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# MORA SENSITIVITY IN KAGOSHIMA JAPANESE: EVIDENCE FROM *NO* CONTRACTION\*

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Japanese has a productive process of *no* contraction by which *no* is contracted to the coda nasal *-n* in several contexts in colloquial speech: e.g. *bakemono* → *bakemon* ‘monster’. This paper discusses how this morphological process is constrained by phonological structure in Kagoshima Japanese, a southern variety of Japanese whose prosodic structure is supposed to be based entirely on the syllable, not the mora. It is concerned specifically with the contraction of the genitive particle *no* in such words as *haruo-no ie* (→ *haruo-n ie*) ‘Haruo’s house’. Looking at how three native speakers of Kagoshima Japanese produce the genitive particle in various phrases, the paper shows that the morphological process is blocked if it would yield a superheavy syllable in the output. It also demonstrates that the process often triggers shortening of the preceding long vowel. Furthermore, the same process triggers resyllabification of three-mora strings that would otherwise constitute trimoraic syllables. All these phenomena can be accounted for by the putatively universal constraint banning superheavy syllables. This generalization not only reinforces the view that superheavy syllables are avoided in Japanese, but also demonstrates that the notion of the mora is indispensable for the description of Kagoshima Japanese, which was previously thought to be a quantity-insensitive language. **Keywords:** mora, *no* contraction, Kagoshima Japanese, superheavy syllable, quantity sensitivity

## 1 *No* contraction in Japanese

The contraction of *no* to the coda nasal *-n* is a productive morphological process that characterizes casual, colloquial speech as opposed to careful, formal speech in Japanese. In Tokyo Japanese, for example, it occurs in various contexts including (a) the final position within nouns, (b) the genitive (GEN) particle *no*, and (c) the conjunctive particle *node*. These are exemplified in (1).

- (1) *No* contraction in Tokyo Japanese
- a. *bakemono* → *bakemon* ‘monster’
  - b. *boku-no uti* → *bokunti* ‘I-GEN-house; my house’
  - c. *iku-node* → *ikunde* ‘go-because; because (I) go’

This contraction process occurs in a particularly productive fashion in Kagoshima Japanese (henceforth ‘KJ’), a dialect spoken in the south of Japan. Thus, it occurs rather freely at the end of some specific morphemes such as *sono* ‘garden’ used in proper nouns and *mono* ‘thing’ in compound nouns. It also occurs very productively in the genitive particle *no*. These are illustrated as in (2a) and (2b), respectively.<sup>1</sup> The last example in (2a) also involves a change of *ri* to *i*, which is another productive process characteristic of casual speech in the dialect: other examples include *tonari* → *tonai* ‘next-door neighbor’ and *kemuri* → *kemui* ‘smoke’ discussed in (4) and (5) below.

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<sup>1</sup> The coda nasal also results when a word-final vowel is deleted in other phonological contexts in colloquial speech: e.g. *inu* → *in* ‘dog’, *kodomo* → *kodon* ‘child’, *yasumi* → *yasun* ‘a day off, holiday’.

- (2) *No* contraction in casual speech in KJ
- a. kubo-zono → kubo<sup>z</sup>on ‘Kubozono (family name)’  
 mae-zono → mae<sup>z</sup>on ‘Maezono (family name)’  
 tabe-mono → tabem<sup>o</sup>n ‘food’  
 tuke-mono → tukem<sup>o</sup>n ‘pickles’  
 wasure-mono → wasurem<sup>o</sup>n ‘lost article’  
 kazari-mono → kazaim<sup>o</sup>n ‘decoration’
  - b. haruo-no kasa → haruo-n kasa ‘Haruo’s umbrella’  
 asita-no sinbun → asita-n sinbun ‘tomorrow’s newspaper’  
 tonari-no in → tonari-n in ‘next-door neighbor’s dog’  
 neko-no esa → neko-n esa ‘cats’ food; food for cats’  
 ie-no kagi → ie-n kagi ‘house’s key; key to the house’

While (2a) occurs in word-final position, (2b) occurs in phrase-final position before another phrase. This paper is concerned with *no* contraction in this latter context and examines the phonological contexts where the process is blocked.

