An Analysis of Tonal Assignment on Japanese Loanwords in Thai[1]

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0. Introduction

The number of Japanese loanwords in Thai is not as high as that of English loanwords. In fact, only five words originally from Japanese[2] are found in The Thai National Language dictionary published by the Royal Institute (ราชบัณฑิตยสถาน) in 1982. Nevertheless, Thai native speakers must have heard more than these five Japanese loanwords, if one considers the influx of Japanese words which have been absorbed into Thai through the mass media. Japanese proper names that sound familiar to us are famous cartoon and TV characters, such as "โดเรมอน" /do:re:mɔ̄n/, "ใน บิตะ" /no:bí?tà?/, "เนินจาวฮาโตริ" /ha:to:rí?/, or "โอชิน" /o:tchin/. We are also familiar with company names such as "ยามาฮ่า" /ja:ma:hâ:/ or "โตโยต้า" /to:jo:tâ:/, as well as food items like "สุกียากี้" /sù?ki:ya:kî:/ or "เทมปุระ" /thempù?rá?/. In this paper, I will examine whether the tones assigned on these Japanese loanwords are phonetically motivated. In addition, I will look at the main factors that determine the tonal assignment on them.

In the first section, I explain the phonological structure of Japanese, in order to understand how its structure is transformed into the Thai phonological system. In section two, I compare the Thai tones on Japanese loanwords with the original pitch accent of the same forms in Japanese (i.e. the "standard" Japanese). Section three discusses the Thai syllable structure in correlation with the tones assigned on Japanese loanwords. I also discuss the role of the Royal Institute in Japanese loanwords. The last section is a conclusion.

1. Japanese pitch-accent

The syllable structure of Japanese is canonically CV. Each CV sequence is called a mora, a timed unit which is smaller than a syllable. For example, the word /sinbun/ 'newspaper' in Japanese has two syllables (/sin/ and /bun/) and is counted as having four morae; /si/, /n/[3], /bu/, and /n/. It is important to separate the moraic level from the syllabic level because pitch distinction can take place at both levels. For example, at the moraic level the word /kan/ has two meanings, depending on the pitch pattern. If this

[2]These are กิโมโน /kĩ?mono:/, คาราเต้ /kha:ra:tê:/, สุกียากี้ /sù?ki:ya:kî:/, เช่น /sen/, and ยูโด /ju:do:/.

[3]A nasal, as well as a geminate, can form a single mora in Japanese.

word has a falling-pitch pattern (i.e. a sequence of high and low on each mora respectively), it means "completion". On the other hand, if it has a rising-pitch pattern, with a sequence of low and high, it refers to "sense" (Comrie 1990:868). It is well-known that Japanese is a pitch-accented language because each word can have no more than one pitch drop. The basic pitch patterns are H(igh)L(ow), LHL, and LH[4]. The following are examples of different pitch patterns on /hasi/: /hasi/ HH 'edge', /hasi/ LH 'chopsticks', and /hasi/ HL 'bridge' (Comrie 1995:869). The HL and LHL pitch patterns have one pitch drop, whereas the LH pattern has none. In other words, a sequence of pitches which shows more than one pitch drop such as HLHL is not possible in Japanese.

2. Tones on Japanese loanwords in Thai

To see whether the pitch accent in Japanese has any affect on the tonal assignment on loanwords in Thai, we need to compare the pitch accent of the original Japanese words with the Thai tones of the same forms. Each mora in Japanese has its own pitch (see Appendix). The number of pitches on each Japanese word depends on the number of morae. When they become loanwords in Thai, the pitch changes to be syllabic, since the syllable is the tone-bearing unit in Thai. For example, /ikkyuu/ 'the name of a famous monk' in Japanese consists of four morae; /i/, /k/, /kyu/, and /u/, having a sequence of HLLL. However, in Thai this loanword is made up of two syllables, /ik/ and /khiw/, with a sequence of high and mid tones. Thai speakers seem to perceive the moraic nature of the Japanese language as a short vowel with a final glottal stop (cvʔ), whereas a sequence of VV, which equals two morae in Japanese, becomes a smooth syllable in Thai.

