

Extraphonological Regularities in the Korean Adaptation of Foreign Liquids*

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1 Introduction

This paper explores several factors that affect the adaptation of foreign liquids (primarily from English) in Korean, a language which makes no contrast between lateral and central liquids. The claim has recently been advanced in the loanword literature that perception plays a key role when foreign words are borrowed into the recipient language (for Korean, cf. H. Kang 2003 and Y. Kang 2003). Iverson & Lee (2004) argued that it is the salient perceptual categories of the recipient language that determine the phonological adaptation of loanwords rather than redundant, non-contrastive properties in either the source or the recipient language. In the course of this paper, we will review how liquids in foreign languages, in particular English, are produced and perceived within the phonological system of Korean, and how conforming to its syllable structure plays a major role in the adaptation of foreign words. In addition, we will identify some extra-phonological factors which result in several apparent exceptions in the manifestation of foreign liquids in Korean, which is further confounded by the influence of Japanese phonology, as well as pragmatic considerations.

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2 Background: the Korean liquid

As is widely known, Korean makes no contrast between lateral (*l*-like) and central (*r*-like) liquids, but rather incorporates the two sound types as allophones of the same phoneme, distributed according to their position in syllable structure: lateral [l] when filling the coda position, central tap [r] when in the onset (Heo & Lee 2004a). (Here and throughout the paper we employ the system of Romanization approved by the Korean government in 2000.)

- (1) Geminate vs. simplex liquids in Korean: /LL/ ([ll]) vs. /L/ ([l] in codas, [r] in onsets)
- | | | | |
|------------|-------------------|-------------------|-----------------------|
| seo[l]bim | ‘New Year’s garb’ | seo[r]i | ‘frost’ |
| gyeou[l] | ‘winter’ | gyeou[r]i | ‘winter (nominative)’ |
| ha[l]meoni | ‘grandmother’ | ha[r]abeoji | ‘grandfather’ |
| ppa[ll]-i | ‘quickly’ | jeo[ll]e-jeo[ll]e | ‘shaking one’s head’ |
| cha[ll]ang | ‘splashing’ | beo[ll]eong | ‘on one’s back’ |

As seen in *seo[l]bim* ‘New Year’s garb’ (coda) versus *seo[r]i* ‘frost’ (onset), or *gyeou[l]* ‘winter’ (coda) versus *gyeou [r]i* (onset), [l] and [r] alternate phonetically according to their position in syllable structure.

In geminate structures, which are always word-medial, the left or moraic portion occupying the syllable coda determines the articulation of both parts (Iverson & Sohn 1994, Ahn 1998), which is thus uniformly lateral: *ppa[ll]i* ‘quickly’ (**ppa[r]i*, **ppa[r]i*, **ppa[lr]i*). Word-medial lateral geminates [ll] and central [r] are thus in contrast: cf. *mu[ll]i* ‘physics’ versus *mu[r]i* ‘a group, unreasonableness,’ and *ha[ll]ye* ‘circumcision’ versus *ha[r]ye* ‘celebration,’ as in (2).

- (2) Medial contrasts between geminate /LL/ and simplex /L/
- | | | | |
|----------------|--------------------|---------------|--------------------|
| mu[ll]i | ‘physics’ | mu[r]i | ‘unreasonableness’ |
| ha[ll]ye | ‘circumcision’ | ha[r]ye | ‘celebration’ |
| sa[ll]ang-hada | ‘be chilly’ | sa[r]ang-hada | ‘to love’ |
| mu[ll]e | ‘a spinning wheel’ | mu[r]ye | ‘impoliteness’ |
| si[ll]yeok | ‘ability’ | si[r]yeok | ‘eyesight’ |

In view of this distribution, the appropriate underlying representation of the Korean liquid is arguably neither lateral nor central, but rather indeterminate between the two types of articulation, i.e., /L/. That is to say, the phonological

representation of the liquid should be neutral with respect to the phonetic differences between [l] and [r] (as per Iverson & Sohn 1994).