Before we explore the phonological contexts, it is probably worth mentioning other genitive particles in KJ. Modern KJ has three genitive particles: *ga*, *no*, and *n*. *Ga* is the most traditional genitive particle in the dialect, reflecting the fact that it used to be the genitive particle in Japanese in general before it was replaced by the modern genitive form *no*.<sup>2</sup> This old feature survives in KJ, where male speakers still use it as a genitive marker very productively. However, the genitive *ga* can be used only as a possessive case marker: the noun to which *ga* is attached must possess the following noun. For this reason, it is impossible to say *\*asita-ga sinbun* ‘tomorrow’s newspaper’, *\*neko-ga esa* ‘cats’ food; food for cats’, and *\*ie-ga kagi* ‘house’s key; key to the house’. These ungrammatical phrases become grammatical if *ga* is replaced with *no* or its contracted form *n*, as shown in (2b) above.

*No*, on the other hand, is a marker used rather generally in KJ without being subject to the semantic constraint that governs *ga*: it can be used as a possessive case marker as well as a non-possessive case marker. It may be a form borrowed from Tokyo Japanese as many words have entered the dialect from the standard variety. This new particle is used rather freely in KJ by female speakers and in formal contexts in particular. In casual, colloquial speech, it is usually contracted to *n*, as is often the case in Japanese in general. In KJ, this contraction occurs characteristically in male speech as opposed to female speech since *n* forms imply being less polite than *no* forms.

Given this observation, it could be expected that *no* can turn into *n* in any phrase. This is not the case, however, as demonstrated by the following phrases. In the next section, we will consider why *no* contraction is allowed in (2b), but not in (3).

- (3) a. atai-no kasa → *\*?atai-n* kasa ‘my (colloquial) umbrella’  
 b. tonai-no in → *\*tonai-n* in ‘next-door neighbor’s dog’  
 c. oi-no kasa → *\*oi-n* kasa ‘my (colloquial) umbrella’  
 d. kemui-no nioi → *\*kemui-n* nioi ‘smoke-GEN smell; smell of the smoke, smoky smell’

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<sup>2</sup> In Tokyo Japanese, the genitive *ga* survives in some archaic phrases such as *wa-ga ya* ‘my home’ and in place names like *oni-ga sima* ‘devil’s island’ or *ziyuu-ga oka* ‘liberty hill’.

## 2 Constraints on *No* Contraction in KJ

### 2.1 Blocking Effect

With a view to illuminating the constraints on *no* contraction, we looked at three native male speakers of KJ aged between sixty and eighty-two in 2016-2017; we did not examine female speakers or young male speakers since they do not use the morphological rule productively.

We presented a list of some 80 *no* phrases to the speakers, including those in (2b) and (3). They were asked to read each phrase and to judge whether *no* can change into *n*. This analysis has revealed that *no* contraction is disfavored or blocked if it would yield superheavy syllables, or syllables consisting of three moras. This can be seen most clearly in the pairs of phrases in (4)-(10): the phrases in (a) permit the contraction, while those in (b) do not.<sup>3</sup>

- (4) a. tonari-no in → tonari-n in ‘next-door neighbor’s dog’  
 b. tonai-no in → \*tonai-n in ‘next-door neighbor’s dog (colloquial)’
- (5) a. kemuri-no nioi → kemuri-n nioi ‘smoke-GEN smell; smoky smell’  
 b. kemui-no nioi → \*kemui-n nioi ‘smoke-GEN smell; smoky smell (colloquial)’
- (6) a. dare-no kasa → dare-n kasa ‘whose umbrella’  
 b. dai-no kasa → \*?dai-n kasa ‘whose umbrella (colloquial)’
- (7) a. watasi-no kasa → watasi-n kasa ‘my umbrella’  
 b. atai-no kasa → \*?atai-n kasa ‘my umbrella (colloquial)’
- (8) a. boku-no kasa → boku-n kasa ‘my umbrella’  
 b. oi-no kasa → \*oi-n kasa ‘my umbrella (colloquial)’
- (9) a. amerika-no miyage → amerika-n miyage ‘America’s souvenir; souvenir from America’  
 b. hawai-no miyage → \*hawai-n miyage ‘Hawaii’s souvenir; souvenir from Hawaii’
- (10) a. tomodati-no kasa → tomodati-n kasa ‘(my) friend’s umbrella’  
 b. tomodat-no kasa → \*tomodat-n kasa ‘(my) friend’s umbrella (colloquial)’<sup>4</sup>