I pay more attention to the tones assigned on the final syllable of Japanese loanwords, because it is a position where we find many tonal variations. On the other hand, most of the non-final syllables ending with a glottal stop tend to have a mid tone in casual speech. For example, the syllable /kiʔ/ of /kiʔmoːnoʔ/ 'a Japanese traditional costume' has a low tone, but in casual speech the low tone is neutralized into a mid tone, as in [kimono:]. Similarly, the second syllable of 'sakura' has a low tone in careful speech (/sa:kùʔráʔ/), but in casual speech it becomes a mid tone ([sakuráʔ]). However, the non-final checked syllables ending with /p,t,k/ maintain a high tone in casual speech, such as /níppɔn/ 'name of a painting company' and /dajhátsù/ 'name of a car company'.

Gandour (1979) suggests that English loanwords in Thai are phonetically motivated (with some exceptions), because the tones assigned on them follow the stress pattern of the original English words. If primary stress is on the first syllable of a bisyllabic word in English, a falling tone would be assigned to the last syllable of the same English loanword in Thai. This is because a bisyllabic word with primary stress on the first syllable in English has an overall falling stress pattern. For example, the last syllable of /wi:sâ:/ 'visa' has a falling tone because in English, the same word has initial stress /'vizo/ which has an overall falling pitch. On the other hand, if primary stress is on the second syllable of a bisyllabic word in English, a mid tone, not a falling tone, would be assigned to the last syllable of that English loanword, since it has an overall rising stress pattern. For example, the last syllable of /tche:mphu:/ 'shampoo' has a mid tone,

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[4]LL and HH are possible as well.

not a falling tone (*/tche:mphû:/), because the stress of the original form falls on the last syllable (/ʃaːm'pu/) and does not create an overall falling contour.

If the tones assigned on each Japanese loanword in Thai are phonetically motivated, they should correlate with the pitch accent of the original Japanese form. That is, the tonal assignment on Japanese loanwords in Thai should at least reflect the original pitch pattern of the original Japanese forms. However, the Japanese loanwords presented in this paper do not clearly show such evidence. The tones of Japanese loanwords will be described in the next section.

3. Discussion

The tones on Japanese loanwords in Thai do not occur randomly; they are quite systematic, depending on the syllable structure and the initial consonant which is described below:

3.1. Tones on the non-final syllable of Japanese loanwords

-All non-final smooth syllables have the mid tone, except /saː/ of /sǎːkeː/ 'เหล้าสาเก' and /kiáw/ of /kiáwsáː/ 'เกี๊ยวซ่า' (see Appendix).

-Short-checked syllables with the initial /b/ in Japanese loanwords have both low and high tone:
/noːbǐʔtàʔ/ (<JP./nobita/ HLL)   /dajbútsùʔ/ (<JP. /daibutsu/)
-A short-checked syllable with the initial /s/ in Japanese loanwords has the low tone:
/sùʔkiːjaːkîː/ (<JP. /sukiyaki/ LHHH)
-A short-checked syllable with the initial /tc/ in Japanese loanwords has the low tone:
/tchintcùʔkuʔ/ (<JP. /sinjuku/)
-Short-checked syllables with the initial /k/ in Japanese loanwords have the low tone:
/kùʔlíʔkòʔ/ (<JP. /guriko/ HLL)   /aːkǐʔhaːbaːráː/ (<JP. /akihabara/)

-Short-checked syllables with the initial /m/ have the high tone:
/mítsuːbǐʔtchíʔ/ (<JP. /mitsubisi/ LHLL)   /khaːmíʔkaːsèː/ (<JP. /kamikaze/ LHLL)
-Short-checked syllables with the initial /tch/ have the high tone:
/tchíʔsuːkàʔ/ (<JP. /sizuka/ HLL)   /tchíʔkoːkùʔ/ (<JP. /sikoku/ LHL)
-Short-checked syllables with the initial /n/ have the high tone:
/níttchin/ (<JP. /nissin/ HHLL)   /níppôn/ (<JP. /nippon/ LHHL)
-A short-checked sylllable with the initial /r/ has the high tone:
/naːrǐʔtàʔ/ (<JP. /narita/ HLL)
-A short-checked syllable with the initial /l/ has the high tone:
/kùʔlíʔkòʔ/ (<JP. /guriko/ HLL)
-Short-checked syllables with the initial /h/ have the high tone:
/hǐʔtaːtchíʔ/ (<JP. /hitachi/ HLL)   /dajhátsùʔ/ (<JP. /daihatsu/)

