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Mina Lee April 12, 2021

j-/k/ Sound Relationship between Chinese and Korean

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Abstract
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While learning Korean or Chinese, it is not surprising to find there are many Korean words that share similar pronunciations with Chinese words of the same meanings.

Focusing on the similarities in pronunciations between Chinese and Korean and comparing the phonetic spelling of Modern Standard Chinese, Middle Chinese, Old Chinese, Modern Sino-Korean, and Modern Native Korean, this paper traced the relationship between j initial consonant in Modern Standard Chinese and /k/ sound in Sino-Korean and examined the comparisons between Modern Standard Chinese and Native Korean's sounds.

To see the relationship between Modern Standard Chinese and Modern Sino-Korean, the proportion of corresponding Modern Sino-Korean's initial sounds of Chinese characters with initial consonant j was found. The result showed a clear pattern that the majority follows the j-/k/ pattern for Modern Standard Chinese and Modern Sino-Korean. Next, similar data search was conducted on Modern Native Korean with a different method. For Modern Native Korean, randomly selected Native Korean words were chosen from the National dictionary and their corresponding Modern Standard Chinese sounds were compared. The results showed a low similarity between the latter comparison.

These results show that, when people claim that Korean also keeps many Old/Middle Chinese sounds, it only applies to Sino-Korean sounds. Native Korean sounds are from their own group and do not show a clear borrowing of sounds as Sino-Korean sounds do. On this basis, different concept and comparison should be applied for Sino-Korean and Native Korean when comparing Chinese with Korean.

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Table of Contents

Chapter One
Introduction

The influence of Chinese language on the transformation in other East Asian languages are widely known due to the historical and cultural interactions between Chinese dynasties and other East Asian countries. While learning Korean or Chinese, it is not surprising to find there are many Korean words that share similar pronunciations with Chinese words of the same meanings.

Focusing on the similarities in pronunciations between Chinese and Korean and comparing the phonetic spelling of Modern Standard Chinese, Middle Chinese, Old Chinese, Modern Sino-Korean, and Modern Native Korean, this paper will first trace the relationship between j initial consonant in Modern Standard Chinese and /k/ sound in Sino-Korean and will further examine the comparisons between Modern Standard Chinese and Native Korean's sounds. For the overall structure of the paper, I will examine and compare Chinese and Korean's Romanization systems in chapter two, discuss the syllable structure of each language and the writing systems of Korean language of which related to Chinese language with previous studies and analysis to find a relationship between Middle Chinese, Modern Standard Chinese, and Modern Sino-Korean in chapter three, explore a new dataset to find the remnants of Chinese sounds in Native Korean in chapter four, and discuss the conclusion of this research in chapter five.

The purpose of this study is to find the sound relationship between two languages. The ultimate goal of this research is to see how Chinese sound system has impacted on Korean and potentially provide Korean Chinese learners to understand the reasons behind the sound similarities of Chinese and Korean.

Chapter Two
Romanization systems in Chinese and Korean

As readers might not be able to read both Chinese and Korean words, it is important to have consistent standardized Romanization systems for both languages. In this chapter, we will introduce the Romanization systems in Chinese and Korean in which we can transcribe the sounds in these two languages in a uniform system. We will compare the different Romanization systems for Chinese and Korean, discuss their background and differences, and specify which system we will adopt for the thesis.

2.1 Romanization Systems of Chinese

The Chinese language has a respectable history in Eastern Asia for thousands of years, and, currently, it is the language used by the most people on earth as a native language. While each Chinese character represents a monosyllabic Chinese word or a morpheme, it is considered to be one of the hardest languages to learn for the beginners as each character/shape does not directly tell the pronunciation. With its numerous logographic characters, the Chinese language has had various ways to indicate the sounds of each character/shape. For instance, until modern times, Chinese people used sound representation by characters such as ZhiYin, 直音, (‘straight tone’) and Fanqie, 反切, (‘cut and join’) to indicate the pronunciation of characters (Xing and Feng 2016). The ZhiYin system indicated the character by citing another character that shared the same or similar pronunciation; the Fanqie system described a character’s sound with initials and finals of two other characters. For example, when describing the sound of 冬, ‘dōng’, the ZhiYin system would describe the sound as “冬 has the sound as 东” whereas the Fanqie system would be 都宗切, explaining the word with the initial of 都, ‘dōu’, and final of 宗, ‘zōng’. These

tactics were only suitable for people who already understood characters, and so did not help those who had no prior knowledge of the character's pronunciation. Therefore, Romanization became a new strategy. The initialization of Romanization was due to some missionaries like Matteo Ricci back in the 17th century of the Ming Dynasty and, with more foreign contacts, people started to use the Romanization system to transcribe Chinese characters (Chiang 2017). Nowadays, there are several examples of Romanization system and the most well-known systems are Missionary systems, Wade-Giles, Yale, Gwoyeu Romatzyh (国语罗马字), Latinxua Sinwenz (拉丁化新文字), and Hanyu pinyin. This chapter will introduce background information about Wade-Gile, Gwoyeu Romatzyh, and Hanyu pinyin.

For the differences within the romanization systems, Wade-Giles system ("WG") was introduced by Thomas Wade in 1859 and was improved by Herbert Gilles in 1892. WG was developed for the international uses, so that it was based not only on English but also on French and German sounds; WG has been widely used until the twentieth century that we can still find some words such as Peking (北京, pinyin:beijing) Tsinghua (清华， pinyin: Qinghua) nowadays. For the character 几 (*jī* or *jǐ*) , it would be written as $chi^2 or\ chi^3$ for WG (Xing and Feng 2016).

Gwoyeu Romatzyh ("GR") is different from others from the fact that it labels four tones of Mandarin by varying the spelling of syllables. Other systems indicate the tones with either diacritics (ex. Pinyin: *āi, ái, ǎi* and *ài)* or numbers (ex. Wade-Giles: ai^1, ai^2, etc.). GR spells the four tones of the same vowel, *ai*, ***air***, ***aeh*** and ***ay*** ("Gwoyeu Romatzyh" 2020)**.** Using the same example, GR would write *jī* and *jǐ* in *ji* and *jii.* The table below shows the differences in pronunciation for the word 几 and 金.

Table 2.1 Examples of Chinese Romanization Systems

	Wade-Giles	Gwoyeu Romatzyh	Hanyu Pinyin
几	$chi^1 or\ chi^3$	*ji* or *jii*	*jī* or *jǐ*
金	$chin^1$	*jin*	*jīn*

Hanyu pinyin is the official Romanization system for Standard Chinese in Mainland China, consisting of the 26 letters of the English alphabet plus the ü sound[1]. It was developed by Zhou YouGuang in the 1950s and was officially published by the Chinese government in 1958 (Xing and Feng 2016). It has four diacritics denoting tones. One of the goals of Hanyu Pinyin is to inform the pronunciation of new words with a transcribing system for foreigners to learn Mandarin. Since one of the ultimate goals of this study is to help Korean speakers to understand the relationship between the pronunciations of Chinese words and those of Koreans and vice versa, Hanyu Pinyin will be utilized as the phonetic writing system of Chinese in this research.[2]

2.2 Romanization Systems of Korean

Korean is a language spoken by the Korean people from the Korean peninsula. While there are many theories about the origin and affiliation of the Korean language, it is distinguished as a language isolate (Mustgo 2020). The language is now written in Hangul, an alphabetic system ascribed by King Sejong. Also for the non-Korean readers, there are four distinct Romanization Systems of Korean: McCune-Reischauer System ("MR"), ALA/LC Romanization Rules, Yale System and Revised Romanization of Korean ("RR"). Each Romanization system is

[1] Out of 26 letters in English alphabet, the letter 'v' is not used in transcribing Chinese sound in Pinyin.
[2] Chinese languages mentioned in this paper will be concentrated on Madarin Chinese.

utilized in a different context. However, as MR and RR are more widely used compared to ALA/LC and Yale systems, we will be mainly introducing MR and RR in this chapter.

Both MR and RR are used by non-linguists. Since the Korean government officially announced the RR as the official Korean language romanization system in South Korea, RR replaced MR for the majority except for surnames and companies' names. However, North Korea still uses MR as the official romanization system.

One of the distinctions between MR and RR is the use/omission of apostrophe and breve. For instance, MR uses (k) and (k') for consonants ㄱ /g/ and ㅋ /kʰ/ respectively , and omission of apostrophe would result in consonants to be indistinguishable.Also, for vowels, (ŏ) and (o) are used in MR for ㅓ/ʌ/ and ㅗ/o/ respectively and omission of breve would also result in confusion between the two vowels. On the other hand, unlike MR, RR uses (g) and (k) for consonants ㄱ and ㅋ and uses (eo) and (o) for ㅓ and ㅗ ("Romanization of Korean I" 2000).

