A Diachronic Vowel-Change in Present-day Seoul Korean

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1. Introduction

The generation differences of the vowels of the present-day Korean Seoul dialect have already been pointed out by many scholars.[1] However, the actual generation differences and process of its diachronic changes are still not fully understood. In this paper I will attempt to make clear the process of diachronic vowel-change in present-day Korean through the results of a survey of informants of different generations native to Seoul.

When explaining the vowels of present-day Korean, taken as the Seoul dialect, the following vowel system diagram is usually given.[2]

	Front		Back	
	unrounded	rounded	unrounded	rounded
Close	i	(ü)	ɨ	u
Mid	e	(ö)	ɔ	o
Open	ɛ		a	

However, there are several problems with the above diagram, some of which are stated below:

(1) the treatment of the bracketed vowels ü and ö
(2) the presence of the open-mid opposition of front unrounded vowels
(3) the difference in phonetic value depending on the difference for the length of the mid back unrounded vowel ɔ and its phonemic interpretation
(4) the presence of the length-opposition

1.1. Phonetic characteristics of the each vowels

As for the vowels /ü/ and /ö/ mentioned in (1), there are differences of opinion as to whether they should be considered as distinct single vowel phonemes or as diphthongs comprising of the mid approximant /w/ and the vowels /i/ and /e/ respectively. According to data from the older generation

speakers of the Seoul dialect, the vowel represented as ü is not just a single vowel but a diphthong [ɥi], comprising close front rounded vowel and ending with i. The vowel represented as ö is pronounced as [we] when following /h/ or when not attached to a consonant. In all other environments it is pronounced as [ø]. For the present I will interpret both as /wi/ and /we/ respectively and consider them as removed from single vowels.

As for (2), (3) and (4), a more detailed explanation will be given below but before this I would like to give a brief explanation of the phonetic facts about each of the vowels in the above diagram:

The sound which falls under /i/ is a close, front unrounded vowel and is roughly the same as cardinal vowel No.1: [i].

The sound which falls under /e/ is a close-mid, front unrounded vowel and is approximate to cardinal vowel No. 2: [e].

The sound which falls under /ɛ/ is an open-mid, front unrounded vowel and is lower than cardinal vowel No. 3: [ɛ̝]

(2), stated above, relates to the problem of the presence of a distinction between this close-mid front vowel and open-mid front vowel and, except for the older generation of speakers, there are many people that do not make this distinction.

The sound which falls under /a/ is situated between cardinal vowel No. 4 [a] and cardinal vowel No. 5 [ɑ].

The vowel written as ə approximates to the open-mid, slightly advanced back unrounded vowel [ɐ̟] when pronounced by the younger generation of speakers.[3] With the older generation of speakers there is a distinction between short and long pronunciation. In the case of short pronunciation it becomes an open-mid, slightly advanced back and slightly rounded vowel [ɔ̟̈], and in the case of long pronunciation it becomes a close-mid central vowel with neutral lips [ɤː].[4] This vowel will now be referred to with the broad notation [əː], following the custom of previous researchers. According to the author's observations, there is some lip-rounding although slight in the case of the short pronunciation of [ɔ].[5] On the other hand, for speakers of the younger generation who have lost the length distinction, the pronunciation is as above, i.e. an unrounded [ɐ̟]. One can consider the presence or not of lip-rounding as being based on generational difference.

The sound which falls under /o/ is a close-mid, back rounded vowel and is slightly more front than cardinal vowel No. 7, i.e., [o̞].

The sound which falls under /u/ is a close, back rounded vowel and is roughly approximate to cardinal vowel No. 8: [u].

The sound which falls under /ɨ/ is a slightly back, close central vowel without lip-rounding [ɨ̟].

Now I would like to touch on the problems (3) and (4) pointed out at the beginning.

1.2. On the vowel ə

1.2.1. Previous studies on phonemic interpretation of ə

The sound which falls under ə is pronounced as the open-mid back vowel [ʌ] by speakers of the non-elderly generation. On the other hand, with the speakers of the elderly generation it is produced as the open-mid, back vowel [ɔ] in the case of short pronunciation and as the central vowel [əː] in the case of long pronunciation.

According to Lee Ki-mun (1998: 461f.), Lee P'il-su drew attention to this difference in length and suggested that there should be a new graphic representation in relation to the long [əː] in his book published in 1922 and 1923. Furthermore, Lee Sung-nyŏng also pointed out in his book published in 1949 that in Seoul dialect, long pronunciation results in a central vowel close to the IPA [əː] and that it becomes a back vowel in the case of short pronunciation. Based on these phonetic facts he estimated the status of the Middle Korean vowel *ɐ* as [ə].[6)]

Although these ideas are from considerably earlier times, the observations of these previous researchers were quite correct, and especially in relation to the suggestion of a different graphic representation for the long vowel [əː], one can comprehend the truly remarkable awareness on the phonological interpretation for the long ə.