-A long-checked syllable with the initial /m/ has the high tone:
/máːtdâː/ (<JP. /matsuda/ LHH)

The tones on non-final syllables of the Japanese loanwords above are summarized in Chart I:

Smooth syllables	All smooth syllables are assigned the mid tone except: /sä:kc:/ and /kiáwsâ:/	
Short-checked syllables	T,ones	Initial consonants
	Low	/b/, /tc/, /s/, /k/
	High	/b/, /m/, /tch/, /n/, /r/, /l/, /h/
Long-checked syllable(s)	Tone(s)	Initial consonant(s)
	High	/m/

Chart I: Summary of tones on the non-final syllable of Japanese loanwords

3.2. Tones on the final syllable of Japanese loanwords

-Short-checked syllables with the initial /k/ in Japanese loanwords all have the low tone:

/tha:na:kà?/ (<JP./tanaka/ LHH) /tchisu:kà?/ (<JP./sizuka/ HLL)
kha:wa:sa:kî?/(<JP./kawasaki/ LHHL) /su:su:kî?/ (<JP./suzuki/ LHH)
/na:ŋa:sa:kî?/ (<JP./nagasaki/ LHLL) /hajkù?/ (<JP./haiku/ LHH)
/tchiko:kù?/ (<JP /sikoku/ LHL) /tchintcùkù?/ (<JP./sinjuku/ LHHH)
/kha:ra:o:kè?/ (<JP./karaoke/ LHHH) /jo:kò?/ (<JP./youko/ HLL)
-Smooth syllables with the same initial consonant have the falling tone:
/o:sa:kâ:/ (<JP./oosaka/ LHHH) /sùki:ja:kî:/ (<JP./sukiyaki/ LHHH)
/sajkô:/ (<JP./seiko/ HHH)
Exception: /sä:ke:/ (<JP. /sake/ LH)

-Checked syllables with the initial /s/ have the low tone:
/i:su:sù?/ (<JP./isuzu/ LHH) /dajhátsù?/ (<JP./daihatsu/ HHHL)
/dajbútsuù?/ (<JP./daibutsu LHHH)
-Smooth syllables with the same initial consonant have the falling tone:
/kíawsâ:/ (<JP./gyouza/ LHH) /kinsâ:/ (<JP./ginza/ LHH)
/a:sa:kù?sâ:/ (<JP./asakusa/ LHHH) /ja:ku:sâ:/ (<JP./yakusa/ HLL)
/kha:mí?ka:sê:/ (<JP./kamikaze/ LHLL)

-Checked syllables with the initial /tch/ have the high tone:
/su:tchî?/ (<JP./susi/ LH) /tha:khe:tchî?/(<JP./takesi/ HLL)
/mítsu:bitchî?/(<JP./mitsubisi/ LHLL /híta:tchî?/ (<JP./hitachi/ HLL)
-A smooth syllable beginning with the same consonant has the mid tone:
/kc:î?tcha:/ (<JP. /geisha/ LHH)

-Short-checked syllables with the initial /t/ have the low tone:
/no:bĭ?tà?/   (<JP./nobita/ HLL)   /na:rǐ?tà?/   (<JP./narita/ HLL)
-Smooth syllables beginning with the same consonant have the falling tone:
/to:jo:tâ:/   (<JP./toyota/ HLL)   /ha:kha:tâ:/   (<JP./hakata/ LHH)
/kha:ra:tê:/   (<JP./karate/ LHH)
Exception: /kiawto:/ (<JP. /kyouto/ HLL)

-Short-checked syllables with the initial /d/ have the low tone:
/ha:ne:dà?/   (<JP./haneda/ LHH)   /e:dò?/   (<JP./edo/ LH)
-Smooth syllables beginning with the same initial consonant have the falling tone:
/hɔndâ:/   (<JP./honda/ HHL)   /má:tdâ:/   (<JP./matsuda/ LHH)
/tɕhĭ?se:dô:/   (<JP./siseidou/ LHHLL)

