		
Fu(ran)ku		*!

<sup>9</sup> As Kubozono (1996) notes, some four-mora words with final two light syllables are accented, contrary to the prediction. Place names in (i) and person names in (ii) have accent:

(i) a'ndesu 'Andes,' we'eruzu 'Wales,' i'ndasu 'Indas,' ma'dorasu 'Madras,' se'negaru 'Senegal'

(ii) De'ibisu 'Davis,' To'omasu 'Thomas,' A'damuzu 'Adams,' A'kubaru 'Akbar,'

A'gunesu 'Agnes,' Bo'ruhesu 'Borges,' Ado'rufu 'Adorf'

Kubozono argues that this peculiarity of the words in (i) results from the fact that the final vowel is epenthetic: as the glosses show, the final vowel /u/ is not present in the original words. The same observation applies to the person names in (ii).

Kubozono (p.c.) points out that such 'exceptional' accents appear especially when the epenthetic vowel is /u/ and the final consonant in the original word is coronal; thus *Porupoto* (< Pol Pot) is unaccented. Although there are some exceptions (e.g. *Ado'rufu* < Adorf), this seems a general tendency.

Since words other than those belonging to (30) and (31) do not have the prosodic structure referred in (35), they are not subject to the constraint, hence receive their accent from (36), as shown in (39); in this case, a heavy syllable constitutes a distinct foot in the middle of the word.

On the other hand, Japanese native names with similar structure do not behave in the same way.

(40) Naka'moto, Take'moto, Kane'mura, Take'hara, Ono'dera, Koya'nagi, Iga'rashi  
It is completely natural for Japanese native names with four light syllables to have an accent.<sup>10</sup> Therefore, the following ranking is necessary for the Yamato stratum:

(41) Yamato: **APA** » **No-Accent-(F)(F<sub>σσ</sub>)**

Needless to say, this ranking produces outputs with an antepenultimate accent.

(42)

Nakamoto	APA	No-Accent-(F)(F <sub>σσ</sub> )
☞ (Naka)'(moto)		*
(Naka)(moto)	*!	

Here too, the constraint hierarchy differs among strata: the ranking in (37) and the one in (41) clearly contradict each other. One way of solving this problem is to divide **No-Accent-(F)(F<sub>σσ</sub>)** into two parts, and to rank them before and after **APA** as in (43), following the Multiplying approach.

(43) **No-Accent-(F)(F<sub>σσ</sub>)-A** » **APA** » **No-Accent-(F)(F<sub>σσ</sub>)-Y**

At first glance, this seems to work: the ranking of **No-Accent-(F)(F<sub>σσ</sub>)-A** prior to **APA** ensures that only words in the Alien stratum will be subject to this constraint, but not those in the Yamato stratum. Unfortunately, however, such an analysis is disallowed, as a markedness constraint such as **No-Accent-(F)(F<sub>σσ</sub>)** cannot be multiplied by definition. Only constraints of the Faith family, or those of Correspondence, can be multiplied. This argument is elaborated below.

First, let us review the definition of correspondence (cf. McCarthy and Prince (1995:262)):

<sup>10</sup> Although the names in (40) have their accent on the antepenultimate mora, others have it on a different one; e.g. *Tsubaki'no*, where the accent falls on the penultimate mora. This is because the last mora constitutes a foot by itself, as it corresponds to a single Chinese letter, hence is a morpheme. Moreover, as is often the case in Japanese, many names are unaccented; e.g. *Hashimoto*, *Nakamura*, *Watanabe*, *Oyamada*, *Kubozono*, etc. This is not due to the constraint in (37), because names with different shapes can be accentless; e.g. *Wada*, *Kimura*, *Ogasawara*, etc. This fact suggests that **APA**, or the ranking in (41), is applicable only to inputs which are lexically marked as [+accent]. However, I will leave such refinement to future research, as it is beyond the scope of this paper.