Following on from the researchers mentioned above, many scholars such as Kôno (1955), Lee Ki-mun (1974, 1998), Lee Hyŏn-bok (1971a, 1998), Yu Man-gŭn (1977a, 1977b, 1994), KBS (1993), Lee Sŭng-jae (1993), Lee Ik-sŏp et al. (1997) also described the fact that the vowel becomes [ʌ] in the case of short pronunciation and [əː] in the case of long pronunciation. For example, the ideas of Lee Ik-sŏp are cited as follows: "One should pay special attention to the vowel ŏ. In the traditional Seoul dialect, the long vowel ŏ as in sŏm 섬 "island", kŏjinmal 거짓말 "lie", hŏn-pŏp 헌법 "constitution", chŏkta 적다 "a few", tŏrŏpta 더럽다 "dirty", etc. becomes closer to the vowel ŭ and its pronunciation is similar to [əː]. This is also the same with long pronunciation in the case of yŏ in pyŏl 별 "star", yŏlswe 열쇠 "key", yŏnggam 영감 "old man". However, even among people born in Seoul, it is only the older generation that are keeping this kind of pronunciation alive." (Lee Ik-sŏp et al. 1997: 86)

Many scholars have not made clear statements in relation to the phonemic interpretation of these two vowels. KBS (1993) stated that describing these two vowels as [ʌ] and [əː], they come under the same vowel phoneme and the latter is the case of a variant where pronunciation depends on length. Only Yu Man-gŭn (1995) describes these two vowels as coming under the two distinct phonemes /ɒ/ and /ɤ/ (represented in this paper as /ɔ/ and /ə/ respectively). I observed and described the pronunciation of speakers of the Seoul dialect and stated strongly that these two vowels come under two different phonemes in

Umeda (1957).[7]

There is a reason as to why these two vowels have come to be considered as the same one vowel phoneme. The mid-open back vowel [ɔ] and the mid-close central vowel [ə:] are written with the same Hankŭl alphabet. This is because at the time when Hankŭl was first created, in Middle Korean, the sound was the same and it was afterwards that the difference in accent caused a split into two different vowels. That is to say that these vowels are divided into the open-mid back [ɔ] in the case of low level accent (平聲) and high level accent (去聲), and the close-mid central [ə:] in the case of rising accent (上聲).

Furthermore, rising accent (上聲) used to have a tone rising from low level to high and the loss of this tone was compensated with long pronunciation. As a result of this, the low and high level pitch vowels of Middle Korean correspond to the present-day short vowels. And, in contrast, the rising pitch vowels now correspond to vowels of long duration. In the case of the open-mid back vowel and the close-mid central vowel, the former ends up appearing as a short vowel while the latter appears as a long vowel. Consequently, because these two vowels appear complementary to each other in terms of length and furthermore they are written with the same character, these two vowels have ended up being viewed as the same phoneme by many scholars.

However, the fact is that in the form derived by analogy and in the emphatic form the long version of the open-mid back vowel [ɔ:] exists, and in the phonological environments where it is apt to become shorter, a shortened close-mid central vowel [ə] also exists. In addition, because this tendency, of one phoneme changing value depending on length,[8] can not occur with other vowels, the two must be interpreted as two different phonemes. Furthermore, this vowel differs in relation to generation and, as I will state later on, with younger generations the close-mid central vowel assimilates to other vowels causing it to eventually completely disappear.

The disappearance of the lip-rounding of the open-mid back vowel [ɔ] among the younger generation, as stated above, is probably related to the disappearance of the close-mid central vowel and the lost of the open-close distinction of the front vowels. This can also be said to be the result of the tendency for the system to try to become more balanced.

1.2.2. short ə in non-word initial and long ɔ in word-initial position

(4) is related to the problem of vowel duration. In the present-day Seoul dialect, in general the phonological contrast of vowel duration is only limited to the first syllable of polysyllabic words or closed monosyllabic words and is not found with or after the second syllable, in the pronunciation of the older generation. In the pronunciation of the non-elderly generation, this phonological contrast of duration has even been lost in the first syllable and this has been pointed out already by many scholars.[9] It is a known fact that, for the most

part, the long vowels of the Seoul dialect correspond to the vowels of Middle Korean which had rising pitch, as stated above.

Because ə originates from the Middle Korean *ɐ* with rising accent, pronunciation of long duration is normal but, there are several examples of pronunciation with short duration. For example, [ə] ㅓ in [kˀulbəl] 꿀벌 "honeybee", [madəptˀa] 맛없다 "not delicious", and [nunməlda] 눈멀다 "become blind" are pronounced with short duration. It is also possible to interpret this as phonemically long but, in fact, as it is saliently short it is adequate to regard this phonologically as a contrast of quality, not as the opposition in duration, for [ə] and [ɔ] in the second syllable. Consequently, as the short [ə] appears in the first syllable as [tʃəi] 저희 "we (humble form)" and [jəlsˀwe] 열쇠 "key"', there will be the phonological contrast of [ə] and [ɔ] in both the initial and non-initial syllable, and if functional burdening is not taken into consideration it will appear similar to other vowels in terms of duration.