-Short-checked syllables with the initial /n/ have the high tone:
/ajnú?/   (<JP./ainu/ HLL)
-Smooth syllables with the same initial consonant have the falling tone:
/ha:ko:nê:/   (<JP./hakone/ LHH)   /a:ka:nê:/   (<JP./hakone/ LHH)
Exception: /kĭ?mo:no:/   (<JP. /kimono/ LHH)

-Checked syllables with the initial /b/ have the low tone:
/sa:bà?/   (<JP./saba/ LH)   /so:bà?/   (<JP./soba/ HL)
/wa:sa:bǐ?/   (<JP./wasabi/ HLL)   /na:bè?/   (<JP./nabe/ HL)
-Smooth syllables with the same initial consonant have the falling tone:
/to:tɕhĭ?bâ:/   (<JP./tousiba/ HHLL)   /kha:wbĭ:/   (<JP./karubi/ HLL)
/sembê:/   (<JP./sembe/ HHL)   /wa:ta:na:bê:/ (<JP./watanabe/ LHHH)
Exception: /ko:be:/   (<JP. /koube/ HLL)

-Checked syllables with the initial /m/ have the high tone:
/ha:na:mǐ?/   (<JP./hanami/ LHH)   /sa:tɕhĭ?mǐ?/   (<JP./sasimi/ LHH)
Smooth syllables with the same initial consonant have the falling tone:
/ĥiro:tɕhímâ:/   (<JP./hirosima/ LHHH)   /jo:ko:ha:mâ:/ (<JP./yokohama/ LHHH)

-Checked syllables with the initial /j/ have the high tone:
/ha:na:já?/   (<JP./hanaya/ LHL)   /tɕho:jú?/   (<JP./shouyu/ LHH)

-Checked syllables with the initial /r/ have the high tone:
/thempù?rá?/   (<JP./tenpura/ LHHH)   /na:rá?/   (<JP./nara/ HL)
/sa:jo:na:rá?/   (<JP./sayounara/ LHHHH)   /kha:ma:kù?rá?/ (<JP./kamakura/ LHHH)
/sa:kù?rá?/   (<JP./sakura/ LHH)   /ha:to:rǐ?/   (<JP./hattori/ LLHH)
/su:ba:rú?/   (<JP./subaru/ HLL)
-Smooth syllables with the same initial consonant have the falling tone:
/a:kĭ?ha:ba:râ:/ (<JP./akihabara/ LHHHL)   /a:ra:rê:/   (<JP./arare/ LHH)
Exception: /dajmaru:/   (<JP. /daimaru/ HHLL)

-Japanese loanwords ending with a glide have the mid tone:

/ikkhiw/	(<JP./ikkyuu/ HLLL)	/to:kiaw/	(<JP./toukyou/ LHHH)
/to:khiw/	(<JP./toukyuu/ HHLL)	/bɔ:nsaj/	(<JP./bonsai/ LHHH)
/sa:mu:raj/	(<JP./samurai/ LHHH)	/kha:waj/	(<JP./kawai/ LHH)

The tones on final syllables of Japanese loanwords are summarized in Chart II below:

Smooth syllables	All smooth syllables ending with a glide /w/ and/j/ have the mid tone. Other smooth syllables have either the mid tone or the falling tone	
Short-checked syllables	Tones	Initial consonants
	Low	/b/, /d/, /tc/, /t/, /s/, /k/
	High	/m/, /n/, /r/, /j/, /tch/

Chart I: Summary of tones on the final syllable of Japanese loanwords

It can be seen from Chart I and Chart II that both of the non-final and final syllables of Japanese loanwords are consistently pronounced with the same tones. The short-checked syllables beginning with /b/, /tc/, /s/, and /k/ have the low tone whereas those beginning with /m/, /tch/, /n/, and /r/ have have the high tone.

On the other hand, most non-final smooth syllables have the mid tone, whereas final smooth syllables are assigned the mid tone as well as the falling tone. The rising tone never occurs, except on /să:kc:/.