3 Adaptation of English liquids in Korean

3.1 English rhyme liquids

Even though the feature [lateral] is not distinctive in Korean, source language laterals are generally adapted as an *l*-sound, either [l] (simplex) or [ll] (geminate), whereas central liquids are typically adapted as an *r*-sound, the tap [ɾ]. As lateral [l] is the only liquid that can occupy the coda position in Korean, source language lateral and rhotic codas and other liquid equivalents must be rendered accordingly.

(3) Adaptation of English rhyme liquids in Korean

a. Source in a lateral nucleus:

[t̪] → [t̪]

tekeul ‘tackle’

syoteul ‘shuttle’

ssempeul ‘sample’

gugeul ‘google’

teibeul ‘table’

b. Source in a lateral coda:

[t̪] → [l]

gildeu ‘guild’

pildeu ‘field’

dipolteu ‘default’

ssil ‘seal’

deuril ‘drill’

c. Source in a rhotic nucleus:

[ɻ] → [ə]

paudeo ‘powder’

keoten ‘curtain’

sseobisseu ‘service’

ereo ‘error’

pepeo ‘pepper’

d. Source in a rhotic coda:

[ɻ] → ∅

hadeu ‘hard’

pateuneo ‘partner’

syapeu ‘sharp’

seukapeu ‘scarf’

As we can observe from the data in (3), coda [l] in English is rendered straightforwardly as [l] (3b) while the phonetically syllabic lateral is rendered as [l] along with an epenthetic vowel inserted before it, [t̪] + [l] (3a). The vowel [t̪] is inserted here since it is the least marked vowel in Korean. Conversely, English /r/ outside of the syllable onset is realized as schwa in Korean when it serves as a rhotic nucleus [ɻ] in the source language (3c). But when preceded by a vowel and functioning as a coda, English /r/ is not manifested at all in Korean (3d). Rhotic

[ɹ] is not in the recipient language's sound inventory to begin with, hence source language [ɹ] must be modified to adapt to the phonological structure of Korean. In the syllable coda, this vowel-like segment is simply dropped. However, because the nucleus is greater in phonetic value or content than the coda, and is the core element of the syllable, only the rhotic value in the nucleus is deleted, leaving the schwa value still in place. Nonrhotic articulation ([ɹ̥]>[ə]) and the deletion of coda /r/ are characteristics of several varieties of English, too (e.g., Standard British; Ladefoged 2001), of course, reflecting the consonantly 'weak' position of the syllable coda (Vennemann 1988).

3.2 English onset liquids

As discussed in the previous section, rhotic [ɹ] in codas is deleted since lateral [l] is the only possible coda liquid in Korean that conforms to its syllable structure requirements. Onset liquids, however, appear to show sensitivity to a feature that is redundant and thus presumably not even salient in Korean.

(4) Adaptation of English onset liquids in Korean

- | | |
|------------------------------------|-----------------------------------|
| a. Source in a rhotic: [ɹ] → [r] | b. Source in a rhotic: [ɹ] → [l] |
| seuteu[r]aikeu 'strike' | no examples |
| meteu[r]o 'metro' | |
| Me[r]i 'Mary' | |
| [r]adio 'radio' | |
| keo[r]ieo 'career' | |
| | |
| c. Source in a lateral: [l] → [ll] | d. Source in a lateral: [l] → [r] |
| Ba[ll]i 'Bali' | [r]obi 'lobby' |
| po[ll]iseu 'police' | [r]aiteu 'light' |
| sse[ll]eodeu 'salad' | [r]aillak 'lilac' |
| tekeuno[ll]oji 'technology' | [r]emon 'lemon' |
| bo[ll]ing 'bowling' | [r]eisseu 'lace' |

