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Loanword accentuation in Japanese

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1 Introduction

Accentuation is one of the main issues in Japanese loanword phonology and many studies have been conducted. Most of the studies pursued so far, however, are on loanword accentuation in Tokyo Japanese, and loanword accentuation in other dialects such as Kansai¹ Japanese have been studied little. The present study analyzes the location of accent and the pitch pattern of accented English loanwords in both Tokyo Japanese and Kansai Japanese in the framework of Optimality Theory (OT; Prince and Smolensky, 1993).

The major findings of this study are as follows. First, Tokyo Japanese and Kansai Japanese are the same in terms of accent assignment. The default accent of loanwords is the English accent, i.e. the accent on the syllable stressed in English. Second, Tokyo Japanese and Kansai Japanese are different with regard to pitch pattern. The constraints *[HH and *[LL, which are members of the constraint family Obligatory Contour Principle (OCP), play crucial roles in Tokyo Japanese, while the constraints *[LL and LH' are significant in Kansai Japanese. Third, the word-initial pitch of a loanword in Kansai Japanese is predictable, although it has been said in the literature that the pitch pattern of the whole word in Kansai Japanese is not predictable due to the two possible word-initial pitches, high and low. The default word-initial pitch in Kansai Japanese is high.

This paper is structured as follows. Section 2 introduces the data on English loanwords in Japanese, which are categorized into three groups. Section 3 analyzes the locus of accent of English loanwords in both Kansai and Tokyo Japanese. An account of the pitch pattern of accented English loanwords in both Kansai and Tokyo Japanese is presented in section 4. Finally, this study concludes in section 5 by summarizing the analysis.

2 Data

For this study, I collected 1105 unabbreviated English loanwords from a loanword dictionary (Horiuchi, 1996). All words are nouns and consist of three to eight morae, two to eight syllables. Bimoraic loanwords are ex-

¹Kansai is the name of the area in Japan containing Kyoto, Osaka, Kobe, and Nara.

cluded from the corpus since all of them have the accent on the first mora, which means the locus of accent and the pitch pattern are predictable. Also there are no one-mora loanwords in the corpus simply because one-mora loanwords do not exist in the Japanese lexicon.

As illustrated in (1), I have categorized the data into three groups: English Type, Non-English Type, and Unaccented Type. Accented loanwords belong to either English Type or Non-English Type. Loanwords of English Type have English accent, i.e. the accent on the syllable stressed in English. Loanwords of Non-English Type, on the other hand, do not have the English accent. All of the unaccented loanwords belong to the Unaccented Type.

(1)

	Tokyo J.	Kansai J.
a. English Type	756 (68.4%)	739 (66.9%)
b. Non-English Type	222 (20.1%)	221 (20.0%)
c. Unaccented Type	127 (11.5%)	145 (13.1%)
	1105 (100.0%)	1105 (100.0%)

In this study, I analyze only accented loanwords, i.e. loanwords belonging to the English Type and the Non-English Type, and ignore the Unaccented Type. Among the 1105 loanwords, 978 loanwords in Tokyo Japanese and 960 loanwords in Kansai Japanese are accented.

3 The Locus of Accent

First, let us analyze the location of accent. McCawley (1968) is a milestone in the study of loanword accentuation in Japanese, especially in Tokyo Japanese. He observes the characteristics of the loanword accentuation shown in (2). Based on the observation in (2), many researchers (Ono, 1991; Tanaka, 1992; Katayama, 1995; and others) claim that the antepenultimate accent, i.e. the accent on the syllable containing the antepenultimate mora, is the default loanword accent in Tokyo Japanese.

(2) McCawley's observation (1968:134 fn. 6)

Loanwords fall into three classes based on the accentuation: i) unaccented words, ii) words accented on the syllable containing the antepenultimate mora, iii) words accented on the syllable which was stressed in the source language.