To clarify the differences between pronunciations, RR made a distinction using different letters between aspirated consonants (ㅋ /kʰ/ ㅌ /tʰ/ ㅍ /pʰ/ ㅊ /tɕʰ/; k t p ch) and unaspirated consonants (ㄱ /g/ ㄷ /d/ ㅂ /b/ ㅈ /dʑ/; g d b j), with exceptions for consonants in the final position since they are neutralized to unreleased stops (ex. Cup, 컵, /k'ŏp/ (keop)), while MR made a distinction by adding an apostrophe ("Romanization of Korean I" 2000). Initial consonants are typically voiceless, with the exception of ㅂ, which is voiced in initial position (/b/ in initial /p/ in final). Also, despite the fact that RR has been declared as the standardized Romanization system, Korean family names were the exception. For last names, MR is still adopted to avoid possible illegality and confusion from changes in romanization systems. That is the reason why surname such as 金 'jīn' 김/kɯm/ is still written as "kim" (MR) (Herald 2013).

RR will be utilized for the Korean words. The reason is that this paper will ultimately be used to understand how Koreans could easily learn Chinese through phonological approaches, so it is important to utilize the systems that common people would comprehend without any confusion that might arise from a human error of omission on the apostrophe or breve. In addition, this paper wants to explore whether Middle Chinese initial /k/ is retained in Modern Native Korean, which will be discussed in the chapter four. Therefore, we will focus on unaspirated initial consonants written in RR system (ㄱ g). However, as we have mentioned above, due to the exceptions in adopting RR, k still can be indicating the consonant ㄱ. Therefore, it is important to clarify the sounds with the International Phonetic Alphabet ("IPA") after transliterating the characters/Hangul into the romanization system. Also, if romanization rules have a conflict with the pronunciation of a word within the scope of our analysis on the sound system, we will represent the pronunciation in IPA to avoid confusion.

Chapter Three
The Sound and Writing Systems in Chinese and Korean

In this chapter, we will first introduce the syllable structures of each language. The second part of the chapter explains different types of Korean words and writing systems of Korean with Chinese characters. The last part of the chapter will touch on initial consonants *j* and *g /k/* with analysis from previous studies to find a relationship between Middle Chinese and Modern Standard Chinese and their correlation with the Sino-Korean pronunciation. The ultimate goal of this chapter is to discuss the similarities and differences in sounds of Modern Standard Chinese and Modern Sino-Korean based on the preexisted standard.

3.1 Chinese

3.1.1 Chinese Consonants

Modern Standard Chinese has 22 consonants. The places of articulation for the consonants' sounds are shown in Table 2.1. Bilabial is articulated with both lips. Labiodental is articulated with upper teeth on the lower lip. Alveolar is articulated with tongue to behind the upper teeth. Velar is articulated with the back part of the tongue against the back roof of the mouth. Palatal is articulated with the middle tongue part and middle roof of the mouth. Postalveolar is articulated with the tongue and back of the alveolar ridge. Dental is articulated with the tip of the tongue and the back of upper teeth (Shei 2014). Consonants in the table are written in the pinyin system.

Table 3.1 Place of Articulation for Chinese Consonants written in the pinyin system

Place of Articulation	**Consonants with IPA**
Bilabial	b /p/ p /pʰ/ m /m/
Labiodental	f /f/
Alveolar	d /t/ t /tʰ/ n /n/ l /l/
Velar	g /k/ k /kʰ/ h /x/
Palatal	j /tɕ/ q /tɕʰ/ x /ɕ/
Post-Alveolar	zh /ʈʂ/ ch /ʈʂʰ/ sh /ʂ/ r /ʐ/
Dental	z /t͡s/ c /t͡sʰ/ s /s/

The following tables will also explain how to understand Chinese consonants' sounds.

Table 3.2 Manner of articulation written in the pinyin system

Manner of Articulation	**Consonants**
Plossive (stops)	b p d t g k
Fricatives (sibilants)	f s sh r(liquid) x h
Affricates	z c zh ch j q
Nasals	n m ng
Lateral	l

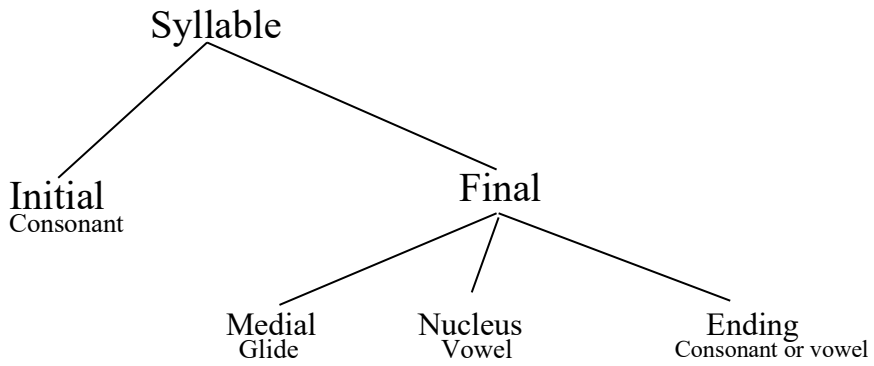
Table 3.3 Example of Unaspirated vs. Aspirated in Chinese consonants

Unaspirated	**Aspirated (air comes out)**
b	p
d	t
g	k

j	q
z	c
zh	ch

3.1.2 Chinese Syllable

Chinese syllables generally consist of the initial and the final. The initial, or *shēngmǔ* 声母 , is usually a consonant, but sometimes when the syllable does not have an initial consonant (zero initial). The final, or yùnmǔ 韵母, is the remaining part of the syllable. The final can be divided into a nucleus (yùnfú 韵腹) and a ending (yùnwěi 韵尾). The medial (yùntóu 韵头) in Modern Standard Chinese is one of the following three sounds, i, u, and v that can appear before the nucleus. The ending can be anything that follows the nucleus, including the sounds represented by the pinyin letters of i, o, u, n, and ng (Shei 2014). The syllable model is presented in Figure 3.1.



Figures 3.1 Chinese syllable structure

Among four parts of initial, medial, nucleus, ending, initial, medial, and ending are optional. For Chinese syllables, we can have IMNE, MNE, NE, INE, IMN, MN, etc structures. Following Table 3.4 will demonstrate the examples of syllable structures mentioned prior.

Table 3.4 Syllable Structure Examples

Syllable Structure (I-initial, M-medial, N-nucleus, E-ending)	Examples in pinyin system without tones
IMNE	guan
MNE	wan
NE	an
INE	gan
IMN	gua
MN	wa
N	a

Tones are necessary for each syllable in Modern Standard Chinese. There are five tonal differences which lie on the pitch differences: first tone (high-level), second tone (rising), third tone (falling-rising), fourth tone (falling), and a fifth tone which is considered to be the neutral tone. The tonal differences resulted in more words that could be expressed with the same syllables by reducing homophones. For instance, we can write different kinds of ma syllables, each representing potentially many characters as the table below:

Table 3.5 Four tones of syllable ma

Tones	Meanings	Characters
mā	“Mother”	妈

má	“Hemp”	麻
mǎ	“Horse”	马
mà	“To curse”	骂

3.2 Korean

There are many dialects in Korea, and Korean speakers do recognize the majority of these dialects, but Standard South Korean (Pyojuneo) is preferred. Standard South Korean was most commonly used by people who received education in Seoul. Dominance of Standard South Korean could be due to mass migration into Seoul from other regions, mass exposure from the media and government (Song 2006).

3.2.1 Korean Consonants & Vowels

Korean has 14 basic consonants (자음 /ja-eum/) and 10 basic vowels (모음 /mo-eum/). By combining these basic consonants, 5 tense consonants, 11 complex consonants , and 11 complex vowels are created. The table of consonants and vowels are shown in Table 3.5 & 3.6.

Table 3.5 Korean Consonants

Basic Consonants	Tense consonants	Complex consonants
ㄱ, ㄴ, ㄷ, ㄹ, ㅁ, ㅂ, ㅅ, ㅇ, ㅈ, ㅊ, ㅋ, ㅌ, ㅍ, ㅎ	ㄲ, ㄸ, ㅃ, ㅆ, ㅉ	ㄳ, ㄵ, ㄶ, ㄺ, ㄻ, ㄼ, ㄽ, ㄾ, ㄿ, ㅀ, ㅄ

Table 3.6 Korean Vowels

Basic Vowels	Complex Vowels
ㅏ, ㅑ, ㅓ, ㅕ, ㅗ, ㅛ, ㅜ, ㅠ, ㅡ, ㅣ	ㅐ, ㅒ, ㅔ, ㅖ, ㅘ, ㅙ, ㅚ, , ㅝ, ㅞ, ㅟ, ㅢ

Out of all consonants, every basic consonants and tense consonants can be placed in the initial consonant position. For the final position, all basic consonants, 2 tense consonants, and all complex consonants can be placed in the final consonant position. The basic consonants are linguistically classified as voiceless and little aspirated when in initial position but, when they are placed between vowels, they are voiced (Taylor 2014).

For the places of articulation, Korean consonants are based on the five places of articulation (Lee, Madigan, Park 2016). Unlike Chinese, some Korean Consonants' Place of Articulation are still over disagreement in the literature.