Since [ɔ] derives from *ɐ* with low and high level accent of Middle Korean, it is usual for pronunciation to be short but, the following examples show pronunciation of long duration: [jɔːl] 열 "ten", [kˀɔːmɔn] 꺼먼 "black (emphatic form)". Despite the fact that the former has high level pitch accent in Middle Korean, it is pronounced with duration. The reason why the form of numerical word "ten" is pronounced with duration is the result of the analogy based on the fact that all the other numerical words from "one" to "nine" are consisted of two morae. The latter has become fixed as an emphatic form and there are several examples where the normal form [ɔ] appears as the emphatic form [ɔː]: [tʃɔgi] 저기 "over there (normal form)", [tʃɔːgi] "over there (emphatic form)"; [tʃɔtʒˀok] 저쪽 "that side (normal form)", [tʃɔːtʒˀok] "that side (emphatic form)"; [tʃɔbɔn] 저번 "recently (normal form)", [tʃɔːbɔn] "recently (emphatic form)". If we consider the length of these as also phonemically long, [ɔː] and [əː] contrast phonemically in the first syllable and this demonstrates the same distribution as other vowels regarding duration.

1.2.3. The analogical change

There is a problem of alternating accent of verb stem vowels in Middle Korean in relation to the problem that the long vowels of the present-day Seoul dialect correspond to the vowels with the rising pitch of Middle Korean. In Middle Korean, when the vowel of the monosyllabic consonant-stem of declinable word has a rising pitch accent and in the case of a suffix starting with a consonant, the vowels in the stem remain unchanged. In contrast, in the case of a suffix starting with a vowel, there are cases where either the accent of the stem does not change or it alternates to low accent. The former is regular verb and the latter is irregular verb in relation to the accent of stem-vowel.

Research was carried out into how the Seoul dialect corresponds in the case of *ɐ̄* (: ㅓ) as the vowel in the stem of a declinable word. These results will

be mentioned in the following chapter but for the present I would like to give, as examples, the pronunciation of informant D, representing the older generation, and that of informant L and Q, representing the non-elder generation.

(a) Declinable words with no accent alternation

Declinable word	MK	D	L	Q
ŏp-ta 없다 "nothing"	ēbs-gŏ	əːpkˀo	iːpkˀo	ɔpkˀo
	ēbs-ymiĕn	əːpsˀɨmjɔn	iːpsˀɨmjɔn	ɔpsˀɨmjɔn
	ēbs-ĕ	əːpsˀɔsɔ	iːpsˀɔsɔ	ɔpsˀɔsɔ
chŏk-ta 적다 "few"	jiēg-gŏ	tʃəːkkˀo	tʃɨːkkˀo	tʃɔkkˀo
	jiēg-ymiĕn	tʃəːgɨmjɔn	tʃɨːgɨmjɔn	tʃɔgɨmjɔn
	jiēg-ŏ	tʃəːgɔsɔ	tʃɨːgɔsɔ	tʃɔgɔsɔ

(b) Declinable words with accent alternation

Declinable word	MK	D	L	Q
kŏl-da 걸다 "to hang"	gēr-gŏ	kəːlgo	kɔːlgo	kɔlgo
	gēr-(y)miĕn*	kəːlmjɔn	kɔːlmjɔn	kɔlmjɔn
	ge-rĕ	kɔrɔsɔ	kɔrɔsɔ	kɔrɔsɔ
nŏm-ta 넘다 "to go over"	nēm-gŏ	nəːmkˀo	nɔːmkˀo	nɔmkˀo
	nem-ỹr	nɔmɨl	nɔmɨl	nɔmɨl
	nem-ĕ	nɔmɔ	nɔmɔ	nɔmɔ

*Suffix-initial vowel *y* drops after stem-final consonant *r*.

For the declinable words in (a), all the stem vowels in D's speech are conjugated as [əː], but appear as [iː] in L's examples and [ɔ] in Q's examples. For the declinable words in (b), on the other hand, [ɔ] appears before suffixes starting with a vowel in all cases. As for D, the alternation of [əː] and [ɔ] is a close reflection of the pitch alternation of Middle Korean. In contrast, one can consider the appearance of [ɔː] even before suffixes starting with a consonant in L's speech as a form derived from an analogy of the vowel of stem before suffixes starting with a vowel. The opposition of length was lost in Q's speech.

2. Previous research on the diachronic change of vowels in the Seoul dialect

As a detailed study of the generational differences of the Seoul dialect one can refer to Hattori et al. (1981). This research clarified, through a survey into the basic vocabulary of three speakers of the Seoul dialect from three different generations, the dates of birth of the three informants being 1924, 1928 and 1944, the situation of diachronic change of the three generations in relation to the mid-close central vowel. As explained above, depending on the difference of accent the mid-close central vowel *e* (어) of Middle Korean was separated into əː and ɔ. But, due to consequent changes, it seems that these two vowels

merged into the same vowel ɔ again. However, it does not seem possible for this to split into əː and ɔ, then merge again into one phoneme without any conditions involved. If fusion does take place then there should be some existing conditions involved and if we cannot identify these conditions then it means that we have not clearly explained the change.