The two phrases in (a) and (b) in the above examples crucially differ from each other with respect to the structure of the final syllable in the pre-*no* noun. Namely, the relevant syllables in (a) are light (monomoraic), while those in (b) are heavy (bimoraic), involving either a diphthong or a coda consonant (see Kubozono 2004 and 2015a for evidence that KJ permits only three vowel sequences as diphthongs, i.e. /ai/, /oi/ and /ui/). More generally, *no* contraction is blocked when *no* is immediately preceded by a heavy syllable.<sup>5</sup> This is the descriptive generalization of the facts in (4)-(10), which raises a question of why the process is blocked in this particular context.

Moreover, apart from (9), the pre-*no* nouns in (b) are more casual forms than those in (a): *tonai*, *kemui*, *dai*, *atai*, *oi* and *tomodat* are casual forms as against *tonari*, *kemuri*, *dare*, *watasi*, *boku* and

<sup>3</sup> KJ has a rather productive phonological rule turning *ri* into *i* in colloquial speech: e.g. *tonari* → *tonai* ‘next-door neighbor’, *kemuri* → *kemui* ‘smoke’, *atari* → *atai* ‘neighborhood’, *tori* → *toi* ‘bird, chicken’.

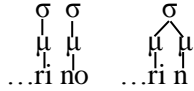
<sup>4</sup> The noun-final *-i* in *tomodat-no* in (10b) is realized as a coda obstruent, not as a coda nasal, in KJ.

<sup>5</sup> Not surprisingly, *no* contraction readily occurs if the preceding noun ends in a non-diphthongal vowel sequence: e.g. /ao/ *kao-no* → *kaon* ‘face’s’, /ae/ *kigae-no* → *kigaen* ‘spare clothes’s’, /oe/ *aloe-no* → *aloen* ‘aloe’s’, /eo/ *bideo-no* → *bideon* ‘video’s’.

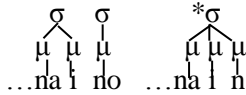
*tomodati*, respectively. Since *no* contraction has the effect of making the phrases sound more casual, this raises a second question of why the process is blocked in the phrases involving casual expressions.

These two questions can be answered in a principled way if one pays attention to the change that *no* contraction exerts on the syllable structure. Phonologically, *no* contraction is a process of depriving the particle of its syllabicity and attaching the resultant non-syllabic mora *n* to its preceding syllable; in other words, it is a coda-generating process. Because of this, the contraction process has the effect of creating a heavy syllable out of two light syllables as well as a superheavy syllable out of a heavy syllable plus a light one. These two cases are illustrated in (11a) and (11b), respectively.

(11) a. light → heavy



b. heavy → superheavy



In sum, the blocking effect in (4b)-(10b) indicates that *no* contraction is blocked in contexts where it would yield a superheavy syllable such as /ain/, /oin/, /uin/, and /atn/.<sup>6</sup> This clearly shows that the putatively universal constraint banning superheavy syllables is at play in the prosodic system of KJ, too.<sup>7</sup>

## 2.2 Vowel Shortening in Pre-no Nouns

In addition to the blocking effect discussed above, our analysis has also shown that long vowels are often shortened as *no* is contracted to *n*. This is exemplified in (12).