Table 3.7 Place of Articulation for Korean Basic Consonants written in both Korean and its RR (Lee, Madigan, Park 2016)

Place of Articulation	**Consonants**	**RR**
Velar	ㄱ /k/ ㅋ /kʰ/ ㅇ /ŋ/[3]	g k [Empty]
dental/alveolar	ㄷ /t/ ㅌ /tʰ/ ㄴ /n/ ㄹ /l/ ㅅ /*sʰ*/	d t n r s
Bilabial	ㅂ /p/ ㅍ /pʰ/ ㅁ /m/	b p m
Alveolo-palatal/Palatal	ㅈ /*tɕ*/ ㅊ /*tɕʰ*/	j ch
Glottal	ㅎ /h/	h

Table 3.8 Example of Unaspirated vs Aspirated in Korean Consonants (Jeong 2020)

Aspirated	**Moderate**	**Non-aspirated**
ㅋ /kʰ/	ㄱ /k/	ㄲ /k'/
ㅍ /pʰ/	ㅂ /p/	ㅃ /p'/
ㅌ /tʰ/	ㄷ /t/	ㄸ /t'/

[3] Korean consonant, ㅇ, is silenced when placed as an initial consonant.

ㅊ /tɕʰ/	ㅈ /tɕ/	ㅉ /tɕ'/
	ㅅ /sʰ/	ㅆ /s'/
ㅎ /h/		
		ㅇ /ŋ/
		ㄴ /n/
		ㄹ /l/
		ㅁ /m/

3.2.2 Korean Syllable

Korean syllables are written in the blocks and each consonant and vowel in the block makes up one syllable to form a sound. The structures of Korean syllables are initial, medial, and final. Unlike Chinese, Korean syllables have simple requirements for the syllable's structure. It needs initial and medial but final is optional (Yoon, Jeong, and Na 2018). The initial *(choseong*) part can be a zero-initial (a silent placeholder)[4] or any of basic and tense consonants. The medial (*jungseong*) part can be one of the 10 vowels or 11 complex vowels. The Final position (*jongseong*) can be chosen from basic, tense, and complex consonants while some of which are pronounced similarly to seven consonants: ㅂ/-p/,ㄷ /-t/, ㄱ /-k/, ㅁ/-m/, ㄴ /-n/, ㅇ /-ŋ/, ㄹ/-l/ as in Table 3.9.[5]

[4] If we only want to pronounce a single vowel, the vowel must be written with the initial ㅇ, which works as a silent placeholder ("Individual Letters of Hangul and its Principles" 2008). For example, vowel ㅏ /a/ is pronounced as 아 /a/, a syllabic block made of ㅇ and ㅏ.

[5] "7 sounds of Final Consonants." *Organic Korean*. http://organickorean.com/7-sounds-of-korean-final-consonants-%EB%B0%9B%EC%B9%A8-5/.

Table 3.9 Final Consonants and corresponding sound

Consonants	ㅂ	ㄷ	ㄱ	ㅁ	ㄴ	ㅇ	ㄹ
IPA	/p/	/t/	/k/	/m/	/n/	/ŋ/	/l/
Final Consonant	ㅂ, ㅍ, ㅃ, ㅉ	ㄷ, ㅌ, ㅅ, ㅆ, ㅈ, ㅊ, ㅎ	ㄱ, ㅋ, ㄲ, ㄳ, ㄺ	ㅁ, ㄻ	ㄴ, ㄵ, ㄶ	ㅇ	ㄹ, ㄼ, ㄽ, ㄾ

As mentioned prior, each syllable contains at least one consonant and one vowel, with optional addition of a final consonant. A syllable block has a minimum of two letters and they can be written either horizontally or vertically. These rules can be seen from Figure 3.2.

Figure 3.2 Two different syllable block types

Both 가 is formed with one consonant ㄱ and one vowel ㅏ and 구 is formed with one consonant ㄱ and one vowel ㅜ. However, the difference in two syllables are the structures that are decided by their vowels.

3.2.3 Korean Vocabulary

Before exploring a specific sound of Sino-Korean, it is important to understand the Korean words and Korean sounds. Korean words have three types: Native, Sino-Korean (Chinese words adopted into Korean), and Foreign loanwords.

Proportionally, the number of Sino-Korean words are more than the number of native words in Korean dictionaries. Among Korean words, Sino Korean words are used for “abstract

concepts, technical terms, and institutions". Native words usually are used for "common objects, actions, feelings, and human relations" (Taylor 2014). In Table 3.10, the top three rows show the concepts more commonly expressed in Sino-Korean and the bottom three rows show the concepts more commonly used in native words.

Table 3.10 Native words and Sino-Korean Words Usage

Meaning	**SK words (RR)**	**Native words (RR)**
'Filial piety'	hyo	angapeum
'cold'	gamgi	goppul
'school'	hakgyo	(Unknown)
'mother'	mochin	eomeoni
'love'	ae	sarang
'wind'	pung	baram

*Some concepts are only expressed in Sino-Korean.[6]

Korean native words consist of native morphemes , compound words, and a few homophones.

Native morphemes: **벗** 'friend' (beot) /pɔːt̄/ , **서울** 'capital' (Seoul) /səʊl/
Compound words: **눈물** 'tear' (nunmul) /nunmul/
Homophones: **눈** 'eye'/ 'snow' (nun) /nun/, **사과** 'apple'/ 'apologize' (sagwa) /sʰagwa/

Some homophones are distinguished by the length of vowels.

다리 'bridge' vs. 'leg' Da:ri vs. Dari / **밤** 'night' vs. 'chestnut' bam vs. b:am

However, Sino Korean words usually contain the sounds of Chinese without the tones, so they also have homophonic Sino Korean words similar to Chinese.

사 (sa) /sʰa/ : 'four', 'die','history','temple'

[6] https://www.korean.go.kr/. This is the official website of the National Institute of Kroean Languages and was used to find corresponding Native words/Sino-Korean words.

차 (cha) /t͡ɕʰa/ : ‘car’, ‘tea’, ‘fill’

In the past, it was easy to separate Sino-Korean and Native Korean since Sino-Korean words were written in Han’ja, logographic Chinese characters. However, as the Sino-Korean words are written in phonetic writing system, Han’gul, the easiest method to distinguish between Sino Korean and Native Korean words now is by checking whether we can write the words in Han’ja since native words are always written in Han’gul. For most of the Koreans, the method mentioned prior is applicable to common Sino-Korean words as they learn some Han’ja characters at secondary school. However, it is common for them to not know the Native Korean version of the Sino-Korean words they know.

3.3 Relationship between Chinese and Korean languages

3.3.1 Writing Systems

Similar to how Latin language was the Lingua Franca in Europe, Chinese characters were the Lingua Franca in East Asian Countries. As Korean language and Chinese language were different, Chinese characters were not perfectly suitable to transcribe Korean languages. Therefore, using both Chinese characters and some borrowed Chinese characters, Korean utilized Idu 이두, Hyangchal 향찰, and Gugyeol 구결 systems to transcribe until the announcement of a new Korean inherent writing system (Hunminjeongeum) by King Sejong in 1446.

Korean used Chinese characters (“Han’ja”) by borrowing Han’ja’s meanings (훈 hun, 训, ‘morpheme’) and sounds (음 um, 音, ‘syllable’). Figure 2.3 will show the meaning and sound of a character 天 천 cheon /cʰən/ *tiān* ‘sky’. Below the character 天, the word in the bottom left

(하늘) is the hun, showing the meaning of the character, ‘sky’. The bottom right (천) is the um of the character, showing the character should be pronounced as 천 cheon /cʰən/.

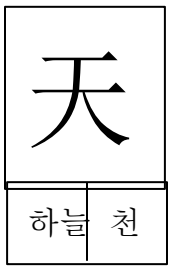


Figure 3.3 Chinese Character with Hun and Um

What Korean borrowed were different for each character:

1) Use both Chinese sound and meaning (um and hun reading)
2) Read the native sound of designated character (hun reading)
3) Use Chinese sound but ignore the meaning (um reading).

However, as Korean and Chinese did not share the same grammatical structure nor Chinese had postpositions like Korean did, it was clearly impossible to write everything in Han’ja. As mentioned prior, Korean people utilized the Idu, Hyangchal, and Gugyeol systems to transcribe Chinese Classics with Han’ja. The Idu system would transcribe Chinese characters by changing the characters in Korean syntax and add grammatical morphemes to the text. The Hyangchal system is classified as a subgroup of the Idu system. Under the Hyangchal system, Korean native words were written with characters of which hun and um were borrowed. Gugyeol system, however, would leave the Chinese characters in the same syntax as they were and add grammatical morphemes into a Chinese text between phrases. Examples of Idu and Gugyeol are shown in Table 3.11 and 3.12. Example of HyangChal is shown in Table 3.13. (If Chinese characters are borrowed for the Um Reading, they are underlined)

Table 3.11 Example of Idu and Gugyeol

Chinese Text	大虎出现殺人
Meaning	'A big tiger appeared and killed a human being'
Idu	大虎伊(이) 奈陀奈(나타다) 人乙(을) 殺其尼(이니)
Gugyeol	大虎可(가) 出現爲也(위야) 殺人爲尼(위니)

Table 3.12 Another example of Idu and Gugyeol

Chinese Text	我爱你
Meaning	'I love you'
Korean text	**나는 너를 사랑하다**
Meaning	'I you love'
Idu	我隱(**는**) 你乙(**를**) 愛多(**다**)
Meaning	I -neun(postposition) you -reul(postposition) love -da(verb ending)
Gugyeol	我可(**가**) 爱你爲多(**하다**)
Meaning	I -ga(postposition) love you -hada (verb ending)

Table 3.13 Two Examples of Hyangchal

Chinese Text	投　石
Meaning	'throw rocks'
Korean Text	石　乙　投　多
Korean Meaning	**돌　을　던지　다**
Hun / Um	Hun Um Hun Um

Meanings	rock -eul(postposition) throw -da(verb ending)

Chinese Text	我　去　学校
Meaning	'I go to school'
Korean Text	我 隱 学 校 乙 去 多
Korean Meaning	나는 학교를 간다
Hun/ Um	Hun Um Hun Hun Um Hun Um
Meanings	I -neun(postposition) school -eul (postposition) go -da(verb-ending

Hyangchang was no longer used after disappearance of Hyangga (향가 'old Korean folk songs') ("Want to Know about Hangeul?" 2008). Both Idu and Gugyeol systems were highly used until the Language Reformation in the 20th century (Taylor 2014). The background information of how Korean was transcribed in Chinese characters in the past will help finding the sound relationship between Chinese sound, Sino-Korean, and Native Korean, particularly of the Modern Standard Chinese consonant, j.