From this viewpoint, the result of attempting a clarification of the aforementioned process of change and related conditions is that after the Middle Korean *e* (ㅇㅣ) divided into ɔ in the case of low level pitch and high level pitch, and əː in the case of rising pitch, the phonological change of əː to iː also took place. On the other hand, examples such as a change of əː to ɔː resulting from interference of the written language, and a change of əː to ɔː due to an analogical change of declinable words, have also been found. In other words, it is apparent that (1) əː phonemically changed to iː, not to ɔː and, (2) the change of əː to ɔː is due to factors other than a phonological change.

Furthermore, through his survey of an informant born in 1957, Hattori (1985) clarified that iː, as mentioned previously, changed to ɔː and further reduces in length changing to ɔ. The change iː to ɔː is a result of interference of the written language and the reduction in length of ɔː to ɔ has been clarified as a phonological change.

Others works include Lee Hyŏn-bok (1987 and 1989) relating to the survey of the state of standard Korean pronunciation and the work of Pak (1987) who carried out a survey of different generations into the degree of correspondence of the speaker's actual pronunciation and awareness of the distinction of vowel duration. And Hong (1991) carried out a listening test and examination of formant frequency values in relation to the open-close range opposition of front vowels in each age group.

3. Diachronic changes of the vowels of the Seoul dialect

3.1. Outline of survey

Hattori et al. (1981) conducted valuable research into the diachronic changes of vowels in the Seoul dialect but there is a problem in that, of the three informants, the oldest was from a slightly different class and geographical area. Language is influenced by various social factors within one language society. In order to distinguish clearly which changes are pure language change and which derive from interference from factors such as analogies and the written language in the study of the process of diachronic change of language, it is necessary to eliminate other factors such as regionality and stratification. So, I selected many informants homogeneous in both in terms of region and stratification but from different generations and carried out surveys of these informants in Seoul during the summers of 1988 and 1989.[10] Fortunately, I was able to get cooperation from Professor Pahk Hy-Tay , the Deputy President of the

Hankuk University of Foreign Studies at that time, and his relatives including those by marriage. Consequently I was able to survey a group of informants that were relatively homogeneous in terms of stratification and region.

3.2. Generational differences and the vowel system

I investigated eighteen informants who were native to Seoul and the several types of vowel systems shown in Diagram 1 were found in the investigation.

All the informants were born in the so-called old castle town of Mun-an (門內) or the area extremely close to there. The informants are represented, in order of age, by the letters A, B, C, D, ...R and female informants are indicated by an asterisk. The informants consist of the blood relatives of Mr. D (Mr. D was born in Samch'ŏng-dong (三淸洞), the mid-town area inside of the ancient

Diagram 1

[1]	i iː	ɨ	u uː	A (1916.10)
	e eː	(ə) əː	o oː	C (1925. 3)
	ɛ ɛː		ɔ (ɔː)	
		a aː		
[2]	i iː	ɨ (ɨː)	u uː	B (1917. 3)
	e eː	(ə) əː	o oː	D (1928. 3)
	ɛ ɛː		ɔ (ɔː)	
		a aː		
[3]	i iː	ɨ ɨː	u uː	E (1929. 9)
	e eː	(ə) əː	o oː	F (1931.12)*
	ɛ ɛː		ɔ (ɔː)	G (1933.11)*
		a aː		
[4]	i iː	ɨ (ɨː)	u uː	H (1936. 3)*
	e eː	(ə) əː	o oː	I (1940. 1)
			ɔ (ɔː)	
		a aː		
[5]	i iː	ɨ (ɨː)	u uː	J (1943.10)
	e eː	(ə) əː	o oː	K (1945. 2)*
	ɛ ɛː		ɔ (ɔː)	L (1951. 4)*
		a aː		M (1953. 9)
[6]	i iː	ɨ (ɨː)	u uː	N (1958. 8)
	e eː		o oː	O (1962. 3)
	ɛ ɛː		ɔ ɔː	
		a aː		
[7]	i	ɨ	u	P (1963. 1)*
	e	ʌ	o	Q (1963. 9)*
		a		R (1964.7)*

Seoul castle) and his relatives in law (Mrs. H, who is Mr. D's wife, was born in Ch'ungjŏng-ro (忠正路), just outside of the West Gate of the ancient Seoul castle) and informants related to the latter are shown by dates of birth which are shaded.

Diagram 1 shows the vowels in the first syllables and those with contrasting length are arranged in order of vowels of short duration and those of long duration. Examples that were found to be few are indicated in brackets.

[1] Informant A (date of birth: October 1916)
Informant C (date of birth: March 1925)

There are nine vowel phonemes, /i, e, ɛ, a, ɔ, o, u, ɨ, ə/, and each vowel has the opposition of quantity except ɨ in this system. The characteristic of this system is that there is no long vowel ɨː. Accepted examples of the long vowel ɨː, found indictionaries[11] etc., are shown in Diagram 2. That is to say that, excluding the Sino-Korean word 應 ('ȳng [ɨːŋ]), the vowel which falls under ȳ [ɨː] is pronounced as [əː]. In contrast to the fact that [ə] in speaker A's [təltʒʔwi] is considered to decrease in duration in the circumstance which vowel is apt to become short, [əː] becomes [ɨ] when it decreases in duration in C's speech for some reason.

