Sino-Korean coda -l and the syllabic structure of Old Sino-Korean

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Abstract

Old/Middle Chinese codas of the entering tone are well preserved in Sino-Korean except for Chinese *-t, which changed to Sino-Korean -l. This article claims that Old Chinese coda *-t changed to Sino-Korean -l because coda -t was not fully developed in Old Korean by the time the Sino-Korean phonological system was formed in the eighth century. This article also proposes that the syllabic structure of Old Sino-Korean was (C)V at the earliest stage and gradually changed to (C)V(C). Evidence is presented from place names of the Samguk sagi along with other relevant Old Sino-Korean materials. The results of this study suggest we must reject the views that Sino-Korean coda -l developed under the influence of similar changes that occurred in Chinese dialects, that Middle Chinese coda -t remained the same in Sino-Korean until the sixth century but changed to -l in the seventh century, or that it was realized as -r due to phonetic adjustment caused by released codas of Old Korean.

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1. Introduction

One of the most controversial issues in Sino-Korean (hereafter SK) phonology is the origin of SK coda -l, which was derived from Old Chinese (hereafter OC) coda *-l of the entering tone. It has been debatable because the other two OC codas of the entering tone, *-p and *-k, are well preserved in SK. What has made historical linguists even more perplexed is why and how indigenous Korean vocabulary still maintains words ending in both -t and -l while SK has no words ending in -t, only in -l. Many plausible theories have been proposed to resolve these questions to date. To name just a few of them, Lee (1981, 2002[1972]) and Martin (1997) proposed that SK coda -l was derived from -r, one of the three lenited codas -b, -r, -g of the northwestern dialects of late Tang and the Five Dynasties in the ninth to tenth century A.D. Eom (2002) disputed their ideas by presenting evidence that OC *-t was already realized as SK coda -l in the seventh century or earlier. That was at least two centuries before the lenition of the OC entering tone codas, *-p, *-t, and *-k, took place in

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Roughly speaking, Old Chinese means Chinese from the earliest stage to the 2nd century CE while Middle Chinese means Chinese of the 6th to 10th centuries.
northwestern dialects. Accordingly, Eom (2002) claimed that SK coda -l from OC *-t was an internal change that took place within the domain of SK phonology. Lee (2014) also supports the idea of internal change. However, he claims that Middle Chinese (hereafter MC) coda *-t was realized as -t in Old Sino-Korean (hereafter OSK) and changed to -l in the mid-seventh century because at that time coda -t was still not widely used in Early Old Korean (hereafter EOK) words. In this article, EOK refers to the Korean language before the seventh century when Silla unified the peninsula. An unresolved problem in both Author and Lee, however, is why and how OC *-t changed to -l almost without exception only in SK, in a context in which indigenous words ending in both -t and -l have survived even into modern Korean. Addressing this question, Shin (2016) presumed that OC *-t might have been realized as a less released -r rather than a more released -t ending in OSK due to the greater phonetic similarity between OSK -r and OC *-t. Unfortunately, however, a consensus on Shin's proposal has not been reached due to a lack of decisive evidence.

Accordingly, this article will justify both Lee's and Shin's innovative views and propose an alternative way to resolve the problems found in the theories in question. It will propose that coda -t was not fully developed in native Korean when Old/Middle Chinese *-t was borrowed into SK so -l was substituted for Chinese *-t. This proposal is closely related with the issues of the development order of OK and OSK codas and eventually the syllabic structure of EOK as well as that of OSK. A brief review of each theory will be given before the main discussions.

2. A brief review of the previous theories: external, internal, or phonetic change

2.1. An external change

In the 20th century, the most prominent explanation for the origin of SK coda -l was influence from northwestern dialects of Chinese in the late Tang and the Five Dynasties, when MC coda -t underwent the following changes: -t > -d (8th C.) > -l (9–10th C.). Luo (1933:68, 168) proposed the following changes in the northwestern dialects of late Tang Dynasty:

<table>
<thead>
<tr>
<th>(1)</th>
<th>Old Chinese</th>
<th>Middle Chinese</th>
<th>Old Mandarin</th>
<th>MM</th>
</tr>
</thead>
<tbody>
<tr>
<td>8th C.</td>
<td>9–10th C.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-p</td>
<td>-b</td>
<td>-b</td>
<td>-β</td>
<td>-Ø</td>
</tr>
<tr>
<td>-t</td>
<td>&gt; -d</td>
<td>&gt; -j</td>
<td>&gt; -Ø/-r</td>
<td>&gt; -Ø</td>
</tr>
<tr>
<td>-k</td>
<td>-g</td>
<td>-g</td>
<td>-γ</td>
<td>-Ø</td>
</tr>
</tbody>
</table>

Taking Luo's observation into consideration, Arisaka (1957:305), Lee (1972:73–74, 247), and Martin (1997) among many others proposed that SK coda -l was a reflection of the northwestern dialects of Chinese in late MC. Martin (1997:266–267) considered that MC coda -t changed to -r or a sound similar to it in the northwestern dialects by the 800s. Martin's further evidence includes similar changes found in Old-Turkic, Old Turkish (Uighur), and SK. (MM denotes Modern Mandarin.)