3.3.2 Middle Chinese Sounds and Sino-Korean Sounds

To this day, China and Korea have shared a close relationship politically and culturally. The usage of Han'ja is deeply fortified in the Korean culture and language which historically proves the relationship between Chinese language to Korean language. During the Three Kingdoms Period (3rd – 4th A.D), the adoption of Chinese characters became dominant. Chinese characters were borrowed for the intellectual who used only to the extent limited to writing purposes while native language was used everyday. However, as culture and education spread, the inflow of Chinese words and characters continuously had an influence on the language of everyday life, resulting in the creation of the highest proportion of Sino-Korean words, even

leading to the replacement of some native words to Sino-Korean words. This is because people in the past considered Native Korean to be a secondary class language and educated elites naturally replaced them with Sino-Korean words (Shin 2014). For instance, the civil service exam to recruit bureaucrats during the Korean dynasty (918-1392) was tested on Confucian Classics and the ability to compose Chinese text. Furthermore, Neo-Confucianism ideologies during the Choson dynasty (1392-1910) persisted in the usage of Han'ja for the civil service exam. In short, Sino-Korean words and their pronunciations were adopted under the influence of Chinese characters and developed independently.

Based on the precedent research on Sino-Korean sounds, it is a widely accepted view that Sino-Korean pronunciations reflect Middle Chinese phonology since the colloquial note of Sino-Korean often contains early Chinese phonological information (Shin 2015).

To expand the precedent research on the relationship between Middle Chinese and Sino Korean, there are a few key notes to notice in terms of the data collection. The materials reflecting the Chinese characters prior to the creation of HunMinJeongEum are limited, so it is common to research based on the literature of place names, Idu, and HyangGa with the Hayngchal system as evidence. However, elimination of the literature of Modern Sino Korean is not necessary because literature has limitations that it can only provide characters not the sounds and, as mentioned prior, Modern Sino Korean sound is a living language that possibly identifies a colloquial note of Old Sino Korean hidden in Modern Sino Korean. In addition, comparing Sino Korean consonants with Chinese dialects is also a meaningful approach firstly because the process of Sino Korean formation is similar to the process in which the Southern Chinese dialect borrowed the common language of each era and secondly because, before Chinese characters were formalized, Chinese common language of each era would have been used as a medium of

text to enter Korea over the centuries and influenced the formation of Sino Korean sounds (Shin 2014).

Following the direct sound IPA correspondence, Middle Chinese velar initial consonants /k/ /kʰ/ correspond to Sino-Korean /k/; Middle Chinese palatal initial consonants /t͡ɕ/ / t͡ɕʰ/ and dental /ts/ /t͡sʰ/ are correspond to Sino-Korean /t͡ɕ/ / t͡ɕʰ/ and many more.

g/k/ *k*/kʰ/ **VS.** ㄱ/k/

j/t͡ɕ/ *q*/ t͡ɕʰ/ *z*/ts/ *c*/t͡sʰ/ **VS.** ㅈ/t͡ɕ/ ㅊ/ t͡ɕʰ/

However, as the palatal sounds *j q x* /t͡ɕ/, / t͡ɕʰ/, /ɕ/ in Chinese initial consonants was the palatalization of dental /t͡s/, /t͡sʰ/, /s/ and velar /k/, /kʰ/, /x/ with high front vowels /i/ and /y/, explaining why, unlike the IPA correspondence, we can see that j initial Chinese consonants' Sino-Korean sounds start with /k/ as shown in Table 3.14 (Chen 1976).

Table 3.14 Characters with initial consonant j and their Old Chinese, Middle Chinese, Sino-Korean sounds

	Pinyin	**QieYun**	**Old Chinese**[7]	**Middle Chinese**[8]	**Dialects in pinyin**	**Sino-Korean (IPA)**	**Meaning**
见	jian	古電切	/*keːns/	/kien^{H}/	Cantonense: gin Hakka: kien Jin: jie	/kjəːn/ gyeon :견	"To see"
九	jiu	擧有切	/*kuʔ/	/kɨə̯u^{X}/	Cantonense: gau Hakka: kiu Jin: jiou	/ku/ gu :구	"nine"
金	jin	居吟切	/*krɯm/	/kɨəm/	Cantonense: gam	/kɯm/	"gold"

[7] Following Zhengzhang's Reconstructions. Boltz William G. Zhengzhang Shangfang : *The Phonological system of Old Chinese*. In: *Cahiers de linguistique - Asie orientale*, vol. 31 1, 2002. pp. 105-116.
[8] Following Bernard Karlgren's Reconstructions Karlgren, Bernhard (1922), "The reconstruction of Ancient Chinese", *T'oung Pao*, 21: 1–42, doi:10.1163/156853222X00015.

					Hakka: kim Jin: jing	geum :금	
江	jiang	古雙切	/*kroːŋ/	/kɔŋ/	Cantonense: gong Hakka: kong Jin: jiang	/kaŋ/ gang :강	“river”
記	ji	居吏切	/*kɯs/	/kiᴴ/	Cantonense: gei Hakka: ki	/ki/ gi :견	“To record”

Table 3.15 below shows all the number of Chinese characters starting with initial consonants j. For these characters, their corresponding Modern Sino-Korean Hanjas were examined to find each initial consonant. Each pinyin below was separated based on the proportion of velar initial consonants (ㄱ /k/ ㅋ /kʰ/), dental initial consonants (ㅈ//t͡s/, ㅊ/t͡sʰ/, ㅅ /s/), and others (ㅇ,ㅎ /h/ ,ㄹ /r/) initial consonants of Hanjas’ Um.

Table 3.15 Chinese Characters with initial consonants j and the percentages of correspondent initial consonants in Modern Hanja’s Um

Pinyin	**Number of Characters**	**Percentage of Hanja with velar initial consonants (ㄱ,ㅋ /k/, /kʰ/)**	**Percentage of Hanja with dental initial consonants (ㅈ,ㅊ,ㅅ /t͡s/, /t͡sʰ/, /s/)**	**Percentage of Hanja with other initial consonants**
ji	381	63.3% (241/381)	34.9% (133/381)	1.8% (7/381)
jia	117	78.6% (92/117)	1.7% (2/117)	19.7% (23/117)
jian	265	56.6% (150/265)	35.5% (94/265)	7.9% (21/265)
jiang	76	68.4% (52/76)	30.3% (23/76)	1.3% (1/76)

jiao	159	72.3% (115/159)	22.0% (35/159)	5.7% (9/159)
jie	195	60.0% (117/196)	31.3% (61/195)	8.7% (17/195)
jin	110	60.9% (67/110)	36.4% (40/110)	2.7% (3/110)
jing	131	59.5% (78/131)	33.6% (44/131)	6.9% (9/131)
jiong	38	78.9% (30/38)	0% (0/38)	21.1% (8/38)
jiu	77	79.2% (61/77)	20.8% (16/77)	0% (0/77)
ju	203	76.8% (156/203)	19.2% (39/203)	3.9% (8/203)
juan	72	72.2% (52/72)	15.3% (11/72)	12.5% (9/72)
jue	137	75.9% (104/137)	9.5% (13/137)	14.6% (20/137)
jun	72	63.9% (46/72)	36.1% (26/72)	0%(0/72)

The table above shows some clear patterns. Despite that fact that the direct transcription of Mandarin consonant j (affricate palatal) is ㅈ[tɕ] for Korean consonants, the majority of the trend shows that Modern Chinese consonant *j* /t͡ɕ/ is parallel to velar initial consonants, ㄱ /k/ ㅋ /kʰ/, in Korean, regardless of the combination of the whole sound. Most of the examples of having other initial consonants other than velar and dental are the cases when the character has two or more syllable options.

Following on the prevailing pattern among Modern Chinese consonant *j* /t͡ɕ/, Middle Chinese *g* /k/, with Sino-Korean ㄱ(g) /k/, the later part of the paper will look over the relationship between Modern Chinese consonant *j* /t͡ɕ/, Middle Chinese *g* /k/, with its possibility to the Native Korean.