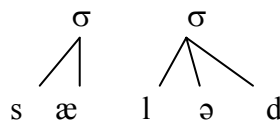
Overall, English onset liquids are borrowed as Korean onsets ([r]), and English codas as codas ([l]) regardless of the laterality or rhoticity of the source liquids, as shown (4a) and (4d) with respect to simplex structures. In the word-medial position, however, there appear contrasts between simplex vs. geminate

structures, because English lateral liquids are generally adapted as geminate lateral [ll] (cf. *Ba[ll]i* and *po[ll]iseu* in (4c)), and central liquids as the nonlateral tap [ɾ] (*meteu[ɾ]o* and *Me[ɾ]i* in (4a)). Thus, word-initial liquids, both [ɹ] and [l], are rendered as the tap [ɾ], but word-medial [ɹ] and [l] from English are rendered as [ɾ] and [ll], respectively. This adaptive sensitivity to the difference between lateral and central liquids is surprising since the feature [lateral] is not distinctive in Korean. Nonetheless, it is not (or at least need not be) awareness particularly of the redundant feature [lateral] that comes into play in Korean adaptation of foreign liquids; rather, onset liquids in the source language can be seen to be rendered according to the syllable structure distinctions of Korean, which are perceptually salient between onset and coda (Ahn & Iverson 2004). That is, medial lateral liquids are always geminate in Korean (shared between coda and onset), whereas the tap liquid is simplex, organized exclusively into the syllable onset; the Korean perception of liquids is then not so much in terms of lateral vs. central articulation as it is in terms of coda vs. onset. Hence the manifestation of a source lateral [l] varies depending on its location in the corresponding syllable. Word-medially, it is not the case that Korean speakers perceive a lateral onset and manifest it as a Korean onset liquid, which must be a tap [ɾ]; rather they perceive the source lateral onset as a liquid serving as coda of the preceding syllable and so make it geminate. Hence, lateral [l] in English words such as ‘salad,’ ‘technology,’ and ‘bowling’ is manifested as [ll], as in *sselleodeu*, *tekeunolloji*, *bolling*, and so forth as shown in (4c).

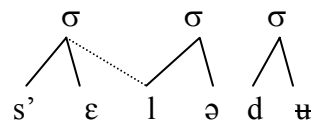
The overall idea is that the feature [lateral] as such is not being perceived at all, and so is not available in the phonology. Rather, the acoustic signal of the source language pronunciation is being perceived and prosodically organized directly according to the available contrastive categories of the receiving language. One might suppose that the reason that English onset /l/ is being construed as a coda is precisely because it is [lateral] phonetically, but in our view Koreans do not perceive the feature [lateral] itself; rather, they perceive syllable structure through the prosodic lens of their own language, which forces liquid sounds that are phonetically but not contrastively lateral to be organized into codas rather than onsets. This is what accounts for the [lateral] property of these liquids, as displayed graphically in (5).

(5) Korean Perception of English medial lateral liquid

English (Source language)



Korean (Recipient language)



Rather than ascribe perceptual awareness in loanword adaptation to features that are not salient in the recipient language, like [lateral] (H. Kang 2003, also [voice] per Y. Kang 2003) in Korean, then, onset liquids in the source language can be seen to be rendered according to the syllable structure distinctions of Korean, which are indeed perceptually salient between onset and coda (which is also the site of extensive neutralization in the language; Ahn & Iverson 2004). As exemplified in (2), the key factor is that Korean makes a contrast between geminate (lateral) and simplex (rhotic) medial liquids, and this is the structural difference which is imposed on source language medial liquids which contrast lateral vs. rhotic articulation. That is, lateral liquids are ‘heard’ not so much as laterals but as codas, while English vocalic *r*-sounds are apprehended as consonantal taps when in the relatively strong position of the onset, and not at all when in the coda.

4 Exceptional adaptation of word-medial [l] as a simplex liquid

4.1 Word-medial [l] in compounds and laterals in series

English word-medial onset [l] is thus expected to be adapted as geminate [ll] rather than parsed as a singleton liquid (tap [r]) as discussed in the previous section, but there are some apparent exceptions in which English word-medial [l] is manifested as a simplex tap, as illustrated in the words in (6).