<table>
<thead>
<tr>
<th>(2)</th>
<th>MC</th>
<th>MM</th>
<th>Old Turkic</th>
<th>Old Turkish</th>
<th>SK</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>蜜</td>
<td>mit</td>
<td>mi</td>
<td>mur</td>
<td>ba:l</td>
<td>mil</td>
<td>honey</td>
</tr>
</tbody>
</table>

In addition, Lee (1981:76–77) presented additional evidence for the -t to -r change in the Northern Wei (386–534), such as ‘kelmürčin (乞萬真)’ and ‘pürtüčin (拂竹真),’ which transliterated Mongolian kelemürčin (a translator) and örtegečin (a horseman) respectively. Unfortunately, however, the language of Northern Wei was not Sinitic but Altaic and Lee's examples are merely transliterations of Mongolian -l/-r into Chinese characters. Since OC/MC did not have any liquid codas such as -l or -r, those sounds in foreign languages were rendered by Chinese characters ended in -t, which was the closest sound in terms of articulation. Thus, Lee's additional examples are not relevant as evidence of coda lenition in MC.

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2 This article tentatively follows the Eom's (2015a:13) periodization of Sino-Korean and Lee's (2002) periodization of the Korean language with a slight modification. The author's Old Sino-Korean refers to ancient Korean readings of Chinese characters up to the 7th century, when Silla unified the Three Kingdoms while Lee's Old Korean covers up to the beginning of the 10th century, when the Unified Silla turned to Koryŏ. To avoid discrepancies between Old SK and Old Korean, OK is further divided into two stages: Early OK and Late OK regarding the birth of the Unified Silla at the mid seventh century as the turning point. In this article, Sino-Koguryo, Sino-Paekche, and Sino-Silla before the unification belong to Old Sino-Korean while the native languages of those kingdoms are regarded as EOK. The author regards OSK was a mixture of distinctively diverse regional characteristics as those languages of the three kingdoms are known to be quite distinctive by regions.
2.2. An internal change

The most critical problem of the previous view regarding SK -l as an external change is that OC coda ^-t was already realized as -l in OSK even before such lenition took place in the northwestern dialects of Chinese in the ninth century. Eom (2002:115) presents the following characters that were pronounced with coda -l in OSK during the Three Kingdoms Period (1st C. BCE-676 CE) before the seventh century:

(3) 忽 OC *xuat OSK *kol
    伐 OC *biwet OSK *pul, *pel, *pel
    乙 OC *iet OSK *el

The first character, hú 忽, was often used as a suffix in Koguryó place names, while the second character, fá 伐, was used in Silla place names. The third character, yī 乙, was used as an accusative case marker in hyangga poetry of the Silla dynasty. The OC reconstructions of these characters are based upon Wang Li, while their OSK reconstructions are cited from Pak (1971:12) for the first two and Pak (1990:90, 95) for the last character. What is apparent is that OC coda ^-t changed to -l in OSK no later than the seventh century, even before a similar change took place in the northwestern dialects of Chinese in the ninth to tenth century. If it was an internal change, one can assume that OC coda ^-t must have been realized as -l in OSK before the ninth century. However, Eom’s (2002) close observation of OC coda -t characters used in the place names of Koguryó, Paekche, and Silla does not support the assumption that OC coda -t was realized as -l in OSK before the lenition of obstruent codas first appeared in the northwestern dialects of MC. For instance, the following place names in Paekche, quoted from Eom (1991:140, 2015a:344–345), alternated with other forms of the same names:

(4) a. #443 kulji 屈旨 = kuljik 屈旨
    b. #23 yolgi 悅己 = turungi 豆陵伊
    c. #144 kalch’o 葛草 = hāro 何老 = koya 古野

Since the first characters in (4a) are identical, they seem to present -t to -l correspondence. However, they could equally represent -l to -l correspondence. The coda of yol in (4b) is seen in the onset of the second syllable in turungi. This implies that the Paekche language and Sino-Paekche Korean had no closed syllables. (4c) supports that idea by demonstrating a closed syllable corresponding with open syllables.