As illustrated in (3), however, the antepenultimate accent is not the default loanword accent in Tokyo Japanese and Kansai Japanese. The data show that 618 words out of 978 accented loanwords in Tokyo Japanese, i.e. 63.2%, and 615 words out of 960 accented loanwords in Kansai Japanese, i.e. 64.1%, have the antepenultimate accent, while 756 accented loanwords in Tokyo Japanese, i.e. 77.3%, and 739 accented loanwords in Kansai Japanese, i.e. 77.0%, have the English accent. This fact strongly suggests that the English accent is the default accent in both Tokyo Japanese and Kansai Japanese.

(3)

	Tokyo J.	Kansai J.
Antepenultimate Accent	618/978 (63.2%)	615/960 (64.1%)
English Accent	756/978 (77.3%)	739/960 (77.0%)

If the English accent is the default accent, why do the loanwords belonging to the Non-English Type not have the English accent? Interestingly, 181 words out of 222 loanwords in the Non-English Type in Tokyo Japanese, i.e. 81.5%, and 179 words out of 221 loanwords in the Non-English Type in Kansai Japanese, i.e. 81.0%, have the antepenultimate accent. That is, the accent appears on the syllable containing the antepenultimate mora when a loanword does not preserve the English accent. In loanwords of Non-English Type, the original English accent seems to shift onto the syllable containing the antepenultimate mora.

The next question to be considered is: What triggers the accent shift? The corpus shows that only 7.0% of the accented loanwords in Tokyo Japanese, i.e. 68 words, and 6.9% of the accented loanwords in Kansai Japanese, i.e. 66 words, have the accent on the left side of the syllable containing the preantepenultimate mora. In other words, accent on the left side of the syllable containing the preantepenultimate mora is disfavored in Japanese. Based on this, I assume that this restriction on the location of the accent causes the accent shift. The fact that more than 90% of the loanwords belonging to the English Type in both Tokyo Japanese and Kansai Japanese satisfy this restriction supports this hypothesis.

Within the OT framework, this accent shift can be explained by the five constraints in (4–8).

- (4) FAITHLOC(ACCENT) (Smith, 1998:617)
Output accent is faithful to its location in the input.
- (5) NONFINALITY (Prince and Smolensky, 1993:52)
No accent falls on the word-final foot.

- (6) **RIGHTMOST** (Prince and Smolensky, 1993:39)
A peak of prominence lies at the right edge of the word.
- (7) **ACCENT(PROMINENT M)**
Accent is on the most prominent nucleus of the syllable.
(e.g. on the first part of a long vowel)
- (8) ***ACCENT(L, PENULT F)**
No accent is on the left side of the penultimate foot.

FAITHLOC(ACCENT) in (4) requires that the locus of accent in the output be faithful to the locus of accent in the input. Because of this constraint, the loanwords of English Type have the accent on the syllable stressed in English. **NONFINALITY** in (5) prohibits the accent on the word-final foot while **RIGHTMOST** in (6) requires that the accent be at the right edge of the word. The ranking between them is **NONFINALITY » RIGHTMOST**. As illustrated in (9), this ranking accounts for the antepenultimate accent observed in the Non-English Type.

- (9) **NONFINALITY » RIGHTMOST**

Input: canoe	NONFINALITY	RIGHTMOST
a. ka(nu'u)	*!	*
b. σ ka'(nuu)		**

As claimed above, the default accent of English loanwords in Japanese is the accent on the syllable stressed in English. As shown in (10), English loanwords in Japanese can have the English accent as the default due to the ranking between the three constraints: **FAITHLOC(ACCENT) » NONFINALITY » RIGHTMOST**.