- (12) a. taroo-no kasa → taro-n kasa ‘Taro’s umbrella’  
 b. kyoo-no tenki → kyo-n tenki ‘today’s weather’  
 c. tookyoo-no miyage → tookyo-n miyage ‘Tokyo’s souvenir; souvenir from Tokyo’  
 d. ataigee-no in → ataige-n in ‘my house’s dog; dog my house keeps’  
 e. sensee-no kasa → sense-n kasa ‘(the) teacher’s umbrella’

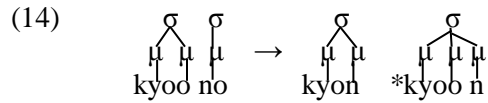
Many of these phrases permit a variant pronunciation with the original long vowel before the moraic nasal, e.g. /sensee-n kasa/ for (12e), as we will consider shortly. What is important here is the fact that the input forms with *no* do not permit variant patterns with a short vowel. This is shown in (13): /taro-no kasa/ and /kyo-no tenki/, for example, are not legal forms for (12a) and (12b), respectively.

- (13) a. taroo-no kasa → \*taro-no kasa ‘Taro’s umbrella’  
 b. kyoo-no tenki → \*kyo-no tenki ‘today’s weather’  
 c. tookyoo-no miyage → \*tookyo-no miyage ‘Tokyo’s souvenir; souvenir from Tokyo’  
 d. ataigee-no in → \*ataige-no in ‘my house’s dog; dog my house keeps’  
 e. sensee-no kasa → \*sense-no kasa ‘(the) teacher’s umbrella’

<sup>6</sup> /atn/ in *tomodatn* may be ill-formed for a phonotactic reason, too, since it violates the sonority sequencing principle.

<sup>7</sup> See Kubozono (1995, 1999, 2015a, 2015b, 2015c) for evidence for this constraint in Japanese and Ito and Mester (2015) for the controversy over superheavy syllables in the language. It is known that trimoraic syllables are disfavored in a wide range of languages including Latin (Martinet 1955), English and other Germanic languages (Árnason 1980), Hausa (Hayes 1986), Koya and Fula (Sherer 1994), and Pali (Zec 1995), to mention just a few (see Hayes 1995: 303 for more languages).

This means that vowel shortening illustrated in (12) is triggered by the morphological process of *no* contraction. In prosodic terms, the vowel shortening in question involves the change shown in (14), where the change in (12b) is used for illustration.



This process, too, can be attributed to the syllable weight of the output. Namely, *no* contraction would have yielded superheavy syllables consisting of a long vowel and a moraic nasal, which have been remedied into heavy syllables by the shortening of the long vowel.

### 2.3 Resyllabification

So far, we have seen two phenomena that can be attributed to a ban on superheavy syllables. On the one hand, *no* contraction is blocked after diphthongal vowel sequences as in (3), which would otherwise yield trimoraic syllables with a moraic nasal, i.e. \*/ViVjN/. On the other hand, *no* contraction takes place before a noun with a long vowel, but with the concomitant shortening of the long vowel, as in (12). These two phenomena can be attributed to a very general constraint banning trimoraic syllables.

Interestingly, KJ shows one more phenomenon that can be accounted for by the same constraint. This concerns resyllabification of trimoraic sequences. As suggested above, long vowels (and occasionally diphthongs) can sometimes surface after *no* contraction takes place. This pronunciation is only marginally acceptable to some native speakers. Some examples are given in (15).

- (15) a. kyoo-no tenki → kyoo-n tenki ‘today’s weather’  
 b. tookyoo-no miyage → tookyoo-n miyage ‘Tokyo’s souvenir; souvenir from Tokyo’  
 c. ataigee-no in → ataigee-n in ‘my house’s dog; the dog my house keeps’  
 d. oigee-no in → oigee-n in ‘my house’s dog; the dog my house keeps (colloquial)’  
 e. waigee-no in → waigee-n in ‘your house’s dog; the dog your house keeps’  
 f. sensee-no kasa → sensee-n kasa ‘(the) teacher’s umbrella’  
 g. atai-no kasa → atai-n kasa ‘my umbrella’

This might be taken as suggesting that superheavy syllables are permitted in this context in KJ. A careful examination of word accent reveals, however, that what appears to form trimoraic syllables is actually made up of two syllables, i.e. a light syllable followed by a heavy syllable. To understand this, we need to know how word accent is calculated in KJ.