3.3. Transcription of Japanese loanwords by the Royal Institute (ราชบัณฑิตยสถาน)

In 1992 the Royal Institute agreed on the spelling rules of loanwords in Thai from different languages, including Japanese. The Institute suggested that the short (i.e. one mora) and long vowels (i.e. two morae) in Japanese must be spelled differently in Thai. The vowels '-ะ', 'ิ', '-ุ', 'เ-ะ', and 'โ-ะ' in Thai represent short vowels /a/,/i/, /u/, /e/, and /o/ in Japanese, whereas '-า', 'ี', '-ู', 'เ-', and 'โ-' represent long vowels /aa/, /ii/, /uu/, /ee/, and /oo/ in Japanese. For example, /tori/ とり in Japanese would be 'โทะริ' (/thóʔríʔ/), but /toori/ とおり becomes 'โทริ' (/tho:ríʔ/).

If these spelling rules proposed by the Royal Institute are seriously practised, many phonological forms of Japanese loanwords would be changed. For example, /daimaru/ has long been pronounced /dajma:ru:/ and spelled 'ไดมารุ' in Thai. According to the spelling rules by the Royal Institute, however, '-ุ' cannot be used for /ru/, because

it is not a long vowel. The correct spelling would be 'ด≈อิน≈รุ' (/dà?í?má?rú?/). This means that the tone on /ru/ would now be the high tone instead of the mid tone.[5] In addition, these spelling rules will be the main factors in determining tones on new Japanese loanwords. In other words, the tones of Japanese loanwords will not correlate with the pitch accent of the Japanese forms, if the Royal Institute is successful in convincing Thai people to spell the loanwords according to the rules proposed.

3.4. *Data analysis*

Among one hundred and one Japanese loanwords[6] (see Appendix), sixty-six do not follow the pitch pattern of standard Japanese. For example, /tanaka/ 'Mr. Tanaka' has the LHH pitch pattern in standard Japanese, but it has the overall falling pitch contour in Thai: /tha:na:kà?/ (mid-mid-low). If the original pitch pattern has any effect on the Thai tones, this word should have the overall rising pitch contour in Thai, such as mid-high-high or low-mid-mid, not mid-mid-low as in /tha:na: kà?/. Similarly, /ainu/ 'the Ainu people' in Japanese has the falling pitch accent: high-low-low, whereas in Thai the same word has the rising pitch pattern, beginning with the mid tone and ending with the high tone (/ajnú?/).

It can be seen from Charts I and II that syllables beginning with /s/, /k/, /b/, and /tc/ consistently have the low tone whereas those beginning with /m/, /tch/, /n/, /r/, /l/, and /h/ always have the high tone. This is because the low tone is a 'default' tone for checked syllables spelled with the initial ส เสือ, ก ไก่, บ ใบไม้, and จ จาน whereas the high tone is a default tone for checked syllables spelled with the initial ม ม้า, ช ช้าง, น หนู, ร เรือ, ล ลิง, and ฮ นกฮูก. Checked syllables with the initial ส, ก, บ, and จ are pronounced with the low tone when there is no tone marker, such as สะ /sà?/, สบ /sòp/, กะ /kà?/, กบ /kòp/, บะ /bà?/, บบ /bòp/, จะ /tcà?/, and จบ /tcòp/. On the other hand, checked syllables beginning with ม, ช, น, ร, ล, and ฮ are pronounced with the high tone when there is no tone marker, as in มะ /má?/, มบ /móp/, ชะ /tchá?/, ชบ /tchóp/, นะ /ná?/, นบ /nóp/, ระ /rá?/, รบ /róp/, ละ /lá?/, ลบ /lóp/, ฮะ /há?/, and ฮบ /hóp/. Therefore, the tones of most Japanese loanwords are not phonetically motivated. They are predictable according to the Thai spelling. For example, the final /ka/ of /tanaka/ in Japanese can be written in two ways in Thai; either 'กะ' (low tone) or 'ก๊ะ' (high tone). Between the written forms 'กะ' and 'ก๊ะ', 'กะ' has a default low tone without a tone marker. In the same way, the mora /mi/ in Japanese can be either 'มิ' (with the high tone) or ' หมิ' (with the low tone) in Thai, according to the restriction on Thai tones of short-checked syllables. But since 'มิ' has a default high tone, the Japanese loanwords having the final mora /mi/ would naturally have the high tone, regardless of the original pitch accent in Japanese.