(6) Source in a word-medial lateral [l] → [r]

- a. auteu[r]ain ‘outline’
gaideu[r]ain ‘guideline’
sseinteu[r]uiseu ‘Saint Louise’
meijeo[r]igeu ‘major league’
kontaekteu[r]enjeu ‘contact lens’

- b. honollu[r]u~ hono[ll]u[ll]u ‘Honolulu’
sso[ll]i[r]oki ‘soliloquy’
ma[r]aya[r]am~ ma[ll]aya[r]am ‘Malayalam’
de[r]i[ll]a ~ de[ll]i[ll]a ‘Delilah’

The lateral liquid in words like ‘outline’ and ‘Saint Louise’ is articulated as a central tap in the recipient language rather than geminate [ll] even though it is

positioned word-medially. We can explain those words (‘out-line,’ ‘contact lens’) by considering them to be compounds, however; thus, word-medial onset [l] in these source language words is perceived as the initial sound of the second word, which Koreans regularly pronounce as a tap, the only possible liquid in that position.

Word-initially, as already reviewed, both lateral and central source language liquids are structured as onsets, hence with a tap (*robi* ‘lobby,’ *raiteu* ‘light,’ *auteurain* ‘out-line’), but even word-medially a tap may arise in manifestation of a lateral if there is a series of liquids in the source word: *Marayaram* ‘Malayalam’, *solliroki* ‘soliloquy’, etc., as in (6b). There may well be variation in how these words are adapted, in fact, (*Mallayaram*, *Honollullu*, *Dellilla*), but it seems that the basic principle at play is to avoid sequences of syllables in the same word with geminate liquids. We know of no native Korean words which are configured with multiple geminate liquids in series, so perhaps this is the basis of the avoidance.

4.2 The influence of English orthography in the adaptation

However, there are some instances where word-medial [l] is articulated as a tap even though it is not in a compound or one of multiple geminate liquids in series. Oh (2004) suggested that this rather idiosyncratic adaptation may be attributable to spelling influence from English, i.e., that single ‘l’ can be realized as either geminate or simplex although the more frequent realization is geminate, whereas double ‘ll’ in English is almost always realized as a geminate structure in Korean. She tested for the role of English orthography through a Google search survey, typing in the Korean alphabet 58 English words with a single ‘l’ in English spelling and 65 with double ‘ll.’ The result is shown in Table 1(Oh, 2004: 201).

Table 1: Realization of English single and double l in Korean

	Total hits	Korean (=r)	Korean (=ll)
From English <l>	3,469,142	16% (543,846)	84% (2,925,296)
From English <ll>	5,264,201	0.001% (4,932)	99.999% (5,262,269)

The search showed that word-medial laterals are borrowed as geminates in most cases (84% [ll] if single graphemic ‘l’ in the source vs. 16 % [r], 99.999% [ll] if double ‘ll’ in the source vs. 0.001% [r]). For example, the word ‘melon’ is manifested either [meron] or [mellon] in Korean, but the word ‘(Carnegie) Mellon’ with double ‘ll’ spelling in English is only rendered into [mellon], with

geminate [ll]. In view of other cases parallel to ‘melon’ vs. ‘Mellon,’ Oh concluded that English spelling has a highly significant effect on the choice between [l] and [r] in Korean.

However, the influence attributed to English orthography does not provide a satisfactory account of the onset [r] manifestation of English singleton ‘l,’ with an apparently random 16% distribution. That is to say, if it is conjectured that English orthography plays a significant role in the adaptation of English medial [l], then we would predict English orthographic singleton ‘l’ to be more consistently rendered into [r], instead of surfacing as [ll] 84% of the time as is actually observed. In the following sections, we correlate the word-medial liquid variations with factors that are more consistent with the observed distribution.

4.3 English loanwords via Japanese

Our account of the Korean liquid distributions assumes that those English words that are borrowed with an unexpected tap are derived via Japanese. That is, English words that Korean has borrowed through Japanese reflect the phonological substitution that Japanese made, in which English medial [l] is always rendered as a tap. We juxtaposed the pronunciation of words with onset [r] and [ll] for comparison in Table 2; it is noteworthy that the loanwords with word-medial tap [r] differ from the words with [ll] not only in liquid pronunciation, but also in pronunciation of other parts of the words as well.