## (44) Correspondence

Given two strings  $S_1$  and  $S_2$ , **correspondence** is a relation  $\mathcal{R}$  from the elements  $S_1$  to those of  $S_2$ . Elements  $\alpha \in S_1$  and  $\beta \in S_2$  are referred to as **correspondents** of one another when  $\alpha \mathcal{R} \beta$ .

This notion is introduced first to ensure the identity between the base and the reduplicant in a reduplicated form (i.e. B-R Identity), and is then applied to all relationships within the phonology. McCarthy and Prince (1995) utilized this to replace the former **Parse/Max** constraints with **Dep** and **Max**, where correspondence was met between the input and the output (i.e. I-O Faith). Benua (1995) has enlarged the notion so that correspondence can be met between two distinct outputs – i.e. between a base word and a truncated form (i.e. B-T Identity). It is evident from these studies that  $S_1$  and  $S_2$  in (44) are defined in various ways; base and reduplicant in B-R Identity, input and output in I-O Faith, and base word and truncated form in B-T Identity.

The basis of my proposal that only Faith can be multiplied lies here. Because Faithfulness is based on Correspondence, it is necessary to define the entities which are being compared. The terms added to Faith and Correspondence constraints, i.e. I-O, B-R, and B-T, all express such definition. It is therefore plausible that certain Faith or Correspondence constraints refer to certain classes of inputs or outputs, as in Benua (1997) and Fukazawa (1998). In Benua's (1997) analysis,  $S_1$  and  $S_2$  correspond to an output indexed as Class 1 or 2, on the one hand, and an output from which another output is derived, on the other. In Fukazawa's (1998) analysis, these correspond to an input and an output which are indexed to the Japanese stratum.<sup>11</sup> In other words, the 'index' is meant to refer to the word forms over which the Faith or Correspondence is evaluated: it does not refer to the constraint itself.

The main argument now becomes clear: it is entirely possible to multiply Faithfulness constraints and to index the word form according to the stratum. In fact, it is theoretically assured so long as the notion of Correspondence is employed in Optimality Theory. Markedness constraints, on the other hand, do not have such motivation since they have nothing to do with Correspondence. Thus, markedness constraints cannot be multiplied; only Faith constraints can.

Let us go back to the problem of accentuation. As shown in (37) and (41), the ranking for accentuation of four-mora names is not consistent as to the stratum. Constraints in these rankings are those of markedness: none of Faithfulness is involved. Differences in ranking therefore cannot be resolved by multiplying one of the constraints as in (43).

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<sup>11</sup> Benua's analysis is somewhat surprising in that the output is indexed. Note that classhood is a lexical property of affixes, hence the information concerning their membership to a class should be contained in the input. In Fukazawa's analysis, on the other hand, it is ambiguous as to whether the index refers to the input or the output.

The Reranking approach, on the other hand, does not raise such a problem that the Multiplying approach does. There is no restriction as to what constraints can be reranked. Although Itô and Mester propose that only Faith can be reranked, this claim does not have theoretical motivation hence is merely an assumption. We thus conclude that only the Reranking approach can account for the differences in accentuation of four-mora names; that is, the two rankings in (37) and (41) coexist in the Japanese lexicon, according to the stratum. Furthermore, the same mechanism should also be responsible for other phenomena, including the accentuation we saw in Sections 2-5. Therefore, we conclude that it is different rankings—or ‘reranking’—that lie under the sub-lexical phenomena.