- (10) **FAITHLOC(ACCENT) » NONFINALITY » RIGHTMOST**

Input: apron	FAITHLOC(ACCENT)	NONFIN	RIGHTMOST
a. (epu)(ro'n)	*!	*	*
b. (epu')(ron)	*!		**
c. σ (e'pu)(ron)			***

ACCENT(PROMINENT M) in (7) prohibits the accent on the second half of the long vowel or on the coda. **ACCENT(PROMINENT M)** is the highest ranked constraint because no loanwords violate this constraint. Finally, ***ACCENT(L, PENULT F)** in (8) is the constraint that prohibits the accent on the left side of the penultimate foot. I do not know how this constraint is explained phoneti-

cally and phonologically². However, this type of restriction on loanword accentuation is observed cross-linguistically. Ono (1991) studies the accentuation of loanwords in English, Russian, Turkish, Polish, and Macedonian and finds that the accents on loanwords in those languages can appear only on the right side of the preantepenultimate syllable: on the last, penultimate, or antepenultimate syllable. In other words, none of these languages allow loanword accent on the left side of the penultimate foot. This constraint also plays a crucial role in Japanese because this constraint triggers the accent shift. *ACCENT(L, PENULT F) is ranked between ACCENT(PROMINENT M) and FAITHLOC(ACCENT).

Among the five constraints introduced above, *ACCENT(L, PENULT F) and NONFINALITY are based on foot structure. It has been agreed in the literature that foot size in Japanese is bimoraic (Poser, 1990, and others). As noted in (11), however, other questions related to foot in Japanese have not been settled.

(11) Kubozono (1999:57-58)

The formation of "foot," for example, raises many interesting questions: e.g. whether it proceeds from left to right or from right to left, whether (or when) it permits a monomoraic (i.e. degenerate) foot, whether an unfooted syllable may be allowed, and whether it is entirely independent of syllable structure as assumed by Poser (1990). None of these questions has been settled in the literature.

In this paper, therefore, I assume three things. Firstly, foot construction is right to left. Secondly, degenerate feet are not allowed. Thirdly, heavy syllables must be parsed into feet while unfooted light syllables are allowed. In other words, I assume that feet are assigned by the three constraints in (12–14), which are ranked as in (15). However, I will not include those constraints in tableaux for simplification.

(12) FTBIN (Prince, 1980)

Feet are bimoraic or disyllabic.

(13) PARSE-HSYL

Heavy syllables are parsed into feet.

²This constraint might be a conjunction of an alignment constraint (e.g. ALIGN-ACCENT-PENULT FOOT L) and another markedness constraint. However, it is not clear how this constraint should be formulated in terms of constraint conjunction. I will use the constraint *ACCENT(L, PENULT F) in this paper and leave the formulation of this constraint for future research.

- (14) ALLFTRIGHT (McCarthy and Prince, 1993a)
Every foot is at the right edge of the prosodic word.
- (15) Constraint ranking for foot structure:
FTBIN, PARSEHSYL » ALLFTRIGHT

In sum, the five constraints in (4–8) are ranked as in (16). The ranking in (16) explains the locus of accent on English loanwords in both Tokyo Japanese and Kansai Japanese, as exemplified in the tableaux (17–20). In (17), the loanword *imajineesyon* has an English accent because the English accent is in the penultimate foot. In (18), the loanword *jaanarizumu* does not have an English accent because the English accent is in the antepenultimate foot. In (19), the loanword *paasonaritii* has an English accent because the English accent is in the penultimate foot. And in (20), the loanword *kon-purekkusu* does not have an English accent because the English accent is in the antepenultimate foot.

- (16) Constraint ranking for the locus of accent
ACCENT(PROM M) » *ACCENT(L, PENULT F) » FAITHLOC » NONFIN » RIGHTMOST

(17) English Type in Tokyo Japanese

Input: imagination	ACCENT (PROM M)	*ACCENT (L, PENULT F)	FAITHLOC (ACCENT)	NON-FIN	RIGHT MOST
a. i(maji)(nee')(syon)	*!		*		**
b. i(ma'ji)(nee)(syon)		*!	*		*****
c. i(maji)(nee)(syo'n)			*!	*	*
d. \emptyset (i(maji)(ne'e)(syon)					***