There are only a few examples which contain the long vowel ɔː and these are shown below (in the second example it was pronounced of short duration by A).

	A	C
yŏl 열 "ten"	[jɔːl]	[jɔːl]
kkŏmŏn 꺼먼 "black"	[kʔɔmɔn]	[kʔɔːmɔn]

Word examples including [əː] were many, but examples of the short [ə] were few and these are shown below.[12]

	A	C
chŏhŭi 저희 "we, us"	[tʃəi]	[tʃəi]
chŏngmal 정말 "true"	[tʃəːŋmal]	[tʃəŋmal]
nŏlttwigi 널뛰기 "spring board"	[nəltʔwigi]	[nəltʔwigi]
tŭljwi 들쥐 "wild rat/mouse"	[təltʒʔwi]	[tɨltʒʔwi]

Both A and C do not produce the analogical change in declinable words which alternates [əː] to [ɔ] before the vowel suffix (for example yŏlda 열다 "open", [jəːnda, jəːlmjɔn, jɔrɔsɔ]).

The front vowels *ae* [ɛ] and *e* [e] demonstrate a clear contrast in word-initial syllables. The pronunciation of *ae* for A is a slightly close open-mid, front vowel

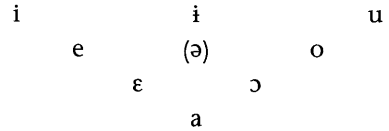
[ɛ̟]. In environments whereby an anterior consonant precedes and a stop follows such as those in [sɛ̟k] (saek 색 "color"), [sɛ̟kk²al] (saek-kkal 색깔 "color"), [sɛ̟tʃʰek] (saech'aek 새책 "new book"), [tʃʰɛ̟k] (ch'aek 책 "book"), and in environments such as [nɛ̟ŋi] (naeng-i 냉이 "a shepherd's purse"), there is a tendency for becoming closer, but even so this is clearly distinguished from [e]. The pronunciation of *ae* for C is a fully open [ɛ] and it is common for it to be slightly close as in the above environments. One can consider these all as environments where it is apt to become close.

In non-word-initial syllables (i.e. after and including the second syllable), there are no vowels of long duration. Examples of the short ə are [udərin] (udŏrŭn 웃어른 "a superior") by speaker A, and [madəpt²a] (madŏpta 맛없다 "bad taste") by speakers A and C.

In this position *ae* is, by rule, pronounced as [e] losing the open-close range contrast, but there are also a few examples of [ɛ] or [ɛ̟] ~ [ɛ̟]. I.e. examples from A include [suhɛ] (suhae 수해 "a flood (disaster)") and [mɛ:mɛ̟] (maemae 매매 "dealing"). In the examples [ue] (u-ae 우애 "friendship"), [je:be] (yebae 예배 "worship"), [sɛ̟tʃʰek] (saech'aek 새책 "new book"), and [kɨt²e] (kŭ ttae 그때"at that time"), the fully close [e] is apparent. The reason for the open vowel in the two examples written above is that awareness of the written form results in pronunciation as the open [ɛ], probably because even at the same morpheme boundary the second Sino-Korean morpheme is particularly significant semantically.

In contrast to A, there are many examples of C employing the open [ɛ] in the middle of words but this is limited to morpheme boundary including Sino-Korean morpheme and, furthermore, becomes a fully close [e] when it is pronounced within a phrase. Examples of cases in which open vowels are present are [sɛtʃʰɛk] (saech'aek 새책 "new book"), [kɨrɛ] (kŭrae 그래 "that's right"), [kidɛ] (kidae 기대 "expectation"), [mɛ:mɛ] (maemae 매매 "dealing"), [tɛ:gɛ] (daegae 대개 "mostly"), [ʃidɛ] (sidae 시대 "era"), [suhɛ] (suhae 수해 "a flood (disaster)"), [pu:pʰɛ] (pup'ae 부패 "rottenness"), [uɛ] (u-ae 우애 "friendship"), but the vowel is pronounced with close vowel [e] when these words are pronounced in phrases, for examples: [ma:ni kidehanda] (manhi kidaehanda 많이 기대한다 "to expect a great deal") and [ʃideɔk tʃʰago] (sidaejŏk ch'ago 시대적 착오 "a mistake of the times").

A possible vowel triangle for vowels in non-word-initial syllables is shown below.



[2] Informant B (date of birth: March 1917)
Informant D (date of birth: March 1928)

In word-initial syllables, the nine vowels /i, e, ɛ, a, ɔ, o, u, ɨ, ə / are clearly distinguished and each have contrasting length. In contrast with [1], there is a major difference in that the long vowel ɨː exists.

There is a clear phonemic opposition in open-close range of the front vowels. In the case of B, there are examples such as [sɛ̝kkˀal](saek-kkal 색깔) but this is an environment where there is a tendency to become a close vowel. The situation for the examples of the long vowel ɔː and the short vowel ə and the situation for the alternation of stem-vowel of declinable words are approximately the same as for [1].