KJ has a two-pattern word accent system, a system that permits two accent patterns or types. All words thus belong to either of these accent types, which are conventionally called Type A and Type B (Hirayama 1951). KJ is also known as a ‘syllable-counting, syllable dialect’ (Kubozono 2004), which counts the number of syllables in accent assignment and assigns a high (H) tone on a certain *syllable*, not on a certain *mora*. Specifically, words in Type A exhibit an H tone on the penultimate syllable, while their Type B counterparts are H-toned on the final syllable. The only exception to this is monosyllabic Type A words, which involve a pitch fall within the sole syllable. These accent patterns are realized within the domain of *bunsetsu* (a minimal syntactic phrase consisting of a content word with one or more optional grammatical particles), rather than the word domain. This is illustrated in (16), where capital letters denote H-toned syllables and dots ./ syllable boundaries.<sup>8</sup>

<sup>8</sup> KJ is subject to a left-dominant compound accent rule whereby it preserves the accent pattern (Type A or B) of the initial member in compounds (Hirayama 1951, Kubozono 2004, 2018).

## (16) a. Type A

na.tu.ya.SU.mi ‘summer holiday’  
 na.tu.ya.su.MI-no ‘summer holiday-GEN’  
 A.tai ‘I’  
 a.TAI-no ‘I-GEN, my’  
 a.TAI.gee ‘my house’  
 a.tai.GEE-no ‘my house’s’  
 Oi ‘I (colloquial)’  
 OI.gee ‘my house’  
 oi.GEE-no ‘my house’s’

## b. Type B

ha.ru.ya.su.MI ‘spring holiday’  
 ha.ru.ya.su.mi-NO ‘spring holiday-GEN’  
 sen.SEE ‘teacher’  
 too.KYOO ‘Tokyo’  
 too.kyoo-NO ‘Tokyo’s’  
 KYOO ‘today’  
 WAI ‘you (colloquial)’  
 wai.GEE ‘your house’

The penultimate syllables in (16a) and the final syllables in (16b) can be either bimoraic or monomoraic. This suggests that KJ has a quantity-insensitive pitch accent system, a system that is not sensitive to the weight distinctions of the syllable. Since KJ thus assigns H tones on a syllabic rather than moraic basis, it clearly shows how words are syllabified and, more specifically, where syllable boundaries are. This accent test reveals the following accent patterns and syllabifications for the three-mora sequences in the output forms in (15):<sup>9</sup> (17a) and (17b) show the patterns of Type A and Type B prenominal phrases, respectively.<sup>10</sup>

## (17) a. Type A

a.TA.in, \*A.tain ‘my’  
 a.tai.GE.en, \*a.TAI.geen ‘my house’s’  
 oi.GE.en, \*OI.geen ‘my house’s (colloquial)’

## b. Type B

kyo.ON, \*KYOON ‘today’s’  
 too.kyo.ON, \*too.KYOON ‘Tokyo’s’  
 wai.ge.EN, \*wai.GEEN ‘your house’s’  
 sen.se.EN, \*sen.SEEN ‘(the) teacher’s’

As the examples above show, the trimoraic sequences split into two syllables in both accent types. For example, Type A phrases attract an H tone only on the antepenultimate mora of the trimoraic sequences: e.g. /ge/ in /ataigeen/. Type B phrases, in contrast, are H-toned on the final two moras in the trimoraic sequences: e.g. /on/ in /kyoon/. Both facts indicate that what appears to be a superheavy syllable actually consists of two syllables rather than one. This is illustrated in (18) with the last example in (17a).

## (18)



<sup>9</sup> These accent judgments are also collected from the three KJ consultants described above.

<sup>10</sup> /IN/ ‘dog’, /mi.ya.GE/ ‘souvenir’, and /ka.SA/ ‘umbrella’ are Type B words, while /TEN.ki/ ‘weather’ is a Type A word.

This phenomenon is interesting particularly because it involves a resyllabification of long vowels and diphthongs whereby they split into two syllables when they are followed by a coda nasal although they otherwise form one integral syllable as shown in (16). This is not an isolated phenomenon in the phonology of KJ, though, since the same reorganization of syllables is observed in loanwords (Kubozono 2015c). (19) gives some typical examples where what appears to form a superheavy syllable actually behaves as a sequence of two syllables, i.e. a light syllable followed by a heavy one.