The examples above clearly demonstrate that OC coda ^-t was not necessarily realized as OSK coda -t. Just for this reason, this study refutes Lee (2013:132–155, 2014:131, 2016:269–284, 2017:385–403) claiming that MC ^-t remained the same in OSK until the sixth century and eventually changed to -l in the mid seventh century due to analogical change. Lee claims that characters pon 本 and wôn 原 in Haman wooden tablets of the mid sixth century should be interpreted as a semantic reading of ‘mil>mi,’ meaning wheat, because those characters were used in the position where a name of grain is supposed to be. However, his hypothesis is not so convincing because there has been proposed another hypothesis on the etymology of Korean word ‘mil’ for wheat. Zheng-Zhang (2003:133) and Pan (2006:6) claim that Korean ‘mil’ was derived from OC mai 茉, *mruuk, meaning barley. It is implausible and even contradictory for Lee (2014) to claim that OC/ MC ^-t was first realized as -l in OSK because Lee himself emphasizes many times in his article that -t ending words were sparse while -l ending words were abundant in EOK.

Lee’s (2014:130) additional reason, Sino-Japanese ti and tu for OC ^-t, cannot be persuasive evidence either. Lee claims that if OC ^-t changed to Sino-Paekche Korean -l, the Go-on readings of Sino-Japanese should have reflected such lenition. However, Lee’s assumption of a direct connection between Sino-Paekche Korean and Go-on still needs further justification. It is true that Sino-Paekche Korean is phonetically more similar to Go-on than Kan-on, as is examined in Eom (1991), but there still exist discrepancies between them, such as voiced onsets and OC/MC -t ending words. Kojiki (712) and Nihon shoki (720), two of the earliest extant historical records of Japan, state that Wang’in or Wari from Paekche transmitted Chinese classics, such as Lunyu and Qianziwen, to Japan in the sixteenth year of the Ojin 應神 period (285 CE). Endo (2015:217–218), however, claims that the date must be corrected to around the sixth century because Qianziwen was compiled by Zhou Xingsi (470–521) and the chronology before the sixth century in the Kojiki and Nihon shoki was lengthened artificially. According to Endo, the linguistic encounter between Korean and Japanese at early days took place during the Suiko 推古 period (592–628), when some vestiges of OC are preserved in both sides. Go-on, on the other hand, was formed during the Nara period (710–794) after the fall of Paekche in 663. If this is the case, Sino-Japanese readings cannot be so crucial to determine the readings of Sino-Paekche Korean. (Lee’s further reasoning related to syllabic structure will be discussed later in section 4.)

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3 The numbers given to the place names in this article denote the order of occurrence in the Geological Chapters of the Samguk sagi.
The second serious question that Lee (1972) and Martin (1997) have to answer is why SK coda -l in particular was influenced by the northwestern dialects of Chinese. Unlike OC coda -*t, the other entering tone codas -*p and -*k are well preserved in SK. Although Martin (1996:86–87) presents some examples of coda -*k changed to Middle SK -h, such as 꼬 ofstream, 俗 sjoh, and 竹 tjoh, they are rare examples and the coda -h disappeared in Modern SK without any trace. All the characters with OC coda -*k remain unchanged in Modern SK. Eom (2002:106–107) points out that no other distinctive characteristics of the old northwestern dialects of MC, such as the change of MC nasals to mb-, nd-, and ng- and the merger of the dāi 代 and tài 氐 rhymes, are detected in SK.

Accordingly, Eom (2002, 2015a[2008]) concludes that SK coda -l is the result of an internal change. Oh (2008), Qian (2015) and many others also support the idea that SK coda -l is the result of an internal change.

### 2.3. Phonetic adjustment

Although the theory of internal change seems more plausible than that of external change, a question still remains to be answered. That is why and how OC/MC -*t changed to -l only in SK phonology, while both -t and -l presumably existed in OK as both codas are easily found in the indigenous words of modern Korean. It is, in fact, a perplexing and abstruse puzzle. In her lengthy article, Shin (2016) points out this problem and proposes new ideas to resolve it. Based upon Lee (1998:84–85, 113) claiming that Korean codas were phonetically released until the thirteenth century, Shin (2016:257) presumes that OC unreleased coda -*l was borrowed into SK as -r, pronounced [ɾ], rather than as released coda -t because of phonetic similarity between OC -*t and SK -r. The plosive codas of OC and MC, -*p, -*t, -*k, were unreleased from the beginning until they were deleted in late MC. The plosive codas in Modern Korean and SK are unreleased. Unlike Modern Korean, however, Middle Korean (hereafter MK) plosive codas were released until the end of the thirteenth century (Lee, 1998:84–85, 113). Shin states that the distinctive difference between released and unreleased codas is the release of airflow. She proposes that -r changed to -l later in Korean as the Korean codas changed from released to unreleased. Her exposition presents a possible reason why OC -*t was converted to SK -l under the situation where -t was also available in Korean. Shin’s intuitive ideas of phonetic adjustment seemingly resolve the perplexing problem that the view of internal change confronted before. The fundamental premises of her proposal are that aspiration in consonants was fully developed and codas -r and -t were already in use in EOK by the time when OC codas were borrowed into OSK. However, her premises are still controversial so Shin’s new proposal also awaits several issues to be justified further.