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[5] I think that the spelling rules proposed by the Royal Institute might have a great effect on the tones of recent loanwords, but not the old loanwords like /dajma:ru:/ because people might have already gotten used to the old pronunciation.

[6] This is only a random selection of Japanese loanwords in Thai.

Only the mid tone and the falling tone are found on final smooth syllables in Japanese loanwords. In fact, the smooth syllables in Thai should allow any of the five tones to occur on them. For example, it is possible for the last syllable of /toːkiaw/ 'Tokyo' to have any tone besides the mid tone: /toːkïaw/ โตเกี่ยว', /toːkïaw/ โตเกี้ยว', /toːkïaw/ โตเกี๊ยว', and /toːkïaw/ โตเกี๋ยว'. However, the smooth syllables select the mid tone because it is the default tone for Thai spelling. The last syllable of /toːkiaw/ 'โตเกียว', without any tonal marker, would have a default mid tone. The spelling system is therefore a crucial factor in determining the tones on Japanese loanwords.

On the other hand, the final smooth syllable of many Japanese loanwords have final falling tones such as /jaːmaːhâː/ 'Yamaha', /toːtchíʔbâː/ 'Toshiba', and /toːjoːtâː/ 'Toyota'. Most of these items are names of shopping malls, companies, and some famous places. The tones on these loanwords may be influenced by the tones of English loanwords, many of which have the final falling tone such as /ɛːrôː/ (<Eng.'arrow'), /tchíʔkhaːkôː/ (<Eng.'Chicago'), /mékdɔːnân/ (<Eng.'McDonald'), and so on. That is, Thai people may not have heard the actual pronunciation of the original words in Japanese. The tonal assignment entirely depends on English spelling. Another possibility is that these Japanese loanwords are secondary loans from English. They are assigned the tones according to tonal rules for English loanwords as proposed by Gandour (1979). For example, in English the stress falls on a penultimate syllable of the word /tɔː' yota/ 'car company'. According to a tonal rule for English loanwords, the falling tone must occur on the final syllable to preserve the falling pitch contour of the original form in English. Therefore, /toːjoːtâː/ may not be borrowed from Japanese directly, but is perhaps a secondary loan from English.

The words in support of the previous explanation are /kendou/ 'a kind of sports' and /nippon/ 'name of a painting company'. Both of them have final smooth syllables when they become loanwords in Thai. The final syllable of /kendou/ has the mid tone for some Thai speakers (/khendo/ 'เค็นโด') and the falling tone for some others (/khendôː/ 'เค็นโด้'). Similarly, the word /nippon/ can be read as either /níppoŋ/ ('นิปปง') with the mid tone or /níppɔ̂n/ ('นิปป้อน') with the falling tone. Thai speakers follow the Thai spelling rules if the mid tone is assigned to the last syllable of /nippon/. On the other hand, those who use the falling tone might read the English spelling according to tonal assignment on English loanwords.

4. Conclusion

The pitch accent of the original words in Japanese must not be the main factor in assigning Thai tones on loanwords, since they hardly correlate with each other. Moreover, it seems unlikely that the syllables which convey negative or existing meaning in Thai are avoided, because there are still loanwords like /toːtchíʔbâː/ 'company' (/bâː/ means 'crazy'), /khaːwbîː/ 'snack' (/bîː/ means 'to squash'), and /dajmaːruː/ 'shopping mall' (/ruː/ means 'hole'). The tonal assignment on Japanese loanwords depends on the writing aphabet at the initial position of a syllable. The checked syllables with initial ต /t/, ก /k/, บ /b/, ด /d/, and ส /s/ have the low tone whereas the ones with the initial ม /m/, น /n/, ร /r/, and ย /j/ have the high tone, regardless of the pitch accent in the original forms.

The tonal distribution on short-checked syllables in Thai is restricted: only high and low tones are allowed. If the tones on Japanese loanwords correlate with the tonal distribution on short-checked syllables, it is possible for both the high and low tone to occur on them according to the Japanese pitch accent. However, certain initial consonants of short-checked syllables select either the high or low tone. The main factor which determines the tones is therefore the Thai transcription of Japanese loanwords.