Chapter Four

The Remnants of Chinese Sounds in Native Korean?

In this chapter, using the trend founded between Modern Standard Chinese consonant *j* /t͡ɕ/ and Modern Sino-Korean velar initial consonants ㄱ /k/, we will continue examining and extend the spectra to sounds in Native Korean words. Due to the higher prevalence of Sino Korean words over Native Korean words, we will conduct a limited research on a few words of which native sounds are more widely known. The ultimate goal of this chapter is to find the relationship by comparing 1) Chinese and Native Korean to the group of SK and Chinese words that show similarities in sound trend in the Chapter three 2) see if a new trend exists in the comparison between Chinese and Native Korean words' sounds.

4.1 Data

In Table 4.1, among the 5 characters, only two characters' corresponding Native Korean lexicons are clearly known.

Table 4.1 Edited Table from Chapter three

	Pinyin	**Old Chinese**[9]	**Middle Chinese**[10]	**Sino-Korean (IPA)**	**Native Korean (IPA)**	**Meaning**
见	*jian*	/*keːns/	/kien^{H}/	/kjəːn/ gyeon :견	Unknown	"To see"
九	*jiu*	/*kuʔ/	/ki̯ə̯u^{X}/	/ku/ gu :구	/ahop/ Ahop :아홉	"nine"

[9] Following Zhengzhang's Reconstructions. Boltz William G. Zhengzhang Shangfang : *The Phonological system of Old Chinese*. In: *Cahiers de linguistique - Asie orientale*, vol. 31 1, 2002. pp. 105-116.

[10] Following Bernard Karlgren's Reconstructions Karlgren, Bernhard (1922), "The reconstruction of Ancient Chinese", *T'oung Pao*, 21: 1–42, doi:10.1163/156853222X00015.

金	*jin*	/*krɯm/	/kɨə̯m/	/kɯm/ geum :금	Unknown	“gold”
江	*jiang*	/*kroːŋ/	/kɔŋ/	/kaŋ/ gang :강	/karam/ garam :가람	“river”
記	*ji*	/*kɯs/	/kiᴴ/	/ki/ gi :견	Unknown	“To record”

The method utilized in the Chapter 3 to find corresponding Sino Korean sounds from the characters with Chinese initial consonant j will not be utilized for Native Korean sounds because the method was used by comparing the character’s Chinese sounds and the character’s Korean Um Reading sounds. However, because of the lack of Korean materials written in Korean before the mid-15th century and research on the Sino-Korean words, Native Korean words, and their etymology, it is hard to find corresponding Native Korean sounds from characters unless they are widely known or searchable from the dictionary published by the National Institute of Korean Language. Therefore, we will choose a list of Native Korean words from the National Institute of Korean Language with velar initial consonants /k/ for assurance, and compare with their corresponding Standard Chinese characters and their reconstructed Middle Chinese and Old Chinese pronunciations and Modern Korean pronunciations. The vocabularies in table 4.2 are the ones selected from the lists in the dictionary shared by the National Institute of Korean Language. To limit the possible independent variables in this research, 41 nouns were examined as the table below.

Table 4.2 Selected Native Korean Nouns and their Chinese pronunciations[11]

Native Korean words with velar initial consonant ㄱ /k/ & RR	**Modern Standard Chinese Characters & Pinyin**	**Old Chinese [12]**	**Middle Chinese [13]**	**Meanings**
가람 Garam	江 : jiang	/*kroːŋ/	/kɔŋ/	“river”
가믓 gameut	痕 :hen	/gɯːn/	/hen/	“mark”
가시 gasi	棘 :ji	/*krɯg/	/kɨə̯k̚/	“prickle”
가을 gaeul	秋 :qiu	/*sʰɯw/	/t͡sʰiəu/	“fall, autumn”
갑 gap	价 :jia	/*kreːds/	/kaiʰ/	“price”
갓 gat	冠 :guan	/*kŋoːn/	/kuɑn/	“Gat, Korean traditional hat”
갗 (가죽) gat	革 :ge,ji	/*krɯːg/	/kæk/	“leather”
갸륵 (교만) gyareuk	驕 :jiao, xiao, ju	/*krew/	/kɨɛu/	“arrogance”

[11] Native Korean words have more comprehensive meanings. One Native Korean word can be written in many Sino-Korean words supporting the reasons of borrowed lexicons from Chinese.

값 “price” : **가치**(價値) “value” —**금액**(金額) “sum”—**가격**(價格) “price”—**대가**(代價) “cost, price”

글 “writing” : **문자**(文字) “letter”—**문장**(文章) “sentence”—**문서**(文書) “document”

[12] Following Zhengzhang’s Reconstructions. Boltz William G. Zhengzhang Shangfang : *The Phonological system of Old Chinese*. In: *Cahiers de linguistique - Asie orientale*, vol. 31 1, 2002. pp. 105-116.

[13] Following Bernard Karlgren’s Reconstructions Karlgren, Bernhard (1922), "The reconstruction of Ancient Chinese", *T'oung Pao*, **21**: 1–42, doi:10.1163/156853222X00015.

겨레 (민족) gyeore	族 :zu	/*zoːg/	/d͡zʱuk/	“Ethnic group”
겯(겨드랑이) gyeot	肢 :qu	/*kʰa/	/kʰiwo/	“armpit”
구름 gureum	云 :yun	/*ɢun/	/iuən/	“cloud”
글 geul	文 :wen	/*mɯn/	/miuən/	“writing”
길 gil	街 :jie	/*kreː/	/kai/	“street”
골 gol	形 :xing	/*ɡeːŋ/	/ɣieŋ/	“shape”
가게(15) gage	店 :dian	*tiːms	/tiem^{H}/	“store”
가녘 ganyeok	界 :jie	/*kreːds/	/kăi^{H}/	“edge”
가닥(18) gadak	丫 :ya	/*qraː/	/ʔa/	“strand”
가름-길 gareumgil	歧 :qi	/*ɡe/	/gie̯/	“Forked road”
가슴(15) gaseum	胸 :xiong	/*qʰoŋ/	/xi̯woŋ/	“Chest, breast”
가지(식물) gaji	柯 :ke	/*kaːl/	/kɑ/	“branch”
가위(15) gawi	铰 :jiao	/*kreːw/	/kau/	“scissor”
각시(15) gaksi	娘 :niang	/*naŋ/	/ni̯aŋ/	“bride”
감자(19) gamja	薯 :shu	/*djas/	/ʑi̯wo^{H}/	“potato”
개미 gaemi	蟻 :yi	/*ŋralʔ/	/ŋie̯^{X}/	“ant”

거름/걸음 gaoreum/ georeum	步 :bu	/*baːs/	/bʱuo^{H}/	“step”
거우루/거울 georuru/ geoul	鏡 :jing	/*kraŋs/	/kɨɐŋ^{H}/	“mirror”
거줏/거짓 geojut/ geojit	假 :jia	/*kraːʔ/	/ka^{X}/	“lies”
겉/걸(15) geot/ geot	表 :biao	/*prawʔ/	/pɨɛu^{X}/	“exterior,surface ”
겨울(15) gyeoul	冬 :dong	/*tuːŋ/	/tuoŋ/	“winter
겨집 geyojip	妻 :qi	/*sʰiːl/	/t͡sʰiei/	“wife”
겹 gyeop	層 :ceng	/*zɯːŋ/	/d͡zʱəŋ/	“layer”
고기(15) gogji	肉 :rou	/*njuɡ/	/ŋʑɨuk̚/	“meat”
고을 goeul	邑 :yi	/*qrɯb/	/ʔɨəp̚/	“County, district”
골 gol	腦 :nao	/*nuːʔ/	/nɑu^{X}/	“brain”
곱 gop	倍 :bei	/*bɯːʔ/	/bʱăi^{X}/	“Double, times”
곳(15) got	位 :wei	/*ɢʷrɯbs/	/wi^{H}/	“place”
과녁(18) gwanyeok	的 :di	/*pleːwɢ/	/tiek̚/	“target”
구무/구멍(15) gumu/ gumeong	穴 :xue	/*gʷliːg/	/ɣiwet̚/	“hole”
구석(15)	陬	/*ʔslo/	/t͡sɨu/	“Side, corner”

guseok	:zou			
구슬(15) guseul	玉 :yu	/*ŋog/	/ŋi̯wok̚/	“bead”
그위실/구실(15) geuwisil/ gusil	政 :zheng	/*tjeŋs/	/t͡ɕi̯ɛŋ^{H}/	“Duty, function”

From the lists above, we can observe that quite a few of Native Korean words’ initial sounds do resemble those of reconstructed pronunciations of both Old Chinese and Middle Chinese.