Table 2: English borrowings in Japanese and Korean

English	Japanese	Korean
salad	[sa.ra.da]	[sa.ra.da] ~[s'ɛl.lə.du]
flash	[ɸu.ra.ɸu]	[hu.ra.ɸi] ~[p ^h u.l.lɛ.ɸi]
plus	[p'u.ra.s'u]	[p'ɯ.ra.s'ɯ]~[p ^h u.l.lə.s'ɯ]
balance	[ba.ran.s'u]	[pa.ran.s'ɯ]~[pɛl.lən.s'ɯ]
glass	[gu.ra.s'u]	[kɯ.ra.s'ɯ]~[kɯl.lɛ.s'ɯ]
vanilla	[ba.ni.ra]	[pa.ni.ra] ~[pa.nil.la]

We believe that the early representations of the English borrowings with an unexpected word-medial tap result from the influence of Japanese based on the following facts. First, representations of vowel sounds in early borrowings are not faithful to the target English vowels but faithful to Japanese vowels, even though Korean has the matching vowel sounds which are more target-like. For example, English [æ] in ‘salad,’ ‘flash,’ ‘balance,’ and ‘glass’ is rendered as [a] in early

borrowings, despite the fact the Korean has [ɛ] which is closer to the target [æ]. The borrowings including a target [ə] sound show an even more evident role of Japanese in the adaptation of English borrowings to Korean. English [ə] should be straightforwardly rendered as [ə] in Korean, since the sound exists both in English and Korean phonetic inventories. However, [ə] is manifested as [a] in early borrowings, as we can see in [sa.ra.da], [p'ʌ.ra.s'ʌ], and [pa.ran.s'ʌ]. Second, early representations of consonants also show the influence of Japanese. [f] in 'flash' is rendered as [h], not as [p], as found in recent direct borrowings from English, since it is a representation of Japanese [ɸ] as in [ɸu.ra.ʃu]. As we have presented so far, the whole pronunciation of the early borrowings with simplex [r] rigidly patterns just like English loanwords in Japanese; for example, the manifestation of 'salad' is either Japanese-like [sa.ra.da] or Koreanized English [s'ɛ.l.lə.dʌ], but they never get mixed forms like *[s'ɛ.rə.dʌ] or *[sal.la.da]. This suggests that they entered Korean not directly via English, but via Japanese.

Japanese has been a pathway for English borrowings since Korean was influenced greatly by Japanese during the 36 years of the colonial era (1909-1945). Korean preserved English borrowings via Japanese but became confronted with two different manifestations of the same words due to the secondary borrowing from the source language, English. Younger Korean speakers were exposed to the English source language directly, and started to use pronunciations of those words which they considered to be more target-like because of the Korean phonology laid out above regarding liquid adaptation, borrowing through Japanese sounded old-fashioned. Therefore, consistent with the principles, Koreans started to substitute geminate laterals for English medial laterals. Today Korean seems to be in the layering stage in the transition from old words to new words, since two variants of the same word coexist: English <Japanese> Korean and English <English> Korean, with the latter becoming increasingly dominant. The following section, however, deals with recent borrowings directly from English in which a word-medial onset lateral is rendered into an onset liquid.

4.4 Loanwords in advertisement

Some recent borrowings which are not through Japanese show unexpected Japanese-like patterns, as illustrated in Table 3.

Table 3: Recent English borrowings not via Japanese

	[r]	[ll]
Opulence [brand name]	[o.p ^h ju.rən.s'ʌ]	*[o.p ^h ju.l.lən.s'ʌ]
Planner [brand name]	[p ^h ʌ.rɛ.na]	*[p ^h ʌ.l.lɛ.nə]
(Lip) gloss [product]	[kʌ.ro.s'ʌ]	*[kʌ.l.lo.s'ʌ]
Kleenex [brand name]	[k ^h ʌ.ri.nɛk ^ˀ .s'ʌ]	*[k ^h ʌ.l.li.nɛk ^ˀ .s'ʌ]
(Matrix) Reloaded [film]	[ri.ro.di.dʌ]	°*[ril.lo.di.dʌ]