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APPENDIX[7]

Japanese	Japanese pitch accent	Thai	Items/Categories

ka roll[8]

Japanese	Japanese pitch accent	Thai	Items/Categories
/tanaka/	LHH	/tha:na:kà?/	name (male)
/sizuka/	HLL	/tchî?su:kà?/	name (female)
/oosaka/	LHHH	/o:sa:kâ:/	city
/kawasaki/	LHHL	/kha:wa:sa:kï?/	car company
/suzuki/	LHH	/su:su:kï?/	car company
/sukiyaki/	LHHH	/sù?ki:ja:kî:/	food
/nagasaki/	LHLL	/na:ŋa:sa:kï?/	city
/haiku/	LHH	/hajkù?/	'poem'
/sikoku/	LHL	/tchî?ko:kù?/	island
/sinjuku/	LHHH	/tchintɕù?kù?/	district
/karaoke/	LHHH	/kha:ra:o:kè?/	musical business

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[7]The pitch accent of these words in Japanese is collected from Kindaichi (1958) as well as from my Japanese colleague, Mr. Toshino Tanaka, who is a native speaker of the Tokyo dialect.

[8]The final syllables of the following Japanese loanwords are put in order according to the alphabetical order of *Hiragana*, the Japanese writing system, as is shown below:

a	i	u	e	o
ka	ki	ku	ke	ko
(ga	gi	gu	ge	go)
sa	si	su	se	so
(za	ji	zu	ze	zo)
ta	chi	tsu	te	to
(da	tzi	tzu	de	do)
(ja		ju		jo)
na	ni	nu	ne	no
ha	hi	hu	he	ho
(ba	bi	bu	be	bo)
(pa	pi	pu	pe	po)
ma	mi	mu	me	mo
ya		yu		yo
ra	ri	ru	re	ro
wa				

Japanese loanwords with the final *a*, *ga*, and *pa* rolls are not listed because the data are not available.

/sake/	LH	/să:ke:/	beverage
/youko/	HLL	/jo:kò?/	name (female)
/seiko/	HHH	/sajkô:/	watch company
/guriko/	HLL	/kù?lí?kò?/	snack company

sa roll

/asakusa/	LHHH	/a:sa:kù?sâ:/	district
/yakusa/	HLL	/ja:ku:sâ:/	name of mafia
/susi/	LH (but /o-susi/ = LHL)	/su:tɕhí?/	food
/takesi/	HLL	/tha:khe:tɕhí?/	name (male)
/mitsubisi/	LHLL	/mítsu:bǐ?tɕhí?/	company
/geisha/	LHH	/ke: ǐ?tɕha:/	'a geisha'

za roll

/gyouza/	LHH	/kíawsâ:/	food
/ginza/	LHH	/kinsâ:/	district
/fuji/	HL	/fu:tɕǐ?/	company
/isuzu/	LHH	/i:su:sù?/	car company
/kamikaze/	LHLL	/kha:mí?ka:sê:/	'Kamikaze'

ta roll

/nobita/	HLL	/no:bǐ?tà?/	name (male)
/narita/	HLL	/na:rí?tà?/	name (airport)
/toyota/	HLL	/to:jo:tâ:/	car company
/hakata/	LHH	/ha:kha:tâ:/	restaurant
/hitachi/	HLL	/hí?ta:tɕhí?/	company
/daihatsu/	HHHL	/dajhátsù?/	car company
/daibutsu/	LHHH	/dajbútsù?/	religion
/karate/	LHH	/kha:ra:tê:/	sport
/kyouto/	HLL	/kiawto:/	city

da roll

/honda/	HHL	/hɔndâ:/	car company
/matsuda/	LHH	/má:tdâ:/	car company
/haneda/	LHH	/ha:ne:dà?/	name (airport)
/edo/	LH	/e:dò?/	historical period

ja roll

/ninja/	HHL	/nintɕa:/	'ninja'