Garam vs. 江: /*kroːŋ/ → /kɔŋ/ → jiang
Gasi vs. 棘: /*krɯg/ → /ki̯ək̚/ → ji
Gap vs. 价: /*kreːds/ → /kai^{h}/ → jia
Gat vs. 冠: /*kŋoːn/ → /kuɑn/ → guan
Gat vs. 革: /*krɯːg/→ /kæk/ → ge
Gyareuk vs. 驕: /*krew/ → /ki̯ɛu/ → jiao
Gyeot vs. 肢: /*k^{h}a/ → /k^{h}iwo/ → qu
Gil vs. 街: /*kreː/ → /kai/ → jie
Ganyeok vs. 界: /*kreːds/ → /kăi^{H}/ → jie
Gareum-gil vs. 歧:/*ge/ → /gie̯/ → qi
Gaji vs. 柯: /*kaːl/ → /kɑ/ → ke
Gawi vs. 铰: /*kreːw/ → /kau/ → jiao
Geoul vs. 鏡: /*kraŋs/→ /ki̯ɐŋ^{H}/ → jing
Geojit vs. 假: /*kraːʔ/ → /ka^{X}/ → jia

Some words, on the other hand, resemble those reconstructed pronunciations in Old Chinese only (but not in Middle Chinese).

Gamut vs. 痕: /gɯːn/ → /hen/ → hen
Gureum vs. 云: /*ɢun/ → /iuən/ → yun
Gol vs. 形: /*geːŋ/ → /ɣieŋ/ → xing
Got vs. 位: /*ɢ^{w}ruɓs/ → /wi^{H}/ → wei
Gumeong vs. 穴: /*g^{w}liːg/ → /ɣiwet̚/ → xue

Among all, 9 out of 41 nouns (22.0 %) follow the pattern from velar consonants initial sounds

/k/,/g/ in Middle and Old Chinese, to palatal consonants initial sounds j in Standard Modern Chinese, to velar consonants initial sounds /k/ in Modern Native Korean.

Garam vs. 江: /*kroːŋ/ → /kɔŋ/ → jiang
Gap vs. 价: /*kreːds/ → /kai^{h}/ → jia
Gyareuk vs. 驕: /*krew/ → /kɻɛu/ → jiao
Gil vs. 街: /*kreː/ → /kai/ → jie
Ganyeok vs. 界: /*kreːds/ → /kăi^{H}/ → jie
Gawi vs. 较: /*kreːw/ → /kau/ → jiao
Geoul vs. 鏡: /*kraŋs/→ /kɻɐŋ^{H}/ → jing
Geojit vs. 假: /*kraːʔ/ → /ka^{X}/ → jia

Unlike the list of Sino-Korean words, the pattern did not apply to the majority of the Modern Nativa Korean words (only 22%). However, in order to see whether the part of speech of a word would have also had an impact on the sound correspondence, verbs of Native Korean sounds are also examined. Table 4.3 shows verbs that were also selected from lists in the dictionary shared by the National Institute of Korean Language.

Table 4.3 Selected Native Korean Verbs and their Chinese pronunciations

Native Korean words with velar initial consonant ㄱ /k/ & RR	**Modern Standard Chinese Characters & Pinyin**	**Old Chinese[14]**	**Middle Chinese[15]**	**Meanings**
가늠하다(19) ganeunhada	揆 :kui	/*gʷilʔ/	/gwi^{X}/	“assume”
가다 gada	去 :qu	/*kʰas/	/kʰɻwo^{H}/	“go”
가려내다	汰	/*tʰaːds/	/tʰɑi^{H}/	“sort out”

[14] Following Zhengzhang’s Reconstructions. Boltz William G. Zhengzhang Shangfang : *The Phonological system of Old Chinese*. In: *Cahiers de linguistique - Asie orientale*, vol. 31 1, 2002. pp. 105-116.
[15] Following Bernard Karlgren’s Reconstructions Karlgren, Bernhard (1922), "The reconstruction of Ancient Chinese", *T'oung Pao*, 21: 1–42, doi:10.1163/156853222X00015.

garyeonaeda	:tai			
걱정하다(18) geokjeonghada	患 :huan	/*ɡroːns/	/ɣwan^{H}/	“worry”
가까이하다 (15) gakkaihada	測 :ce	/*sʰrɯɡ/	/t͡ʂʰi̯ək/	“get next to”
겨루다 gyeoruda	競 :jing	/*ɡraŋs/	/gi̯ɐŋ^{H}/	“compete”
가두다(15) gaduda	囚 :qiu	/*lju/	/zi̯ə̯u/	“shut up (in)”
가라앉다(17) garaanda	淦 :gan	/*kɯːm/	/kăm/	“sink”
가르치다(15) gareuchida	教 :jiao	/*kraːw/	/kau/	“teach”
가르다 gareuda	刳 :ku, kou	/*kʰʷaː/	/kʰuo/	“cut, divide’’
간들간들하다(16) gandeulgandeulhada	飄 :piao	/*pʰew	/bʱi̯ɛu/	“blow softly”
갈다(15) galda	換 :huan	/*ɢʷaːns/	/ɣuɑnH/	“change (person)”
감다 gamda	沐 :mu	/*moːɡ/	/muk/	“wash hair”
감추다 gamchuda	藏 :cang	/*zaːŋ/	/d͡zʱɑŋ/	“hide”
감싸다 gamssada	圍 :wei	/*ɢʷɯls/	/wẹi/	“cover, wrap”
갖추다(15) gatchuda	具 :ju	/*ɡos/	/gi̯uH/	“Be equipped, be endowed with”
개다 gaeda	晴 :qing	/*zleŋ/	/d͡zʱi̯ɛŋ/	“Clear up”
거꾸로-뜨리다	慎	/*tiːn/	/tien/	“Make fall

geokkuro-teeurida	:dian			head-first”
거두다 geoduda	收 :shou	/*qʰljɯw/	/ɕi̯ə̯u/	“collect, harvest”
거들다 geodeulda	助 :zhu	/*zras/	/d͡ʑʱi̯wo^{H}/	“help”
거르다 georeuda	濾 :lǜ	/*ras/	/unknown/	“filter”
걸리다 geollida	罹 :li	/*rel/	/liᴇ̯/	“hang”
거스르다 geoseureuda	逆 :ni	/*ŋrag/	/ŋiɐk/	“disobey, go against”
건너다 (15) geonneoda	涉 :she	/*djeb/	/ʑi̯ɛp/	“cross”
건드리다 geondeurida	批 :pi	/*pʰiː/	/pʰiei/	“touch,irritate, mess around with”
건사하다 geonsahada	眷 :juan	/*krons/	/ki̯wɛn^{H}/	“look after”
걸다(15) geolda	掛 :gua	/*kʷreːs/	/kwai^{H}/	“hang”
걷다(15) geotda	躠 :xie	/*seːb/	/siep/	“walk”
겪다 gyeokda	歷 :li	/*reːg/	/liek/	“experience”
계시다 gyesida	存 :cun	/*zluːn/	/d͡zʱuən/	“be present”
고르다 goreuda	調 :tiao	/*dɯːw/	/dʱieu/	“To choose”
고치다 (15) gochida	改 :gai	/*klɯːʔ/	/kǎi^{X}/	“To fix”
골골거리다 golgolgeorida	痛 :tong	/*l̥ʰoːŋs/	/tʰuŋ^{H}/	“sick”

For verbs as well, from the lists above, we can notice that some of Native Korean words' initial sounds resemble those of reconstructed pronunciations of both Old Chinese and Middle Chinese.

Ganeunhada vs. 揆: /*ɡʷilʔ/ → /gwi^{X}/ → kui
Gada vs. **去**: /*kʰas/ → /kʰi̯wo^{H}/ → qu
Gyeoruda vs. 競: /*ɡraŋs/ → /gi̯ɐŋ^{H}/ → jing
Garaanda vs. 淦: /*kɯːm/ → /kăm/ → gan
Gareuchida vs. 教: /*kraːw/ → /kau/ → jiao
Gareuda vs. 刳: /*kʰʷaː/ → /kʰuo/ → ku, kou
Gatchuda vs. **具**: /*ɡos/ → /gi̯u^{H}/ → ju
Geonsahada vs. 眷: /*krons/ → /ki̯wɛn^{H}/ → juan
Geolda vs. 掛: /*kʷreːs/ → /kwai^{H}/ → gua
Gochida vs. 改: /*klɯːʔ/ → /kăi^{X}/ → gai

In addition, some words resemble those reconstructed pronunciations of Old Chinese only.

Geokjeonghada vs. 患: /*ɡroːns/ → /ɣwan^{H}/ → huan
Galda vs. 換: /*ɢʷaːns/ → /ɣuɑn^{H}/ → huan
Gamssada vs. 圍: /*ɢʷɯls/ → /we̯i/ → wei

For these randomly selected Native Korean verbs, we can find that 4 out of 33 words (12.1%) follow the pattern from velar consonants initial sounds /k/, /g/ in Middle Chinese[16], to palatal consonants initial sounds with the pinyin j in Standard Modern Chinese, with velar consonants initial sounds /k/ in Modern Native Korean.

Gyeoruda vs. 競: /*ɡraŋs/ → /gi̯ɐŋ^{H}/ → jing
Gareuchida vs. 教: /*kraːw/ → /kau/ → jiao
Gatchuda vs. **具**: /*ɡos/ → /gi̯u^{H}/ → ju
Geonsahada vs. 眷: /*krons/ → /ki̯wɛn^{H}/ → juan

From the data collected, we can also notice that the j-/k/ sound pattern is more prevalent in Native Korean nouns than Native Korean verbs from randomly selected vocabularies (22.0% vs. 10.0%).

[16] Current Chinese Consonants do not start with /g/ but Middle Chinese and Old Chinese did.