### 3. An alternative view

The following questions need to be answered before the hypothesis of phonetic adjustment can be verified:

1. Why did the coda-release mean the release of airflow phonetically?
2. Why did only OC -*t change to SK -r while all other [–released] OC codas were realized as [+released] SK consonants?
3. Why did both -l and -r exist in EOK and OSK when OC codas were first borrowed into OSK?

Shin (2016:257) views the distinctive difference between [+released] and [–released] codas as the presence or absence of an apparent airflow after closure of the oral cavity. The apparent airflow after closure may be related to aspiration. If so, the [+released] coda may not have meant an apparent airflow after closure of the oral cavity at least at the early stage of OK because aspiration was still in the process of developing in EOK. Eom’s (1994) study on the toponyms of Koguryo, Paekche, and Silla listed in the Samguk sagi (Chronicles of the Three Kingdoms), the earliest extant historical records in Korea, indicate that aspiration was not phonemic until the seventh century in OSK. In the place names of those three kingdoms, an aspirated sound often corresponds to an unaspirated sound in initial position. Some examples, quoted from Eom (1994:407–410, 2015a:39–44), are as follows, in which SKGR, SP, and SS denote Sino-Koguryo, Sino-Paekche, and Sino-Silla respectively:

<table>
<thead>
<tr>
<th>#78</th>
<th>SK</th>
<th>SKGR</th>
<th>MM</th>
<th>MC</th>
<th>OC</th>
</tr>
</thead>
<tbody>
<tr>
<td>仇乙蛾 ‘仇’</td>
<td>꼬ku k-</td>
<td>꼬tʃou2</td>
<td>꼬giu</td>
<td>꼬giu</td>
<td></td>
</tr>
<tr>
<td>屈暹 ‘屈暹’</td>
<td>꼬kul k-</td>
<td>꼬tʃy1</td>
<td>꼬kʰiwt</td>
<td>꼬kʰiwt</td>
<td></td>
</tr>
<tr>
<td>#145</td>
<td>SK</td>
<td>SP</td>
<td>MM</td>
<td>MC</td>
<td>OC</td>
</tr>
<tr>
<td>古嫌只 ‘古嫌只’</td>
<td>꼬ko k-</td>
<td>꼬ku³</td>
<td>꼬ku</td>
<td>꼬ka</td>
<td></td>
</tr>
<tr>
<td>開要 ‘開要’</td>
<td>꼬kɛ k-</td>
<td>꼬kʰai1</td>
<td>꼬kʰi</td>
<td>꼬kʰi</td>
<td></td>
</tr>
<tr>
<td>#47</td>
<td>SK</td>
<td>SS</td>
<td>MM</td>
<td>MC</td>
<td>OC</td>
</tr>
<tr>
<td>漆吐 ‘漆吐’</td>
<td>꼬tho t-</td>
<td>꼬tʰu⁴</td>
<td>꼬tʰu</td>
<td>꼬tho</td>
<td></td>
</tr>
<tr>
<td>漆陵 ‘漆陵’</td>
<td>꼬tʃe t-</td>
<td>꼬tʃi</td>
<td>꼬tʃi</td>
<td>꼬tie</td>
<td></td>
</tr>
</tbody>
</table>
According to Chang (1982:86), aspiration did not appear in Korean dentals until the seventh century, when aspiration in labials was not phonemic but still phonetic. Aspiration was not yet developed in Korean velars at that time. Chang claims that aspiration became fully developed in Korean only as late as the fifteenth century. Ryu (1983:98), on the other hand, claims that aspiration appeared at the latest at the eighth to ninth century and was fully established by the tenth century. Their studies suggest that the [+released] OSK codas might not have been phonetically conditioned until aspiration was fully developed in Korean at a later stage. Aspiration in onset, of course, is a separate issue from coda release. However, the presence or absence of apparent airflow in the coda might not have been so sensitive to ancient Koreans during the period when aspiration was not fully phonemic.

Instead, the [+released] codas seem to be more related with the CV phonotactics of OK syllabic structure. OC codas were often ignored or moved to the onset position in the following syllable in the toponyms of those three kingdoms. The following Paekche examples, in which a syllable with a coda alternated with one without, are quoted from Eom (2015a:134–135):

(7) a. #23 yŏlgī 悅己 = turŭngi 豆陵伊
   b. #44 kulij 屈旨 = kulijk 屈直
   c. #90 pokryong 伏龍 = paeryong 伏龍
   d. #144 kalch’o 葛草 = haro 何老

Equivalent to the Silla place name suffix pŏl 火 (>伐) was puri 夫里 in Paekche place names. Ungjin 熊津 in Paekche was known as koma 納, from which we know that kom was pronounced as koma. These examples indicate that the syllabic structure of Sino-Paekche Korean was CV. Ryu (1990:76), in fact, clearly states that the syllabic structure of EOK was CV, having no consonantal codas at all due to the [+released] nature of all the consonants. His evidence includes pul and kol/kul that were transliterated as puri 夫里 and kuru 溝瀨 respectively in OSK resources. This tendency, according to Ryu, lasted until the sixth century. If Ryu is correct, the nature of [+released] codas of OSK ought to be associated with both phonetic and phonotactic conditions, which rendered CVC in OC to CV or CVCV in SK. Thus, (5a) needs further verification.