The situation for open front vowels in non-word-initial syllables is as follows; in the case of informant B paying particular attention to the ch'aek 책 "book" of saech'aek 새책 "new book", pronunciation becomes more open, as in the word [sɛtʃʰɛ̝k] and approximates a sound between [e] and [ɛ]. However, when not paying particular attention, the vowel becomes the close [e] as in [sɛtʃʰek]. Furthermore, pronunciation of the fully close [e] arises in the case of the presence of a particle as in [sɛtʃʰegɨl] (saech'aegŭl 새책을) "new book (adding accusative particle)". In addition, *ae* in non-word-initial syllable becomes an intermediate vowel of [e] and [ɛ] such that maemae 매매 "dealing" is pronounced [mɛːmɛ̝] and pup'ae 부패 "gone bad, gone off" is pronounced [puːpʰɛ̝]. However, within phrases all are pronounced as close vowels. Except for examples on a morpheme boundary, as above, word-internal *ae* is fundamentally [e].

In the case of informant D, it was common for word-internal *ae* to be pronounced as an intermediate vowel of [e] and [ɛ], but it was pronounced as fully close in examples such as [seːbe] (sebae 세배 "a New Year's greeting showing respect for one's elders"), [ɔkkˀe] (ŏkkae 어깨 "shoulder"), [are] (arae 아래 "below") and [jaːtʃʰe] (yach'ae 야채 "vegetable").

On the other hand, in examples such as [ɔdʒe](ŏje 어제 "yesterday"), [idʒe](ije 이제 "now") and [kɨːne](kŭne 그네 "a swing"), e (ㅔ) is pronounced as the fully close [e]. However, in examples such as [ʃigɛ̝](sige 시계 "clock"), [kigɛ̝] (kige 기계 "machine"), [saːgɛ̝dʒɔl] (sagejŏl 사계절 "four seasons"), [seːgɛ̝] (sege 세계 "the world") and [hjugɛ̝so] (hyugeso 휴게소 "a resting place"), there are also cases of slightly open pronunciation. Therefore, it can be said that there is no fundamental contrast in the open-close range of front vowels in non-word-initial syllables.

Diagram 2

Mod K (MK) "meaning"	A	C	B	D	E
tŭl (dyrŷh) "a field"	təːl	〃	tɨl	tɨːl	〃
tŭllil "farm work"	təːllil	〃	—	—	—
tŭljwi "a wild rat"	təltʒ²wi	tɨltʒ²wi	—	—	—
ŭmsik ('ym) "eating and drinking"	əːmʃik	〃	ɨːmʃik	〃	〃
kŭne (gŷr'wĭ) "a swing"	kəːne	kɨne	kɨne	kɨːne	〃
kŭrim (gŷrĭm) "a picture"	kəːrim	〃	kɨːrim	〃	〃
t'ŭrim (tŷrĭm) "a belch"	tʰəːrim	tʰəːrim, tʰəːrɨm	tʰɨːrim	〃	〃
hŭm (hŷm) "a fault"	həːm	〃	〃	həːm, hɨːm	hɨːm
hŭmjip "a cut"	həːmdʒip	〃	〃	həːmdʒip, ɨː	hɨːmdʒip
kŭrinda "to draw"	kəːrinda	〃	kɨrinda	〃	〃
kkŭnda "to pull"	kʔəːnda	〃	〃	〃	kʔɨːda
ŭng-wŏn ('yng) "support"	ɨŋwɔn	〃	〃	〃	〃
ŭngdap "reply"	ɨŋdap	〃	〃	〃	〃
ŭng-yong "application"	ɨŋjoŋ	〃	〃	〃	〃

Now I would like to turn to the next problem as to which of the systems, [1] or [2], is older although this is still not well understood. In Hattori et al, Mr. K (date of birth: May 1924) views himself as having the two forms əː and ɨː as in [kəːne~ kɨːne], [kəːrim~kɨːrim] and [tʰəːrim~tʰɨːrim] in relation to the pronunciation of kŭne 그네 "a swing", kŭrim 그림 "a picture", and t'ŭrim 트림 "a belch". He also reports that these words are normally pronounced as the form əː and they are pronounded as the form ɨː in the case with particular attention to the spelling (Hattori et al. 1981: 24). In general, long vowels derive from the Middle Korean vowels with rising accent as said above. However, if one takes into account the fact that in Diagram 2, words with the vowel ɨː do not correspond to the vowels with rising pitch except Sino-Korean words. There are also other examples which the long vowel does not correspond to the vowels with rising pitch of Middle Korean: [pʰaːri] 파리 (MK. pǎr~pǎrĭ "a fly"), [moːgi] 모기 (MK. mŏgyĭ "a mosquito"). There is a possibility that the long vowel ɨː is a result of a development of the later times.