(19) Resyllabification in loanwords

- a. su.PE.in ‘Spain’
- b. de.ZA.in ‘design’
- c. ba.ren.TA.in ‘Valentine’
- d. ba.ren.ta.IN.dee ‘St. Valentine’s Day’
- e. gen.da.IK.ko ‘modern kid’
- f. rin.KA.an ‘Lincoln’

In sum, KJ relies on resyllabification as the last resort to avoid superheavy syllables. Trimoraic sequences that have escaped from the blocking of *no* contraction in section 2.1 and the application of vowel shortening in section 2.2 employ this third strategy to avoid being realized as superheavy syllables.

### 3 Comparison with Tokyo Japanese

In the preceding section, we have seen three phenomena pertaining to the contraction of genitive *no* in KJ: blocking of *no* contraction, vowel shortening accompanying *no* contraction, and resyllabification in contracted forms. At first glance, these phenomena might look independent of each other. Seen from the view point of syllable weight, however, it can be understood that they all conspire to avoid creating superheavy syllables. Blocking *no* contraction prevents superheavy syllables from being created; vowel shortening turns trimoraic sequences into bimoraic ones; and resyllabification reorganizes three-mora sequences at the surface into two syllables. Interestingly, these phenomena are not specific to KJ since previous studies show corresponding phenomena in the loanword phonology of Tokyo Japanese (Kubozono 1999, 2015b, 2015c).

As is well known, Japanese often geminates stops and fricatives in the original coda position as it borrows words from foreign languages. This process of consonant gemination is blocked in certain phonological contexts, one of which concerns the length of the preceding vowel (see Kubozono et al. 2013 for other contexts and Ito et al. 2017 for an optimality-theoretic analysis of consonant gemination in Japanese loanwords). Thus, word-final coda stops in English readily geminate if they are preceded by a short (lax) vowel as in (20a), but not if they are preceded by a long (tense) vowel or diphthong, as in (20b).

- (20) a. kap.pu ‘cup’  
 kat.to ‘cut’  
 buk.ku ‘book’
- b. kaa.pu, \*kaap.pu ‘carp’  
 kaa.to, \*kaat.to ‘cart’  
 kai.to, \*kait.to ‘kite’  
 bai.ku, \*baik.ku ‘(motor) bike’

The blocking of gemination in (20b) can be accounted for as a result of avoiding superheavy syllables (Kubozono 1999, 2015b, 2015c). First of all, gemination adds one more mora to the preceding syllable, just like the *no* contraction process discussed in the preceding section. Given this, geminating a consonant after a short vowel means creating a heavy syllable consisting of a short vowel and the first half of a



geminate consonant. The same process, if applied after a long vowel or diphthong, yields trimoraic syllables consisting of a long vowel/diphthong followed by a coda consonant. The fact that gemination is blocked in this latter context indicates that consonant gemination in loanwords is subject to the trimoraic syllable ban: that is, gemination is blocked in the context where it would yield superheavy syllables. Thus, the blocking effect in (20b) is equivalent to the blocking of *no* contraction which we saw in (4)-(10) above.

Tokyo Japanese also shows a loanword phenomenon analogous to the vowel shortening we saw in KJ in (12) above. Loanwords often undergo vowel shortening before the moraic nasal. This change in vowel length, or ‘pre-nasal vowel shortening’ (Lovins 1975), occurs specifically in non-final position within the word, as illustrated in (21) (Kubozono 1995, 1999, 2015b).

- (21) a. ein → en  
 tyenzi, \*tyeenzi ‘change’, renzi, \*reenzi ‘range’, sutendo gurasu, \*suteindo gurasu ‘stained glass’  
 mentenansu, \*meintenansu ‘maintenance’  
 b. aun → an  
 fandeesyon, \*faundeesyon ‘foundation’, merii-go-rando, \*merii-goo-raundo ‘merry-go-round’  
 c. V:n → Vn  
 konbiihu, \*koonbiihu ‘corned beef’, gurin piisu, \*guriin piisu ‘green peas’

Analyzing this phenomenon in terms of syllable weight, Kubozono (1999) claimed that it is motivated by a pressure to avoid superheavy syllables: if vowel shortening had not occurred, the words in (21) would have yielded superheavy syllables consisting of a long vowel (or diphthong) and a moraic nasal. Pre-nasal vowel shortening in (21) is thus a phenomenon due to the restriction on syllable weight. In this sense, it is analogous to vowel shortening in KJ, which occurs concomitantly with *no* contraction to avoid creating a superheavy syllable.