Shin’s (2016:255) answer to the second question, (5b), is simple and straightforward. She regards that there were no alternative sounds to replace [+released] SK codas -p and -k so the phonetic adjustment from [-released] *-p and *-k in OC to [+released] -p and -k in OSK was easily predictable. If OSK -p and -k were easily predictable, there is no reason to regard -t as an exception. If Shin insists that it was because there was -r in addition to -t, it is merely an assumption without decisive evidence. The additional coda(s) could have been -r, -l, or both -r and -l as Lee (2002:85) points out a high possibility of having both *-r- and *-l- in EOK inventory.

What is unusual is converting all the [-released] OC codas into [+released] SK -p, -k, -m, -n, -η except for -t, which was substituted by -r. It is particularly so when all the consonants were [+released] in OK (Ryu, 1990:76). Sometimes doubtful is the degree of phonetic correspondence between Chinese and Sinoxic dialects. Sinoxic dialects tend to render the original pronunciations of Chinese as precisely as possible only within the capacity of their own languages. When the native phonology has no sounds that match exactly with Chinese, it is quite common to substitute something similar for those. Discrepancies are inevitable and Sino-Korean is no exception. Voicing and aspiration in Chinese, for instance, were fully or partially ignored in SK (Eom, 1994). Accordingly, the necessity to remedy the subtle difference between OC and OSK in terms of [+/- released] might not have been so demanding because the sound difference was marginal and it would only make SK inventories unbalanced and inconsistent. Even if there were both strongly released -l and weakly released -r in OK, it is still debatable whether the unreleased OC coda -l [l] sounded closer to the weakly released -r [r] than the strongly released -t to the Korean listeners of that time because even now modern Koreans often perceive and transcribe a released coda of a single syllable as the released onset of the expanded following syllable. Some examples of this phenomenon with recent English loanwords are as follows:

(8) soup sip’i 坐 = sink sip’i 坐
   nut net’i 剪 = sink net’i 剪
   jet jhet’i 希 = sink jhet’i 希
   park pok’aŋi 檜 = sink pok’aŋi 檜

The above examples demonstrate how English released (but un aspirated) codas -p and -t are realized as Korean aspirated initials tʰ- and pʰ-. They suggest that the coda-release might not have been as sensitive as what one can think of now in terms of perception. Accordingly, Shin’s answer to (5b) needs to be reconsidered.

The third question is doable when considering the formation order of Korean consonantal codas. The toponyms of the Samguk sagi, one of the most reliable resources of OK, indicate that SK codas were not developed concurrently
as no OC *-p ending character was used in the toponyms of Paekche even while OC *-t and *-k ending characters were in use (Eom, 2015a:345). The formation dates of nasal codas seem to be different too. What is notable is Ryu's (1990:174) claim that the consonantal codas were not fully developed in EOK. Some consonantal codas appeared at the earliest in the sixth century and only became fully developed as late as the twelfth century. Below is listed the order of development of Korean codas, quoted from Ryu (1990:179–185), where the evidential source he relied on is written in parentheses:

(9) a. 6–8th Century (Samguk sagi): -m, -l, -n, -p, -k
   b. 7–8th/9–10th Century (Kyunyŏ hyangga): -ŋ
   c. 10–12th Century (Kyerim yusa): -t, -ts, -s, -h

Ryu (1990:179–180) presents the following place and personal names of the Three Kingdoms as the evidence (with his own reconstructions) to support (9a):

(10) a. 及伐山 *ka.par.tara → 畿山 *kip.tara
   b. 落比谷 *si.pi.tana → 畿爵 *sip.tana
   c. 豆夫只 *tu.pu.ki → 同福 *tu.puk
   d. 萬勿阿 *ka.mur.a → 歧悦 *kam.ura
   e. 萬內 *ma.no → 萬呼 *man.o
   f. 首爾 *su.ri → 戉 *sur (>sur)