[3] Informant E (date of birth: September 1929)
Informant F (date of birth: December 1931)
Informant G (date of birth: November 1933)

The vowel pronounced as əː in [1] and [2], is pronounced as ɨː or əː depending on the word in [3]. Word examples with ɨː are given in Diagram 3 and is equivalent to a first-class type from the classification by Hattori et al. (1981). There are many examples of the pronunciation əː as shown in Diagram

4. If one considers the above situation, one can say that the pronunciation ɨː appears in basic words learnt while still a child, whereas words learnt afterwards appear with the pronunciation əː. This situation is apparent with the speaker Mrs. W (date of birth: November 1944) in Hattori et al. (1981). However, in the case of Mrs. W in words learnt after childhood ɔː, not əː, appears.[13)]

Diagram 3

Mod K "meaning"	A-D	E	I	J	K	L	M	N	O
kŏji "beggar"	kəːdʒi	kɨːdʒi	kɨːdʒi, kəːdʒi	kɨːdʒi, kɔːdʒi	ɨː	ɨː	ɔː	ɔː,ɨː	ɔː
kŏjinmar "a lie"	kəːdʒinmal	kɨːdʒinmal	kɨːdʒimmal,	kɨːdʒinmal, kɔːdʒinmal	ɨː	ɨː,ɔː	ɔː	ɔː,ɨː	ɔː
ŏrŭn "an adult"	əːrɨn	ɨːrɨn	ɨːrɨn, əːrɨn	ɨːrɨn, ɔːrɨn	ɨː	əː	ɔː	ɔː,ɨː	ɔː
kkŏm "chewing gum"	kʔəːm	kʔɨːm	kʔɨm,kʔɔm	kʔɔm	ɨː	ɨ,ɔ	ɔː	ɔ,ɨ	ɔː
hŏn-gŏt "an old thing"	həːngɔt	hɨːngɔt	hɨngɔt	həːngɔt	ɨː	ɨ	ɔː	ɔ,ɨ	ɔː
hŏng-gŏp "cloth"	həːŋgɔp	hɨːŋgɔp	həŋgɔp	hɔŋgɔp	ɨː	ɨ,ɔ	ɔː	ɔ,ɨ	ɔ
ŏngdeng-i "bottom"	əːŋdeŋi	ɨːŋdeŋi	ɨŋdeŋi	ɔŋdeŋi	ɨ	ɨ,ɔ	ɔ	ɔ,ɨ	ɔ
myŏng "life (span)"	mjəːŋ	mjəːŋ	mjəːŋ	mjɔŋ, mjəŋ	ɨː	əː	ə	ɔ	ɔ
kŏlsang "seat"	kəːlsʔaŋ	kəːlsʔaŋ	kɨːlsʔaŋ, kəːlsʔaŋ	kɔlsʔaŋ	ɨː	əː	ɔ	ɔː	ɔ
chŏhŭi "we"	tʃəi	tʃəi	tʃəi	tʃəi	ɨ	ɨ,ɔ	ɔ	ɔ	ɔ

Informant E was born in the Japanese colonial era when there was almost no Korean language education in schools and thus there is little possibility of influence from the written language and there is no apparent analogical change with in the conjugation of declinable words. This is probably because E learnt the words which were pronounced as əː (I will call these as "əː form" below) from people older than himself. If one simply takes a superficial view of this phenomenon it appears that the change of əː to ɨː occurred in only a very few words and that with the majority of words no change occurred. However, if one considers the process involved in acquiring vocabulary, it is probable that the first words learnt through oral speech exhibit the change of əː to ɨː whereas there was some factor preventing the change in those vocabularies learnt at a later period. Thus, one can view this factor as being due to the interference of the language of the older generation that, at that time, employed the vowel əː to a much greater extent.

For both informants F and G, although there are several differences in pronunciation for each word in relation to əː in [1] and [2], taking a general overview, these informants show approximately the same pronunciation as with informant E. That is to say that, ɨː is apparent in basic vocabulary and in other

vocabulary they accepted the pronunciation əː due to the influence of the language of the older generation. However, it should be noted that there is an increase in examples where length is lost in an environment which favour shortening.

Regarding the open-close range of front vowels, as for E, *ae* has a tendency to be pronounced in a slightly more close fashion in word-initial syllables and thus there is no distinction between na-ege 나에게 [neːge] "to me/for me" and nŏ-ege 너에게 [neːge] "to you/for you", as well as, bae 배 [pe] and be 베 [pe]. When one made him pronounce the written forms *ae* and *e* separately, pronunciation was exactly the same i.e. the vowel [e] (cf. Umeda 1995). One must conclude that it is because of reasons such as this that the distinction has been lost. Despite the fact that E is relatively older, the fact that the open-close contrast in front vowels has already been lost is slightly unexpected. However, one can consider this as a difference in class and region because E has the inter-marital relationship with H's family. On the other hand, it is apparent that informants F and G have maintained the open-close opposition within word-initial front vowels.

[4] Informant H (date of birth: March 1936)
Informant I (date of birth: January 1940)

In relation to the neutral vowel ə, there is a roughly similar situation to that of [3], but in the vocabulary which informant E pronounced with iː, the əː form has come to coexist with the iː form. An example from informant I has been represented in Diagram 4. As for the distinction between the forms iː and əː in I's speech, the iː form is used in situations when talking informally with friends and family whereas the əː form is employed as a way to preserve social status. There is no fundamental distinction in the open-close range of front vowels (cf. Umeda 1995).