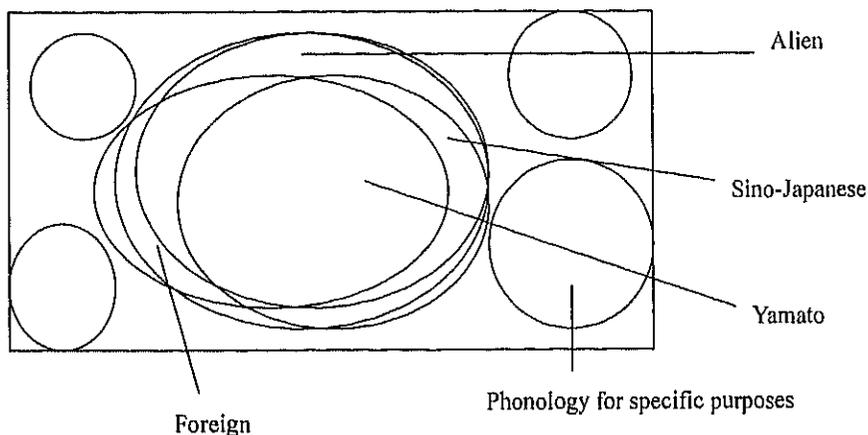
### 7. The Overall Picture of the Japanese Lexicon

Having observed that the Reranking approach is superior to the Multiplying approach for the purpose of representing the lexicon, let us now attempt to give an overall picture of the Japanese lexicon. First, given the indisputability of the core/periphery distinction, it is reasonable to regard the core/periphery organization as constituting the center of the lexicon. This is not an absolute mechanism, however, as Fukazawa et al. (1998) point out: there are still some parts that defy the generalization. This means that a stratum do not completely fit inside another, and that the boundary between the strata can cross, just as the orbits of Pluto and Neptune do.

Moreover, as the present study has shown, there are other phenomena which do not conform to the generalization. Recall that in accentuation of person names, the ranking was the reverse of other stratal phenomena; that is, the Faith for the Yamato stratum was ranked higher than that for the Alien stratum. This suggests that there exist other phenomena outside the core/periphery conceptualization.

Based on these observations, it seems reasonable to assume the following organization:

(45) Japanese lexicon



This figure only represents an approximation, and that the lines are not meant to show the exact boundaries. Moreover, there might be more lexical parts which work for specific purposes other than for accentuation of person names. Inside such specific phonologies, the distinction of strata might also be relevant. Similarly, among each stratum there could be small lexical groups which differ in several minute respects.<sup>12</sup>

One possible problem to this approach would be the case of hybrid forms; for example, combinations involving either Japanese-family and foreign-given names (46a), or foreign-family and Japanese-given names (46b). Let us observe their accentuation:

- (46) a. To'koro Jo'o'oji (George), Ku'roda A'asaa (Arthur),  
           Yoko'yama No'kku (Knock)  
       b. Bi'ito (Beat) Ta'keshi, Anto'nio (Antonio) I'noki,  
           Kyarora'in (Caroline) Yo'oko, Ma'akasu (Marcus) To'shiko

These names have two accents, one each for the family and the given name.<sup>13</sup> Note, however, that this is also a characteristic of Japanese native names. This alone suggests that the presence of a Japanese native name causes the speaker to assume that the whole name belongs to the Yamato stratum. In other words, the native name is regarded as the 'head' of the name, and thus the whole sequence is evaluated at the Yamato stratum.

Similarly, most of the problems which arise from hybrid words disappear when considering headedness. Hybrid words therefore do not constitute a problem for the model presented here.

## 8. Conclusion

Accentuation of person names constitutes another example of sub-lexical phenomenon in Japanese; that is, it differs according to the word class. The facts can be accounted for in both of approaches proposed to date, the Reranking approach and the Multiplying approach -- if one has recourse to Faithfulness constraints. Taken with other facts, however, the latter approach turns out to face a serious theoretical problem: that foreign four-mora names are generally unaccented can only be accounted for by multiplying a markedness constraint in the latter approach, which is impossible by definition. From this we can conclude that the Reranking approach is more suitable for representing sub-lexical phenomena.

As Fukazawa et al. (1998) and the present study show, the core/periphery organization

<sup>12</sup> The distinction between accented and unaccented may be one of such groupings. Moreover, some idiosyncratic behavior of suffixes in accentuation (cf. Zamma (1994a, 1999, 2001) for English suffixes) and affixation generally (cf. Zamma (1994b, 2000) again for English suffixes) may also result from such grouping. Note too that such behavior cannot be accounted for simply by multiplying Faithfulness constraints.