(18) Non-English Type in Tokyo Japanese

Input: journalism	ACCENT (PROM M)	*ACCENT (L, PENULT F)	FAITHLOC (ACCENT)	NON-FIN	RIGHT MOST
a. (jaa')(nari)(zumu)	*!	*	*		****
b. (ja'a)(nari)(zumu)		*!			*****
c. (jaa)(nari)(zu'mu)			*	*!	*
d. (jaa)(na'ri)(zumu)			*		***!
e. \emptyset ((jaa)(nari')(zumu)			*		**

(19) English Type in Kansai Japanese

Input: personality	ACCENT (PROM M)	*ACCENT (L, PENULT F)	FAITHLOC (ACCENT)	NON-FIN	RIGHT MOST
a. (paa)so(nari)(tii')	*!		*	*	
b. (paa)so'(nari)(tii)		*!	*		****
c. (paa)so(nari')(tii)			*!		**
d. σ (paa)so(na'ri)(tii)					***

(20) Non-English Type in Kansai Japanese

Input: complex	ACCENT (PROM M)	*ACCENT (L, PENULT F)	FAITHLOC (ACCENT)	NON-FIN	RIGHT MOST
a. (kon)pu(rek')(kusu)	*!		*		**
b. (ko'n)pu(rek)(kusu)		*!			*****
c. σ (kon)pu(re'k)(kusu)			*		***
d. (kon)pu(rek)(ku'su)			*	*!	*

4 Pitch Pattern

Next, let us consider the pitch pattern. Japanese is considered a pitch-accent language, which means that the pitch pattern of the whole word is predictable given the locus of the accent of the word. Regarding the pitch pattern of loanwords, Tokyo Japanese and Kansai Japanese are different.

4.1 Kansai Japanese

First, let us analyze Kansai Japanese. With regard to the pitch pattern of loanwords, Kansai Japanese has the three characteristics given in (21).

- (21) a. The accent is marked by an abrupt falling pitch.
- b. The morae following the accented mora are low-pitched.
- c. The morae preceding the accented mora are either high-pitched or low-pitched throughout.

Among the three characteristics in (21), characteristic (21c) is problematic. As noted above, Japanese is considered to be a pitch-accent language, which means that the pitch pattern of the whole word is predictable given the locus of the accent of the word. However, it has been said in the literature that the pitch pattern of the whole word in Kansai Japanese is not predictable because of the two possible word-initial pitches, high and low (Pierrehumbert and Beckman, 1988:214).

The next question we need to ask is what determines the pitch pattern of the morae preceding the accented mora in Kansai Japanese. Table (22) shows the distribution of the accented morae in Kansai Japanese. As shown in (22), 343 words out of 960 accented loanwords in the corpus, i.e. 35.7%, have word-initial low pitch, whereas 617 words, i.e. 64.3%, have word-initial high pitch. That is, word-initial high pitch is the default. Interestingly, 258 words out of 343 loanwords with word-initial low pitch, i.e. 75.2%, have the accent on the second mora, while loanwords with word-initial high pitches never have the accent on the second mora. In other words, table (22) shows that word-initial low pitch in Kansai Japanese is possible due to the constraint LH' in (23).

(22) The distribution of accented morae in Kansai Japanese

	1	2	3	4	5	6	7	8	9		
H	457	0	94	50	14	2	0	0	0	617	960
L	0	258	62	20	3	0	0	0	0	343	
	457	258	156	70	17	2	0	0	0	960	

The top row shows the mora on which accent is located, while the left-hand column indicates the word-initial pitch ('H' = high and 'L' = low).

The pitch pattern of loanwords in Kansai Japanese can be explained by the six constraints in (23–28).

- (23) LH'
The mora immediately preceding the accented mora is low-pitched.
- (24) *[LH
No word-initial LH.
- (25) *[HH
No word-initial HH.
- (26) *[LL
No word-initial LL.
- (27) HEAD=H (cf. Yip, 2002:85)
Head mora should be high-pitched.
- (28) *NONHD/H (cf. Yip, 2002:98)
No High pitch on non-head morae.