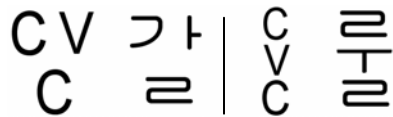
Their [r] manifestation is not a random adaptation, or merely exceptional; rather it relates to a pragmatic function, because most of them are used as brand names or consumer product categories. We account for [r] manifestation in these words as having two pragmatic purposes: 1) prosodic facility in production, 2) simpler structure in orthography. As the geminate lateral is prosodically heavier than the simplex central tap, speakers may prefer the [r], which, as a short segment, requires less effort in production than geminate [ll]. Moreover, the “lighter” sound may be preferred in words that are used for special purposes, mostly in brand names and proper nouns, as it conveys a more elegant and fancier sense. Thus, advertisers would select the central liquid rather than the lateral so as to make their brand names more appealing to consumers.

Besides the apparent auditory preference, the tap is simpler, and aesthetically more appealing, than the geminate lateral in Korean orthography. There are twenty-four basic Korean letters in use today, fourteen consonants and ten vowels as shown in Table 4, which are combined into syllable blocks, unlike the linear sequencing of most other languages, such as English. That is to say, the letters are arranged syllabically so that each block represents one syllable. Each syllable must begin with an initial consonant followed by either a vertically shaped vowel or a horizontally wide back vowel. Depending on the shape of the vowel, the position in Korean orthography is different. Vertically shaped vowels are written to the right of the onset and horizontally wide vowels are written below the onset as shown in Figure 1.

Table 4: Basic consonants and vowels in Korean

Basic consonants														
Symbol	ㄱ	ㄴ	ㄷ	ㄹ	ㅁ	ㅂ	ㅅ	ㅇ	ㅈ	ㅊ	ㅋ	ㆁ	ㅍ	ㅎ
Sound	k	n	t	l/r	m	p	s	ng	c	ch	kh	th	ph	h
Basic vowels														
Symbol	ㅏ	ㅑ	ㅓ	ㅕ	ㅗ	ㅛ	ㅜ	ㅠ	ㅡ	ㅣ				
Sound	a	ya	e	ye	o	yo	u	yu	eu	i				

Figure 1.



The liquid consonant in Korean orthography is more complex than other consonants; therefore, a coda liquid followed by horizontally oriented vowel letters leads to a vertically jammed configuration, and readability decreases a great deal at a distance. Taking the example of a brand name for an elegant apartment complex in Korea named ‘Opulence’ in Table 3, the writing of the second syllable, [p^hju], gets really complicated with [ll], as shown in (7b).

- (7) a. [r] 오 류 런 스 b. [ll] 오 풀 런 스
-

[r] and [l] are both represented in the Korean alphabet by ‘ㄹ,’ and the second syllable with two of these becomes vertically jammed after the horizontally wide vowel [yu] represented as ‘ㅠ,’ making the syllable be spelled as ‘풀’[pjul] in Korean, which is less legible than ‘류’ [pju]. Since the word ‘opulence’ is used as a brand name for a fancy studio or apartment, the advertiser selects [r] over [ll] since its Korean orthographic representation is more readable from a distance and also aesthetically more preferred.

5 Conclusion

In sum, it is more reasonable to say that Koreans are apprehending foreign liquids in terms of syllable structure alignments than in terms of laterality. This is because the feature [lateral] with a phonemic contrast between medial geminate and simplex liquids is not distinctive in the language, but of course its differences in syllable structure are, and it is presumably a principle of phonological perception that listeners are not usually aware of redundant features in their native language. It is thus important for the theory of phonology generally to be able to interpret loanword adaptations in phonological terms that are salient in the receiving language.

Moreover, apparent deviations from the general pattern are not due to perceptual variables, but to ‘extraphonological’ factors such as misinterpretation of source language morphology (*Seinteu ruiseu* ‘Saint Louise’), avoidance of structure absent in the native language (*soliroki* ‘soliloquy’), influence of Japanese (*meron* ‘Melon’), and pragmatics (*opyureonseu* ‘Opulence’). The adaptation of foreign liquids in Korean, a kind of turning of the phonology ‘upside-down’ (Leben & Robinson 1977), thus does not call for the elevation of subphonemic features to the level of overt perceptual prominence, but rather for recognition of the salience of prosodic structure in phonological processing and perception.

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