<sup>13</sup> Kubozono (1995b) claims that the words in (46b) allow a pattern with only one accent on the given name, giving the example of *Biito Ta'keshi*. However, such a pattern is closely related to familiarity. Note that *Maakasu To'shiko* is fairly awkward.

of the lexicon which Itô and Mester (1995) proposed is not so strict that it can never be violated: there are several phenomena that diverge from the generalization. Although the organization seems valid for the most part, it is necessary to loosen the structure somewhat, so that minor idiosyncratic behavior is allowed. The revised model presented here is still a rough sketch, but seems to be a step in the right direction. Refinement is necessary of course, but this will be left to future research.

#### REFERENCES

- Benua, Laura (1995) "Identity Effects in Morphological Truncation," *University of Massachusetts Occasional Papers* 18, 77-136.
- Benua, Laura (1997) "Affix Classes are Defined by Faithfulness," *University of Maryland Working Papers in Linguistics* 5, 1-26.
- Fukazawa, Haruka (1998) "Stratum Specific Phonological Phenomena in Japanese," *On 'in Kenkyuu (Phonological Studies)* 1, 3-10.
- Fukazawa, Haruka, Mafuyu Kitahara and Mitsuhiro Ota (1998) "Lexical Specification and Ranking Invariance in Constraint-based Grammars," *CLS* 34-2, 47-62.
- Itô, Junko and Armin Mester (1986) "The Phonology of Voicing in Japanese: Theoretical Consequences for Morphological Accessibility," *Linguistic Inquiry* 17, 49-73.
- Itô, Junko and Armin Mester (1995) "The Core-Periphery Structure of the Lexicon and Constraints on Reranking," *University of Massachusetts Occasional Papers* 18, 181-209.
- Kubozono, Haruo (1995a) "Constraint Interaction in Japanese Phonology: Evidence from Compound Accent," *Phonology at Santa Cruz* 4, 21-38.
- Kubozono Haruo (1995b) *Gokeisei-to On'in-Kouzou (Word Formation and Phonological Structure)*, Kurosio Publishers, Tokyo.
- Kubozono, Haruo (1996) "Syllable and Accent in Japanese," *The Bulletin of the Phonetic Society of Japan* 211, 71-82.
- Kubozono, Haruo (1997) "Lexical Markedness and Variation: a Nonderivational Account of Japanese Compound Accent," *WCCFL* 15, 273-287.
- McCarthy, John and Alan Prince (1995) "Faithfulness and Reduplicative Identity," *University of Massachusetts Occasional Papers* 18, 249-384.
- Prince, Alan and Paul Smolensky (1993) "Optimality Theory: Constraints Interaction in Generative Grammar," ms., Rutgers University and University of Colorado.
- Zamma, Hideki (1994a) "Accentuation of *-ory*, *-ive*, and *-ion*," *English Linguistics* 12, 248-271.
- Zamma, Hideki (1994b) "Phonological Requirements on Suffixation," *Tsukuba English Studies* 13, 21-41.
- Zamma, Hideki (1999) "*-ant/-ent*-no Kyosei-huyo-to Rekishikon-no Riron (Accentuation of *-ant/-ent* and Theories for Lexicon)," *Kobe Gaidai Ronso (The Kobe City University Journal)* 50:7,

77-94.

Zamma, Hideki (2000) "Stricture and Word Formation in English," *English Linguistics* 17:2, 573-590.

Zamma, Hideki (2001) "-ize-no Kyosei-huyo-to Kurasu-sei-ni Tsuite (Accentuation of -ize and Classhood)," *Imi-to Katachi-no Intaafaisu (Meaning-Form Interface)*, ed. by Nakau Minoru Kyouju Kanreki-kinen Ronbun-shuu Henshuu-iinkai (the committee for the celebration of Prof. Minoru Nakau's sixtieth birthday), 897-906, Kurosio Publishers, Tokyo.

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