4.2 Analysis

This section will discuss two questions related to the thesis: (1) Why are Native Korean sound patterns low in number? (2) Why the j - /k/ sounds correspondence does not show in native Korean sounds? These are discussed in the following sections.

4.2.1. Why are Native Korean Sound Patterns low in number

If Sino-Korean words replaced Native Korean words when Chinese characters were borrowed, sounds of Native Korean wouldn't be influenced by Middle Chinese sounds. For instance, when Chinese characters were borrowed to write Native Korean in either Idu, Guyeol, and Hangchal systems, Um reading of a character is obvious in showing how the characters were borrowed. For example, as grammatical conjugations, preposition, and postpositions are Native Korean, from Idu, Guyeol, and Hangchal systems (Table 3.11, 3.12, 3.13), we can notice that Korean's verb ending -da was written as 多 by only borrowing the um reading and verb -natana 'appear' was written as 奈陀奈 by only borrowing the um reading. For Hun borrowing, we can notice that 'love' was written as 爱 as in Table 3.12 (*ai* in Chinese or also ae in Sino-Korean); the sound of a character could be assumed as sarang (which is Native Korean) but we are unsure of how it was pronounced or read because how to read the character is very subjective and based on the intention of a writer. However, when it comes to more complicated words, it is obvious that both um and hun reading were utilized. For instance, 'lover' in Korean is pronounced as 'aeyin' which is a Sino-Korean pronunciation not 'Sarang Saram' which is a Native-Korean pronunciation. From here, we can see that higher possibilities in replacement of Native-Korean word to Sino-Korean word, so that the sounds of Native Korean weren't necessarily needed to be changed or influenced because they could form new Sino-Korean words with characters.

Continuing on the reasoning behind the replacement of Native Korean words to Sino-Korean words, if we look at the statistics on the use of Sino-Korean words before the creation of Hunminjeongeum by Young-seop Park, the proportion of Sino-Korean in documents is approximately 14% (Park 1995). According to the statistics researched by Moo-sik Kim on the documents after the creation of Hunminjeongeum, the proportion of Sino-Korean in the documents is approximately 20% (Kim 2007). These two statistics are concrete representations of the fact that the use of Sino-Korean words have increased over the time as the portion of Sino-Korean in documents has increased on average from approximately 14% to 20%. Furthermore, according to the National Institute of Korean Language's "Frequent Use in Modern Korean Research" (2002) and "Frequency Questionnaire using two Modern Languages" (2005), among vocabularies presented in the Korean Standard Unabridged dictionary, approximately 69.76% of the headwords are considered Sino-Korean.

As Chinese characters were borrowed for both hun and um readings, more Chinese characters-based vocabularies were accepted as Korean vocabularies with the influx of Chinese characters. With the influence of Chinese characters, it rather replaced the native Korean words to Sino-Korea than accepting the sound influence to Native Korean, supporting why the Modern Chinese learners find more similar sound correspondence from Chinese to Korean or Korean to Chinese despite the non-related sound patterns of Modern Standard Chinese and Native Korean (Heo 2010).

Adding on to the explanation of why we find similarities in sound when translating Chinese to Korean despite low relationship between Modern Standard Chinese and Modern Native Korean words' initial sounds, the vocabularies survey on different word types by Yoongi Hong and Hee Jeong Seo in Table 4.6 shows that the proportions of Sino-Korean words are

getting bigger (28.45% → 68.76%; 32.74% → 65.98%; 40.26% → 75.05%) as the difficulties of primary Korean textbook get higher, indicating more advanced vocabularies are tended to derived from Chinese characters and would have been influenced by Middle Chinese sounds.

Table 4.4 Proportion of word types in Primary Korean textbooks (Hong, Yoongi & Seo, Hee Jeong, 2010)

Textbook Publisher	Level[17]	Native Korean (%)	Sino-Korean (%)	Loanword (%)
Kyunghee	1	243 (71.26)	97 (28.45)	1 (0.29)
Kyunghee	2	351 (44.21)	440 (55.41)	3 (0.38)
Kyunghee	3	244 (30.61)	548 (68.76)	5 (0.63)
Seong Gyun-gwan	1	147 (65.05)	74 (32.74)	5 (2.21)
Seong Gyun-gwan	2	331 (57.77)	348 (41.53)	4 (0.70)
Seong Gyun-gwan	3	165 (34.02)	320 (65.98)	0 (0.00)
Yonsei	1	312 (57.88)	217 (40.26)	10 (1.86)
Yonsei	2	155 (35.47)	281 (64.30)	1 (0.23)
Yonsei	3	134 (24.95)	403 (75.05)	0 (0.00)

This survey (Hong & Seo 2010) also supports a higher proportion of Sino-Korean words. Therefore, it is not surprising for Chinese learners to find similarities in the two languages' sound despite the non-related relationship between Modern Standard Chinese and Modern Native Korean.

[17] 1 means elementary levels, 2 means intermediate levels, and 3 means advanced levels.

4.2.2. Why j -/k/ does not show in Native Korean Sounds

It is hard to conclude that the data collected suffices to show an apparent relationship between Modern Standard Chinese and Native Korean pronunciations as much as it was shown from that of Modern Standard Chinese and Sino-Korean pronunciations. A reason behind this is that Korean language is not from the same language family with the Chinese language, Sino-Tiebetan language family. If Korean is indeed a language isolate, it makes sense that there is little sound connection between Native Korean sounds and Middle Chinese sounds. Therefore, the spread of /k/ sound from Middle Chinese did not affect the sounds of Native Korean. Whereas, Sino-Korean, as the name suggests, is heavily influenced by the spread of Middle Chinese sounds, thus showing the /k/- j sound pattern.

Chapter Five
Conclusion

5.1 Summary

Experience in learning Chinese as a second language for a Korean native speaker was unique. There were many situations where I found similarities in both Chinese and Korean languages. Sometimes, these similarities in sounds for some Chinese terms actually helped in learning those new Chinese terms. Also, sometimes, I used Chinese characters to understand difficult Korean words as well. From those experiences, I always wondered about the relationship between two languages.

In order to examine the sound relationship between two languages, sound correspondences of both languages for characters starting with Modern Standard Chinese initial consonant j and sound correspondences for Modern Native Korean initial consonant g /k/ were the main subjects of the research. From comparisons between characters with Modern Standard Chinese initial consonant j to Modern Sino-Korean g /k/, comparison on initial Sino-Korean sounds for every Chinese characters with initial consonant j, we can conclude that the data shows a clear pattern in showing the majority follows the sound pattern from j palatal consonants initial sounds, to /k/ velar consonants in Old and Middle Chinese, and to /k/ initials in Modern Native Korean. From comparisons between g /k/ velar initial Modern Native Korean nouns and verbs to their corresponding characters' reconstructed Middle Chinese, Old Chinese, and Modern Standard Chinese initials, we can conclude that the data does not suffice to conclude the pattern of k/ initials in Modern Native Korean, to /k/ velar consonants in Old and Middle Chinese, and to j palatal consonants initial sounds is prevailing.

In summary, based upon the data collected above, one can conclude that the sounds in Modern Standard Chinese do share the similar sounds of Modern Korean. Sino-Korean, as the name suggests, is heavily influenced by the spread of Middle Chinese sounds, thus showing the j-/k/ sound pattern. But, the spread of /k/ sound from Middle Chinese did not affect the sounds of Native Korean itself a lot because of possibilities in the replacement of Native Korean to Sino-Korean words when Chinese characters were borrowed and basic words tend to be more resistant in changing from borrowing and their different language family suffices to conclude that the pattern is not persistent in Modern Native Korean and Modern Chinese. Therefore, when people claim that Korean also keeps many Old/Middle Chinese sounds, it only applies to Sino-Korean sounds. Native Korean sounds are from their own group and do not show a clear borrowing of sounds as Sino-Korean sounds do.

5.2 Future Research

There remain several aspects as possible future work. This research only conducted on one sound pattern among all the possible consonants in Chinese/Korean. In the future, we may consider analysing on q /tɕʰ/ initial Modern Standard Chinese consonant and k /kʰ/ ㅋ Modern Korean consonant to see if the aspiration has an impact on the sound relation as well. Additionally, in terms of implication of the sound pattern, we can also extend the research by examining if Korean Chinese learners would learn Chinese better with the knowledge of prevailing sound patterns between Modern Standard Chinese and Modern Korean.

Bibliography

Abraham Chan. “Early Middle Chinese Towards a New Paradigm (Le Chinois Moyen Précoce: Vers Un Nouveau Paradigme).” *T'oung Pao*, vol. 90, no. 1/3, 2004, pp. 122–162. *JSTOR*, www.jstor.org/stable/4528958. Accessed 6 Mar. 2021.

Baxter, William H. *Harvard Journal of Asiatic Studies*, vol. 47, no. 2, 1987, pp. 635–656. *JSTOR*, www.jstor.org/stable/2719193. Accessed 15 Feb. 2021.

Boltz William G. Zhengzhang Shangfang : *The Phonological system of Old Chinese*. In: *Cahiers de linguistique - Asie orientale*, vol. 31 1, 2002. pp. 105-116.