Tokyo Japanese admits a certain number of apparent exceptions to (21), especially in word-final position and in sequences involving /ai/. This is exemplified in (22).

- (22) a. ain  
 rain ‘line, Rhine’, sain ‘sign, signature’, dezain ‘design’  
 b. ein  
 pein ‘pain’, supein ‘Spain’, reinboo ‘rainbow’  
 c. oin  
 koin ‘coin’, saaroin ‘sirloin’, pointo ‘point’  
 d. uin  
 tuin ‘twin’, kuin ‘queen’, uindoo ‘window’  
 e. long vowel + n  
 koon ‘corn’, roon ‘loan’, doroon ‘drone’, rinkaank ‘Lincoln’

These words contain three-mora sequences most of which form superheavy syllables in the source language. This suggests that the same sequences might form superheavy syllables in the host language, too. However, this prediction is not borne out empirically (Kubozono 1999, 2015b, 2015c). There are several independent pieces of phonological evidence showing that the three-mora sequences in question actually function as a sequence of two syllables. Let us consider here the evidence from word accent.

Tokyo Japanese has a rule shifting an accent one mora to the left if the accent happens to fall on a non-head mora of a syllable although it is not always an obligatory rule. As this accent shift occurs within a syllable, it is blocked by a syllable boundary. This can be seen from the compound nouns in (23), where the relevant parts are underlined: those in (23a) permit accent shift, whereas those in (23b) block it

because of an intervening syllable boundary.<sup>11</sup> For the sake of simplicity, only the output forms are syllabified here.

- (23) a. syoonai'-gawa → syoo.na'i-ga.wa 'Shonai River'  
 amazon'-gawa → a.ma.zo'n-ga.wa 'Amazon River'  
 b. sinano'-gawa → si.na.no'-ga.wa, \*si.na'.no-ga.wa 'Shinano River'  
 temuzu'-gawa → te.mu.zu'-ga.wa, \*te.mu'.zu-ga.wa 'Thames River'

Using this compound accent test, we can examine whether the three-mora sequences in question in (22) form one integral syllable or not. This examination shows that accent shift readily occurs between the second and third moras in the relevant sequences, but not between the first and second moras. This suggests that the three-mora sequences in question function as a sequence of two syllables: one light syllable followed by a heavy syllable. Some examples are given in (24) (see Kubozono 1999, 2015c for more details).

- (24) a. rain'-gawa → ra.i'n-ga.wa (~ra.in'-gawa), \*ra'in-ga.wa 'Rhine River'  
 b. supein'-kaze → su.pe.i'n-ka.ze (~su.pe.in'-ka.ze), \*su.pe'in-ka.ze 'Spanish flu'  
 c. koin'-syoo → ko.i'n-syoo (~ko.in'-syoo), \*ko'in-syoo 'coin dealer'  
 d. kuin'-bii → ku.i'n-bii (~ku.in'-bii), \*ku'in-bii 'queen bee'  
 e. rinkan'-hai → rin.ka.a'n-hai (~rin.ka.an'-hai), \*?rin.ka'an-hai 'Lincoln Cup'

The syllabification data in (24) are equivalent to those in (17) in KJ, where what appears to be a trimoraic syllable actually behaves like a sequence of two syllables.

In summary, loanwords in Tokyo Japanese exhibit three features which, as first glance, appear to be unrelated: blocking of consonant gemination (20b), pre-nasal vowel shortening (21), and resyllabification of three-mora sequences into two syllables (24). Seen from the perspective of syllable weight, all these can be generalized as phenomena conspiring to avoid creating superheavy syllables. They are completely analogous to the three phenomena we saw in KJ in the preceding section. This comparison is summarized in Table 1.