The names to the left of the arrows were changed to Sinitic names in 757 by King Kyŏngdok (?–765) of Unified Silla. One can clearly see that sequences originally written with a combination of two open-syllable characters on the left are written with one character with a coda on the right. The examples in (10) imply that OSK had no consonantal coda and the CV syllabic structure of OSK changed to CVC after the OSK period. It is true that the Sinitic names of the Unified Silla tend to have two syllables so the one to one correspondence between the earlier names and later ones might not be so straightforward. However, what is notable is the fact that the onset of the second syllable is identical with the coda of the first syllable in (10a) kŭp.pŏl 及伐, (10b) sŭp.pi 落比, (10d) kam.mul 甘勿, and (10e) man.nae 萬內. These names indicate that the coda was not properly pronounced in OSK. Otherwise, the second syllables in these names would be redundant. The onsets of the second syllable, p-, k-, m-, n-, and r- on the left changed to the coda of the first syllable, -p, -k, -m, -n, and -r on the right. These examples strongly suggest the coda was released and realized as the onset of the following syllable. If those Sinitic names on the right reflect merely transliteration of multiple syllables into two syllabic names, one cannot explain why man.nae 萬內 *ma.no changed to man.ho 萬呼 *man.o since both of them have two syllables. It is also questionable why a two syllable name首爾 *su.ri changed to one syllable name 戉 *sur. An additional question is why the Sinitic names of the Unified Silla consistently ignored the syllables beginning with the same consonant as the coda of the preceding syllables. These questions cannot be easily answered without acknowledging the CV structure of OSK. This will be discussed in more detail in the next section.

Ryu (1990:181–182) claims that the velar nasal first appeared in onset as early as the seventh to eighth century in hyangga poetry and gradually appeared in coda position afterward. According to him, the velar nasal coda was apparently in use at coda position in Kyunyŏ’s (923–973) hyangga poems, which represent Korean of the ninth to tenth century. In one of his poems, the word 法叱供 in 法叱供乙留*papsikuŋ,7i.et.liu ought to be interpreted as *papsikuŋ (法供 pŏpgong), meaning a Buddhist prayer, so one can see the appearance of the velar nasal at the coda position.

However, Ryu’s dating on coda -ŋ seems considerably conservative because the velar nasal coda in the following Paekche names, quoted from Author (2015:141) with a slight modification, was consistently maintained in their Sinitic names of the 8th century:

(11) #1 熊川 > 熊津 > 公州
   #20 沙平 > 新平
   #27 黃等也山 > 黃山
   #29 珍洞 > 珍同
   #76 礦坪 > 礦城

The original Paekche names are given on the left while their Sinitic names during the Unified Silla are given on the right of “>.” There are indeed the examples demonstrating an -ŋ to -ŋ correspondence in Paekche place names, as seen in #90 pokryong 伏龍 and #116 kamp'yŏng 欽平, which alternated with paeryong 盃龍 and 武平 mup'yŏng respectively during the Paekche period. Thus, it is quite plausible to state that the velar nasal coda was already in use by the 8th century OK and SK. The author’s view supports also the conventional view on the date of SK, which is the 8th century MC.
According to Ryu (1990:183–184), the appearance of coda -t in Korean had to wait until the Kyerim yusa (ca. 1103).

(12) a. 面醜曰掠翅沒朝勳 낼치 몰도한 (= 낳이 못 좋은) *nats’i mottjo han
   “An ugly face” is called “nats’i mottjo han.”

b. 花曰骨 *kut, *kot
   A flower is called “kot.”

As is shown in (12), the negation marker ‘mot’ used in the Kyerim yusa was written in two characters, mo 毛+dong 冬 as in 毛冬居叱沙 毛冬居叱沙 모도 사라사 (≡=못 살아서) *moto sarasa in a hyangga poem and ‘kot,’ meaning a flower, was also spelled in two characters, ko 古+cha 次 to denote the equivalent of hwa 華 ‘flourishing’ in the Samguk sagi. Thus, one can see that SK coda -t was in use a minimum of two centuries later than coda -l. If Ryu is correct, it is difficult to accept (5c).

The exact date of the formation of the major stratum of Modern SK is still a controversial issue. Scholars in the field more or less tend to reach a consensus to date SK to the eighth century (Kôno, 1968; Shen, 2006; Ito, 2007; Qian, 2015). Considering this date, one can now understand that there was no -t in the Korean inventory when the phonological system of Middle SK was formed in the eighth century. This is why OC/MC coda *-t was realized as -l in SK: because it was phonetically the closest to OC/MC *-t in the consonantal inventory of MK regardless of whether MK codas were released or not. This also implies that SK coda -l might not be the direct result of avoidance of released coda -t. In addition, it is improper to assume that OC/MC *-t was rendered as -t in OSK when it was first borrowed and later changed to -l after the mid seventh century.

4. Syllabic structure of Old Sino-Korean

The alternative view proposed in this article touches upon another controversial issue in EOK and OSK phonology. That is whether there were consonantal codas in EOK and OSK. If there were, the syllabic structure should be CVC. Otherwise, it will be CV. Lee (2014:116–117) insists that the syllabic structure of EOK was CVC for the following reasons:

(13) a. CVC syllables are present in various OK words.

b. Some Chinese characters employed in Sino-graphic representation of OK were specifically designated to write syllable-final consonants.

c. Syllable-final consonants, -p, -l, -k, -m, -n, -ŋ have clearly been extant throughout the entire period from OK to modern Korean.