CHEN, MATTHEW Y. “FROM MIDDLE CHINESE TO MODERN PEKING.” *Journal of Chinese Linguistics*, vol. 4, no. 2/3, 1976, pp. 113–277. *JSTOR*, www.jstor.org/stable/23752895. Accessed 14 Feb. 2021.

Cheng, Chin-chuan. “A QUANTITATIVE STUDY OF CHINESE TONES.” *Journal of Chinese Linguistics*, vol. 1, no. 1, 1973, pp. 93–110. *JSTOR*, www.jstor.org/stable/23749778. Accessed 7 Feb. 2021.

Chris Shei. Understanding the Chinese Language: A Comprehensive Linguistic Introduction. New York: Routledge, 2014.

Choi, Woon-sun. “A Study on the Meaning Based on the Ratio of Pure-Korean Words and Sino-Korean Words occurring in Elementary School Textbooks”. *Korean Language Education Research*. DOI:10.20880/kler.2012..44.517. Pp 517-547. 2012.

Chiang, Ted. “If Chinese Were Phonetic.” *The New Yorker*, The New Yorker, 18 June 2017, www.newyorker.com/magazine/2016/05/16if-chinese-were-phonetic.

“DISSERTATION ABSTRACTS.” *Early China*, vol. 18, 1993, pp. 267–284. *JSTOR*, www.jstor.org/stable/23351751. Accessed 20 Feb. 2021.

Gong, Xun (2019) 'Chinese loans in Old Vietnamese with a sesquisyllabic phonology.' *Journal of Language Relationship*, 17 (1-2). pp. 55-72.

“Gwoyeu Romatzyh.” Wikipedia, Wikimedia Foundation, 30 Nov. 2020, en.wikipedia.org/wiki/Gwoyeu_Romatzyh.

Hashimoto, Mantaro J. “CURRENT DEVELOPMENTS IN SINO-KOREAN STUDIES.” *Journal of Chinese Linguistics*, vol. 5, no. 1, 1977, pp. 103–125., www.jstor.org/stable/23752933. Accessed 20 Feb. 2021.

Heo, Chul. “Examination How Many Compounds of Chinese Character Words and Investigate the Frequency of Use by Using Analysis of Modern Korean Words 1, 2”. *Society for Korean Classical Chinese Education*. Pp 221-244. 2010.

Herald, Korea. “Culture Ministry sets Guideline for Romanizing Korean names.” The Korean Herald. 10 Mar. 2013. 30 Nov. 2020. http://www.koreaherald.com/view.php?ud=20130310000236.

Hock, Hans Henrich, and Brian D. Joseph. *Language history, language change, and language relationship*. Berlin: Mouton de Gruyter. 1996.

Hong, Yoongi & Seo, Hee Jeong. “한국어교육에서 고유어의 위상과 등급화-고유어 용언을 중심으로", “The Status and Rating of the Native Language-Based on the Usage of the Native Language.” 국어교육학회,*Language Education Association*. 2010.

"Individual Letters of Hangul and its Principles". *National Institute of Korean Language*. 2008.

Insup Taylor. Writing and Literacy in Chinese, Korean, and Japanese: Revised edition/ Insup Taylor and M. Martin Taylor. John Benjamins Publishing Company. 2014.

Jae Jung Song. The Korean Language: Structure, Use and Context. Routledge, February 1, 2006.

Jeong, Ahyong. Korean Diction For Singers. Indiana University Jacobs School of Music. May 2020.

Jeong, Ho Seong. “표준국어대사전 수록 정보의 통계적 분석", “Analysis of Information in Standard Korean Dictionaries”. New Korean Language LIfe 10 (1), 55-72. National Institute of Korean Language. 2000.

Ji Hye Yoon, Yong Jeong, and Duk L. Na.Medial-Vowel Writing Difficulty in Korean Syllabic Writing: A Characteristic Sign of Alzheimer's Disease. *Journal of Clinical Neurology*. 2018 Apr; 14(2): 179–185. Published online 2018 Feb 28. doi: 10.3988/jcn.2018.14.2.179.

Karlgren, Bernhard (1922), "The reconstruction of Ancient Chinese", *T'oung Pao*, **21**: 1–42, doi:10.1163/156853222X00015.

Kim, Hyunsoon. “The Place of Articulation of Korean Affricates Revisited.” *Journal of East Asian Linguistics*, vol. 8, no. 4, 1999, pp. 313–347. *JSTOR*, www.jstor.org/stable/20100771. Accessed 17 Mar. 2021.

Kim, Moosik. “A study on the Proportion of Loanwords from Chinese and its traits which was expressed in the Korean of the 16-17th century”. Korean Literature and Language Society. 2007.

"Korean Romanization." *The University of Chicago Library*, Korean Studies. https://guides.lib.uchicago.edu/c.php?g=297706&p=1986849#s-lg-box-6063305

"Korean Studies Resources and Services." *Pitt: Korean Romanization*, https://pitt.libguides.com/KoreanStudies/KoreanRomanization.

Lee, EunHee, Madigan, Sena, and Park, Mee-Jeong. An Introduction to Korean Linguistics.

Lee, SamHyung. 독서와 문법, "Reading and Grammar." *지학사, "GiHakSa."* 2013.

"M-R Tutorial Session by Jee-Young Park." University of Chicago. https://guides.lib.uchicago.edu/c.php?g=297706&p=1986849.
"Middle Chinese: The Tang and Song Dynasties." *A Phonological History of Chinese*, by Zhongwei Shen, Cambridge University Press, Cambridge, 2020, pp. 152–194.

Mustgo, 31 Dec, 2020. https://www.mustgo.com/worldlanguages/korean/.

"Pinyin romanization."*Britannica*, https://www.britannica.com/topic/Pinyin-romanization#j

"Pinyin." Wikipedia, *Wikimedia Foundation*, 30 Nov. 2020, en.wikipedia.org/wiki/Pinyin.

"Revised Romanization of Korea." Wikipedia, Wikimedia Foundation, 30 Nov.2020, https://en.wikipedia.org/wiki/Revised_Romanization_of_Korean.

"Romanization of Chinese." Wikipedia, *Wikimedia Foundation*, 30 Nov. 2020, https://en.wikipedia.org/wiki/RomanizationofChinese.

"Romanization of Korean. I." *Korea.net*, Ministry of Culture & Tourism. July 2000. 30 Nov. 2020.

"Romanization of Korean. II." National Institute of Korean Language. 30 Nov. 2020. https://www.korean.go.kr/front_eng/roman/roman_01.do.

"Romanization systems." http://www.pinyin.info/romanization/.

Shin, WooSun. A Study on the Diachronic Strata of Sino-Korean Pronunciations. Department of Chinese Literature College of Liberal Arts National Taiwan University. July 2015.

Shin, WooSun. Sino-Korean Pronunciations and the Method of Stratum Analysis. *The Society For Research of chinese Language and Literature*. The Journal of Chinese Language and literature, 89, 2014.

Sooyeon Lee. “A STUDY OF KOREAN DICTION FOR CHORAL CONDUCTORS USING THE PRINCIPLES OF THE KOREAN WRITING SYSTEM.” The University of Alabama. 2017.

Taylor, Insup and Taylor, M. Martin. “Writing and Literacy in Chinese, Korean and Japanese: Revised edition (Studies in Written Language and Literacy, ” *John Benjamins Publishing Company. 17*, Dec. 2014.

“Wade Giles.” Wikipedia, *Wikimedia Foundation*, 30 Nov. 2020, https://en.wikipedia.org/wiki/Wade%E2%80%93Giles

“Want to Know about Hangeul?” *National Institute of Korean Language*. Seoul, South Korea. Dec, 2003. Revised Jan, 2008. https://www.korean.go.kr/eng_hangeul/principle/002.html.

Xing, Huang., Feng, Xu. “The Romanization of Chinese Language”, Review of Asian and Pacific Studies. 2016. pg.99-111.

ZENG Zhao-cong (College of Chinese language and culture, Jinan University, Guangzhou 510610, China)

김유범.Kim Yu Beom. "**설음,치음과** 15 **세기 국어 선어말어미** {-ㅅㅏㅂ-}**의 이형태교체**." "On Lingual(舌音), Dental(齒音) and the Alternation of the Prefinal ending {-sΛβ (-ㅅㅏㅂ-} in the 15th Century Korean." **이중언어학**, 20.0 (2002): 25-43. Bilingual Research, 20.0 (2002): 25-43.

박영섭, “Young-seop Park”. **국어한자어휘론**, “Korean-Chinese Vocabulary Theory”. **박이정** “Yi-jeong Park”. 1995.

신용권. “Shin YoungKwon.” (2014). **훈민정음과 한자**. “HunMinJeongEum Gwa HanJa.” **인문학연구**, “InMunHag YeonGu”, 22(), 103-132.

우리말샘, "Source of our language". *National Institute of Korean Language*. https://www.korean.go.kr. Retrieved 7 March 2021.

董同龢. 1996.《漢語音韻學》。台北：文史哲 (p.216)

王力. 2008.《漢語語音史》。北京：商務印書館。 (p.440)

王力. 2015.《漢語史稿》。北京：中華書局。 (p.120)

竺家寧. 1992.《聲韻學》。台北：五南。 (p.448-449)