The constraint LH' in (23) requires that the mora immediately preceding the accented mora be low-pitched while the constraint *[LH in (24) prohibits the sequence of low-high word-initially. In Kansai Japanese, the rising of the pitch is possible only in the position immediately preceding the accented mora. That is, LH' is ranked higher than *[LH. The constraints *[HH in (25)

and *[LL in (26) prohibit the sequence of high-high in word-initial position, the sequence of low-low in word-initial position, respectively. These constraints are members of the OCP constraint family. As shown above, word-initial low pitch is less common than word-initial high pitch, which indicates that *[LH and *[LL are ranked higher than *[HH. The ranking between LH', *[LH, and *[LL is *[LL » LH' » *[LH, because word-initial low pitch is disfavored and most of the loanwords with word-initial low pitches have their accent on the second mora. The constraints in (23–26) determine the pitch pattern of the morae preceding the accented mora. HEAD=H in (27) requires that the accented mora be high-pitched and *NONHD/H in (28) requires that the other morae be low-pitched. HEAD=H is ranked highest since no loanwords violate this constraint whereas *NONHD/H is ranked lowest.

In sum, the six constraints introduced above are ranked as in (29). This ranking explains the pitch pattern of loanwords in Kansai Japanese, as exemplified in (30–32). In (30), the optimal candidate *bataa* has the sequence of high-low word-initially because it satisfies all the constraints in the tableau. In (31), the optimal candidate *amenitii* has the sequence of low-high word-initially because it satisfies the constraint LH'. Finally, in (32), the optimal candidate *konsensasu* has the sequence of high-high word-initially because it satisfies the constraints *[LL and LH'.

- (29) Constraint ranking for the pitch pattern in Kansai Japanese
 HEAD=H » *[LL » LH' » *[LH » *[HH » *NONHD/H

- (30) Accent on the first mora

Input: butter	HEAD=H	*[LL	LH'	*[LH	*[HH	*NONHD/H
a. ba'taa HHH					*!	**
b. ^σ ba'taa HLL						

- (31) Accent on the second mora

Input: amenity	HEAD=H	*[LL	LH'	*[LH	*[HH	*NONHD/H
a. ame'nitii HHLLL			*!		*	*
b. ^σ ame'nitii LHLLL				*		

(32) Accent on the third mora

Input: consensus	HEAD=H	*[LL	LH'	*[LH	*[HH	*NONHD/H
a. konse'nsasu LHHLLL			*	*!		*
b. konse'nsasu LLHLLL		*!				
c. φ konse'nsasu HHHLLL			*		*	**

4.2 Tokyo Japanese

Next, let us consider Tokyo Japanese. With regard to the pitch pattern of loanwords, Tokyo Japanese has the three characteristics given in (33).

- (33) a. The accent is marked by an abrupt falling pitch. (= (21a))
 b. The morae following the accented mora are low-pitched (= (21b))
 c. The morae preceding the accented mora are high-pitched. But word-initial pitch and the pitch on the second mora must be distinct.

Tokyo Japanese and Kansai Japanese share all the characteristics in (33) but (33c). That is, Tokyo Japanese and Kansai Japanese are different in terms of the pitch pattern of the morae preceding the accented mora.

The pitch pattern of loanwords in Tokyo Japanese can be explained by the six constraints introduced in the previous subsection. Due to characteristic (33c), loanwords in Tokyo Japanese have a low-high sequence word-initially unless the first mora is accented. The characteristic (33c) indicates that the constraints *[HH in (25) and *[LL in (26) are highest-ranked. The constraint *Head=H* in (27) is also highest-ranked because no loanwords in Tokyo Japanese violate it.

In sum, the six constraints are ranked as in (34). The constraint ranking in (34) determines the pitch pattern of English loanwords in Tokyo Japanese, as exemplified in (35–37).