As a matter of fact, there are many words with consonantal codas that have been known as OK words. Lee’s examples for (13a) include a suffix üp 興, which was used to indicate coda *-p and a semantic reading of mo 毛 *tel on wooden tablets excavated in Mirûksa Temple site. An additional example is kich’ok 吉尺 *gidzak on a wooden tablet excavated in Haman. Aside from the controversy on the presence of voiced obstruents in OK (Eom, 1994), the above examples seemingly demonstrate the presence of syllable-final consonants in OK. Characters, ün 防, ü 乙, chi 只, üm 音, and chîl 叱 were used to indicate OK codas, -n, -l, -k, -m, and -s respectively in hyangga poetry. Thus, (13b) is provisionally acceptable as well for the moment. It is needless to mention MC consonantal codas, -p, -l, -k, -m, -n, -ŋ are well preserved in Middle and Modern SK except for -t changed to -l.

However, the preservation of MC codas in Middle SK does not guarantee that OK had those consonants at the coda position. The reason why (13c) is overgeneralized is that Lee’s evidence presented in (13ab) indicates the fact that the consonantal codas existed only in Late OK. According to Lee (2014), the wooden tablets of Mirûksa Temple site date to the turning point between the seventh and eighth centuries while those from Haman date from as early as the mid sixth century. The earliest extant hyangga poems, such as Sŏdongyo 春童謡 and Hyesŏngga 春星歌 were presumably written during the regime of King Chinp’ŏng (579–631) in Silla. Accordingly, what one can conclude for sure is that some of consonantal codas were already in use in the mid sixth century. Recall that the first massive language contact between Chinese and Korean took place as early as the second century BCE when Old Chosŏn was occupied by Wei, a Yan Chinese, and his followers in 194 BCE (Eom, 2015b:227). The Samguk sagi states that Koguryŏ, Paekche, and Silla were established decades before the common era began. Quite uncertain is whether Early OK had consonantal codas, in particular, from the second century BCE through the mid sixth century. It is difficult to find sound correspondence in codas among the alternative transliterations of place names listed in the Samguk sagi. The evidence from Paekche place names was previously presented in (4).
More examples implying unstable codas in Sino-Paekche place names are quoted from Eom (2015a:133–141) as follows (in modern SK pronunciations):

(14) a. #90 pokryong 伏龍 = paeryong 盤龍 -k: -Ø
b. #92 punch’i a 湾沙 = pusa 夫沙 -n: -Ø
c. #116 kamp’yong 欲平 = mup’yông 武平 -m: -Ø
d. #86 matol 馬突 = majin 馬珍 -t: -n
e. #134 saekkum 塞琴 = ch’okpin 促濱 -m: -n

From the examples in (14abc), one can learn that codas were ignored in Paekche place names although loose correspondences in the place of articulation or manner of articulation are detectable in (14de). The correspondence between matol 馬突 and majin 馬珍 in (14d) is often explained from a semantic sense. The pronunciation of tol 突 tends to be regarded as the meaning of jin 珍. As a matter of fact, ‘tol’ means a stone in Korean. However, it is difficult to accept this explanation because the definition of character jin 珍 is not stone but treasure. There is no reason to use jin 珍 to denote the sound of [tol] because stones are not valuable at all and character sŏk 石 is an even more commonly used character than jin 珍. The phonetic correspondence between these alternative names is much more plausible than semantic correspondence, particularly during OC period, as is demonstrated below:

(15) OC EMC SP
    突 *duet duet *t-
    珍 *tian ŭen *t-

The onsets of these characters were different in Early MC but exactly the same in OC except for voicing. The voicing at the word initial position was not phonemic in Early OK (Eom, 1991, 1994, 2015a). Considering the nuclei of the two characters are exactly the same and the codas were still under the unstable stage of development, one can easily observe sound correspondence between them during the OC period. Additional evidence to support the CV structure of EOK/OSK includes those alternative names listed in (7), (10) and (12), which were already discussed in detail previously.

Thus, it is quite reasonable to state that consonantal codas were not fully developed in EOK during the Three Kingdoms Period (1st C. BCE to 7th C. CE). Considering some codas appeared from the sixth century, Lee's observation described in (13ab), in fact, turns out to be partially compatible with Ryu's view summarized in (9). What is apparent, however, is that, unlike Lee's claim in (13c), one cannot claim that syllable-final consonants have clearly been extant throughout the entire period from EOK to modern Korean. It is not certain how long the OK stage lasts in Lee's periodization of the Korean language, but it is certain that consonantal codas were not phonemic in EOK for many centuries at earliest before the sixth century.