_na_ roll

/ainu/	HLL	/ajnúʔ/	native tribe
/hakone/	LHH	/ha:ko:nê:/	district
/akane/	LHH	/a:ka:nê:/	restaurant
/kimono/	LHH	/kĭʔmo:no:/	costume

_ha_ roll

| /yamaha/ | LHH | /ja:ma:hâ:/ | company |

_ba_ roll

/saba/	LH	/sa:bàʔ/	food
/soba/	HL	/so:bàʔ/	food (noodle)
/tousiba/	HHLL	/to:tҫhíbâ:/	company
/wasabi/	HLL	/wa:sa:bĭʔ/	food
/karubi/	HLL	/kha:wbĭ:/	snack
/manabu/	LHH	/ma:na:bùʔ/	name (male)
/sembe/	HHL	/scmbê:/	snack
/nabe/	HL	/na:bèʔ/	food
/koube/	HLL	/ko:bc:/	city
/watanabe/	LHHH	/wa:ta:na:bê:/	surname

_ma_ roll

/hirosima/	LHHH	/hĭʔro:tҫhíʔmâ:/	city
/yokohama/	LHHH	/jo:ko:ha:mâ:/	city
/hanami/	LHH	/ha:na:mĭʔ/	snack
/sasimi/	LHH	/sa:tҫhíʔmĭʔ/	food

_ya_ roll

| /hanaya/ | LHL | /ha:na:jáʔ/ | restaurant |
| /shouyu/ | LHH | /tҫho:júʔ/ | food (sauce) |

_ra_ roll

/tenpura/	LHHH	/thempu:ráʔ/	food
/nara/	HL	/na:ráʔ/	city
/sayounara/	LHHH, LHHL	/sa:jo:na:ráʔ/	'greeting'
/akihabara/	LHHHL	/a:kĭʔha:ba:râ:/	district
/kamakura/	LHHH	/kha:ma:kùʔráʔ/	city
/sakura/	LHH	/sa:kùʔráʔ/	flower
/hattori/	LLHH	/ha:to:rĭʔ/	name (male)

/harakiri/	LHHH, LHHL	/ha:ra:ki:ri:/	'to commit suicide'
/subaru/	HLL	/su:ba:rúʔ/	car company
/daimaru/	HHLL	/dajma:ru:/	shopping mall
/arare/	LHH	/a:ra:rê:/	name (female)

wa roll

tokukawa	LHLL	/to:ku:ka:wâ:/	historical period

Two morae in Japanese which equal one Thai syllable

/ikkyuu/	HLLL	/íkkhiw/	name (male)
/toukyuu/	HHLL	/to:khiw/	shopping mall
/toukyou/	LHHH	/to:kiaw/	Tokyo
/shougun/	LHHH	/tɕho:kun/	'Shogun'
/sogou/	HLL	/so:kô:/	shopping mall
/bonsai/	LHHH	/bɔ:nsaj/	plant
/osin/	LHL	/o:tɕhin/	name (female)
/nissin/	HHLL	/níttɕhin/	snack
/fujitsuu/	LHLL	/fu:tɕîʔsùʔ/	company
/sintou/	LHHH	/tɕhinto:/	religion
/jyuudou/	HLLL	/ju:do:/	sport
/siseidou/	LHHLL	/tɕhíʔse:dô:/	company
/kendou/	HLLL	/khendô:/	sport
/yaohan/	LHHH	/jawhan/	shopping mall
/kanebou/	LHHL	/kha:ne:bô:/	cosmetics company
/daimyou/	LHHL	/dajmiaw/	'noble'
/ramen/	HLLL	/ra:men/	food
/sumou/	LHH	/su:mô:/	sport
/doraemon/	LHHHH	/do:re:mɔ̂n/	name (cartoon)
/sinemon/	LLHHH	/tɕhin-e:mɔ̂n/	name (female)
/nippon/	LHHL	/níppɔ̂n/	painting company
/sanyou/	HHHH	/sanjo:/	company
/samurai/	LHHH	/sa:mu:raj/	'Samurai'
/gorou/	HLL	/ko:rô:/	restaurant
/tarou/	HLL	/tha:rô:/	name (male)
/kawai/	LHH	/kha:waj/	piano company
/zen/	HL	/sen/	religion
/en/	HL	/jen/	currency