- (34) Constraint ranking for the pitch pattern in Tokyo Japanese
 HEAD=H, *[LL, *[HH » *[LH, LH', *NONHD/H

(35) Accent on the first mora

Input: atom	HEAD=H	*[LL	*[HH	*[LH	LH'	*NONHD/H
a. a'tomu HHH			*!			**
b. φ a'tomu HLL						

(36) Accent on the second mora

Input: image	HEAD=H	*[LL	*[HH	*[LH	LH'	*NONHD/H
a. ime'eji HHLL			*!		*	*
b. ime'eji LHLL				*		

(37) Accent on the third mora

Input: Wisconsin	HEAD=H	*[LL	*[HH	*[LH	LH'	*NONHD/H
a. wisuko'nsin LLHLLL		*!				
b. wisuko'nsin HHHLLL			*!		*	**
c. wisuko'nsin LHHLLL				*	*	*

In (35), the optimal candidate *atomu* has the sequence of high-low word-initially because it satisfies all the constraints in the tableau. In (36) and (37), on the other hand, the optimal candidates *imeeji* and *wisukonsin* have the sequences of low-high word-initially because they satisfy the highest-ranked constraints *[HH and *[LL.

5 Conclusion

The present study analyzes the locus of accent and the pitch pattern of accented English loanwords in both Kansai Japanese and Tokyo Japanese. The analysis developed in this study is summarized as follows.

First, Tokyo Japanese and Kansai Japanese are the same with regard to the locus of accent. The default accent of loanwords is the English accent, although it has been said in the literature that the default loanword accent in Japanese is the antepenultimate accent.

Second, the English accent moves onto the syllable containing the antepenultimate mora when the antepenultimate mora is on the left of the penultimate foot. This accent shift occurs due to the constraint *ACCENT(L, PENULT F). As Ono (1991) points out, this type of restriction on loanword accentuation is observed cross-linguistically. The constraint *ACCENT(L, PENULT F) is based on the foot structure. I assume that feet are assigned by the constraint ranking in (38), although questions related to Japanese foot-structure have not been settled in the literature. The locus of accent in ac-

cented English loanwords in both Kansai Japanese and Tokyo Japanese is accounted for by the constraint ranking in (39).

(38) Constraint ranking for the foot structure (= (15))
FTBIN, PARSE-HSYL » ALLFTRIGHT

(39) Constraint ranking for the locus of accent (= (16))
ACCENT(PROM M) » *ACCENT(L, PENULT F) » FAITHLOC(ACCENT) »
NONFIN » RIGHTMOST

Third, Tokyo Japanese and Kansai Japanese are different in terms of pitch pattern: They differ with regard to the pitch pattern of the morae preceding the accented mora. In Tokyo Japanese, the two highest-ranked constraints *[HH and *[LL, which are members of the OCP constraint family, play crucial roles in determining the pitch pattern of the morae preceding the accented mora. The pitch pattern of accented English loanwords in Tokyo Japanese can be explained by the constraint ranking in (40).

(40) Constraint ranking for the pitch pattern in Tokyo Japanese (= (34))
HEAD=H, *[LL, *[HH » *[LH, LH', *NONHD/H

Finally, the pitch pattern of Kansai Japanese is more complicated. It has been said in the literature that the pitch pattern of the whole word in Kansai Japanese is not predictable because of the two possible word-initial pitches, high and low. However, the word-initial pitch of loanwords in Kansai Japanese is, in fact, predictable: In Kansai Japanese, the default word-initial pitch is high. Loanwords can have low pitch word-initially when the accent is on the second mora. In Kansai Japanese, the rising of the pitch is possible only in the position immediately preceding the accented mora, which is due to the constraint *LH'*. The pitch pattern of Kansai Japanese can be accounted for by the constraint ranking in (41), where the constraints *[LL and *LH'* play significant roles.

(41) Constraint ranking for the pitch pattern in Kansai Japanese (= (29))
HEAD=H » *[LL » *LH'* » *[LH » *[HH » *NONHD/H

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