In order for the alternative view proposed in this article to be convincing, the following questions still have to be answered:

(16) a. How were those OSK words with coda -l, such as Koguryŏ place name suffix, hol 忽 and Silla place name suffix pul (semantic reading) 火 or pŭl 伐, read before the sixth century, the time when Ryu claims for the appearance of coda -l in OK?
   b. Is the claim that some seemingly indigenous Korean words were actually early borrowings from OC, such as param 風 *pram for wind, put 筆 *p(r)ut for writing brush and nal 日 *niet for day, still valid?

Due to the limited evidential sources for EOK, it is almost impossible to determine how those suffixes were read during the Three Kingdoms period before the sixth century. Based upon data (4), (7), (10), (12) and (14), one can surmise that EOK had not fully developed consonantal codas at the early stage. Eom (2017) regarded those indigenous Korean words that sound similar to OC pronunciations of their corresponding Chinese characters as the results of linguistic contact between OC and OK. Those Korean words reflecting OC consonant clusters might be the examples of language contact at the earlier stage of the Korean language because the consonantal clusters of OC are believed to have disappeared at a later stage of OC. In theory, those indigenous Korean words can be interpreted to be later developments after the sixth century if one follows Ryu's claim. This possibility, however, is lower than the former. Although no decisive answer can be given due to lack of language data from that time, the best assumption under the given circumstance is that OSK had no codas in the early days and gradually developed codas later, presumably due to frequent contact with Chinese for centuries, at the late stage of OSK. In the meantime, some codas must have been at the stage of free variation until they fully obtained phonemic status. This process was suggested earlier in Eom (1991) and recently in Eom (2015a:347) and Li (2017:130). Thus, one can assume that the syllabic structure of OSK/EOK was (C)V and changed to (C)V(C) later in the sixth century.
5. Conclusion

Based upon the discussions above, one can conclude that SK coda -l was the closest sound to OC/MC coda *-t among those available in the SK consonantal inventory at the stage of the formation of the SK phonological system. Recall that coda -l developed as early as the sixth century in Korean while coda -t was a late development after the tenth century. The phonological system of SK was formed before coda -t was fully developed in native Korean. The only choice for OC/MC coda *-t was -l in SK when the major portion of SK has words ending in either -t or -l. The results of this study suggest that Lee’s (2014) view regarding MC -t was first realized as -t by the sixth century and changed to -l in the seventh century should be reconsidered. It is implausible to assume that MC -t was accepted as it was for the first several centuries in OSK, which Lee himself emphasizes to have had very few words ending in -t. Korean words ending in -t, in fact, seem to be very sparse throughout the history of Korean. It is even more difficult to understand how OSK -t could have changed to -l all of sudden in the mid-seventh century just for the reason that Korean has tended to avoid syllable final -t since EOK. If so, why did OC/MC *-t remain unchanged for many centuries in OSK? In addition, Lee has to answer how laymen were able to differentiate SK -t words and native Korean -t words. This study suggests also that Shin’s (2016) ideas of phonetic adjustment as the cause of *-t to -r (>l) need to be reconsidered as well. It is because the currently available EOK data do not support the idea that there was a choice between codas -l and -r when Chinese characters were first borrowed into OSK.

The results of this study imply also that those indigenous Korean words ending in -t must have been relatively later developments than those words ending in -l. Thus, the conventional views on some native Korean words, such as put for ‘writing brush’ and nat for ‘daytime’ as OC loanwords have to be revised as well. Hashimoto (1977) points out that Korean word put is reminiscent of the form of OC bi 笔. Eom (2007, 2008) regards nat and nal (day) as traces of OC r 램, sun. This scenario implies that those indigenous Korean words ending in -t appeared after MC *-t changed to SK -l. Now recognizing -t to be a later development, Eom (2015a) revised his book of 2008 and refutes put and nat as OC traces. In his revised book, Eom (2015a:350) concludes that Korean -t was fully developed only well after the SK phonological system was established.4

Some indigenous Korean words, such as param 風 fēng for wind and kōri 街 jiē for street, which were reported to have been derived from OC consonant clusters of their equivalent Chinese characters, might be traces of EOK codas that were in the status of free variation. This is because native Korean words existed from much earlier than OSK words and the consonant clusters of OC were more likely to have existed at the earlier than the later period of OC. The process of OK coda formation took many centuries to be completed. The results of this study may shed light to resolve a long term puzzle in SK phonology.

References


4 This does not mean that SK phonology had developed independently from the Korean phonological history. Old and Middle SK indeed formed and underwent subsequent changes, such as alveolar palatalization, within the framework of OK and MK although SK seems to be slightly influenced by Old Mandarin as well at a later stage (Eom, 2015b). An anonymous reviewer suggested a possibility that MK codas -sp, -lp, and -lk might reflect the long history of coda development derived from two different origins. It is an appealing idea worthy of further exploration, but it will be challenging to prove due to limited data.