Table 1 Comparison of KJ with Tokyo Japanese

	KJ	Tokyo
Blocking of a mora-generating rule	Blocking of <i>no</i> contraction (4b-10b)	Blocking of consonant gemination (20b)
Vowel shortening	Pre- <i>n</i> vowel shortening (12)	'Pre-nasal vowel shortening' (21)
Resyllabification	Resyllabification of /VVN/ into /V.VN/ (17)	Resyllabification of /VVN/ into /V.VN/ (24)

## 4 Further Implications

In the foregoing sections we saw that *no* contraction in KJ exhibits three seemingly unrelated phenomena, all of which can be attributed to the constraint banning superheavy syllables. We also observed that Tokyo Japanese displays three analogous phenomena that can be accounted for in the same way. All these

<sup>11</sup> Tokyo Japanese places a compound accent on the final syllable of the first member if the second member is one or two moras long (McCawley 1968, Kubozono 2008)

phenomena can best be understood as conspiring to avoid creating trimoraic syllables: they are standard cases of ‘conspiracy’ (Kisseberth 1970).

That the same constraint is at work in the prosodic systems of different dialects of the same language may not come as a surprise. Especially, the fact that Tokyo Japanese is subject to the constraint on superheavy syllables should not be very surprising since it is a quantity-sensitive system that is sensitive to the distinctions in syllable weight. In this system, it has been known that the weight distinctions play pivotal roles in many phonological and morphological processes. For example, word accent rules are sensitive to the number of moras, counting heavy syllables as equivalent to a sequence of two light syllables (Kubozono 2002, 2008). The weight distinctions play a role in the process of vowel coalescence, too, where, as shown in (25), the number of moras in the input tends to be preserved in the output by way of compensatory vowel lengthening.

(25) Vowel coalescence and compensatory lengthening in Tokyo Japanese

- a. tai.gai → tee.gee, \*te.ge ‘usually, approximately’
- b. su.goi → su.gee, \*su.ge ‘great, splendid’
- c. ka.e.ru → kee.ru, \*ke.ru ‘to go home’

On the other hand, accent rules of KJ are insensitive to the light/heavy distinction, as we saw in (16) above. Similarly, vowel coalescence is not usually accompanied by compensatory lengthening by which the weight of the syllables in the input is preserved in the output. What is invariant between the input and the output in KJ is the number of syllables, not the number of moras. This is shown in (26).

(26) Vowel coalescence in KJ

- a. tai.gai → te.ge, \*tee.gee ‘usually, approximately’
- b. sai.goo → se.go, \*see.goo ‘Saigo (family name)’
- c. hai → he, \*hee ‘ash’

In fact, one finds little or no evidence in the literature for the mora in the phonological system of KJ.<sup>12</sup> Seen in this context, it is quite interesting to find that the constraint on superheavy syllables is at play in KJ, too, which was previously thought to be a quantity-insensitive system: trimoraic syllables are disallowed in this system just as in the quantity-sensitive system of Tokyo Japanese. Since the notion of superheavy syllable hinges crucially on the notion of the mora, it follows that the notion of the mora as well as that of the syllable is indispensable for the description of KJ, which would otherwise look entirely quantity-insensitive. In sum, the phonological grammar of KJ must make reference to the mora despite what was previously thought: it is a quantity-sensitive language although its pitch accent system is essentially quantity-insensitive.<sup>13</sup>

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<sup>12</sup> The mora may play a role in the accentuation of some lexically idiosyncratic and archaic expressions such as /waz.zeE.ka/ ‘outstanding, exceptional’ (Type A) and /ta.no.kan.saA/ ‘god in the rice field’ (Type B) (Uwano 1992). The accentuation of these expressions can be accounted for historically since they are derived via phonological processes from /waz.za.E.ka/ and /ta.no.kan.sa.MA/, respectively, whose accentuation obeys the syllable-based rule of accent/tone assignment in the dialect.

<sup>13</sup> This generalization should be independent of the controversy over the syllable in Japanese (Kubozono 1999, Kawahara 2016 vs. Labrune 2012) so that it holds true even in a syllable-less analysis as proposed by Labrune (2012).

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