Diagram 4

Mod K "meaning"	A	D	E	I	J	K	L	M	N	P	R
pyŏng "illness"	pjəːŋ	〃	〃	〃	〃	〃	〃	〃	ɔ	〃	〃
sŏnmul "gift"	səːnmul	〃	〃	〃	〃	〃	〃	〃	ɔ	〃	〃
chŏn-gi "electricity"	tʃəːngi	〃	〃	iː,əː	〃	iː	iː,əː	əː	ɔː	ɔ	〃
sŏl "New Year"	səːl	〃	〃	〃	ɔː,əː	əː	iː	əː	ɔː	ɔ	〃
kŏn-gang "health"	kəːngaŋ	〃	〃	iː,əː	ɔ	iː	əː	ɔː	〃	ɔ	〃
kŏnmul "building"	kəːnmul	〃	〃	iː,əː	ɔ	iː	ə	əː	ɔː	ɔ	〃
chŏnhwa "phone"	tʃəːnwa	〃	〃	〃	ɔ	əː	〃	əː	ɔː	ɔ	〃
chŏngmal "true"	tʃəːŋmal	〃	〃	i,ə	ɔ	i	ə	əː	ɔ	i,ɔ	ɔ
yŏnae "love"	jəːne	〃	〃	〃	〃	əː,ɔː	əː	〃	ɔː	ɔ	〃
chŏmsim "lunch"	tʃəːmʃim	〃	〃	〃	〃	〃	ə	əː	ɔ	i,ɔ	ɔ

Mod K "meaning"	A	D	E	I	J	K	L	M	N	P	R
kŏrae "stock exchange"	kəːre	〃	〃	〃	ɔː	əː	ɔ	əː	ɔː	ɔ	〃
hŏnsin "devotion"	həːnʃin	〃	〃	〃	ɔ	əː	〃	〃	ɔ	〃	〃
hyŏndae "the present"	hjəːnde	〃	〃	〃	〃	〃	ə	əː	ɔ	〃	〃
kyŏngch'al "police"	kjəːŋtʃʰal	〃	〃	〃	ɔ	əː	ə	əː	ɔ	〃	〃

[5] Informant J (date of birth: October 1943)
Informant K (date of birth: February 1945)
Informant L (date of birth: April 1951)
Informant M (date of birth: September 1953)

At this stage examples appear of pronunciation of ɔː in addition to iː and əː for the neutral vowel ə (cf. Diagram 3 and 4).

If one examines the case of informant J, there are instances of,

1 - the form iː or əː

2 - the əː form (not many examples, and in cases where the speaker is conscious of the written form, there is also the ɔː form)

3 - only the ɔː form

Examples with the coexistent forms iː and əː are basic vocabulary shown in Diagram 3. Vocabulary where only the ɔː form appears as in [jɔŋwɔn] (yŏngwŏn 영원 "eternity"), [sɔːŋin] (sŏng-in 성인 "a saint"), [kɔːre (kŏrae 거래 "stock exchange") and so on, can be considered as 'difficult' vocabulary acquired through the written language after reaching adulthood. For remaining vocabulary the pronunciation əː appears. In other words, for the informant J the forms iː and əː have been inherited from the older generation, but in words learnt through the written form the form /ɔː/ has been adopted. One can consider this as influence of the written language. In addition, it seems there is a correction process taking place in response to the contradicting written form of words with the iː form (written as the same hangŭl letter for /ɔ/) and, consequently in such vocabulary the ɔː form also exists. In informal situations the iː form is present whereas the form ɔː is used in situations where there is specific awareness of the written form.

In the case of informant K, the iː form appears in a slightly wider range of vocabulary including words from Diagram 4. For the remaining vocabulary the pronunciation əː is used. However, in an extremely limited group of words such as [jɔːne ~ jəːne] (yŏnae 연애 "love"), [tʃɔːndʒeŋ ~ tʃəːndʒeŋ] (chŏnjaeng 전쟁 "war") the ɔː form is used. Speaker K employs the iː form to a great extent. One of the possible reasons for the few cases of the ɔː form is due to the personal circumstances of the informant whereby she married soon after graduating from university and thus had little opportunity to be influenced by the standards of society.

In the case of informant L as shown in vocabulary from Diagram 3, in relation to the form adopted for the vowel əː, the iː form was used during childhood whereas, presently, the ɔː form is commonly used. In other vocabulary the əː form is usually used, but in vocabulary acquired through the written language the ɔː form is used. Furthermore, the analogical change of verb-stem vowel əː to ɔː (before consonant-suffix) occurred in the conjugation of declinable words.

In the case of informant M, only əː and ɔː are present with no iː form in relation to the pronunciation adopted for the vowel əː. In other words, with almost all the vowels in the vocabulary in Diagram 3 are substituted with ɔː due to influence of the written language.

The open-close distinction for front vowels is maintained in the speech of informants K and M, whereas it has been lost for both informants J and L. Furthermore, although the length contrast is still present at this stage, there are many instances of insufficient length resulting in vowels of semi-long duration.

[6] Informant N (date of birth: March 1958)
Informant O (date of birth: March 1962)

At this stage only ɔː and iː are pronunciations adopted for the vowel əː and there is no use of the əː form. In relation to the vocabulary shown in Diagram 3, informant N employed iː during junior high school but presently employs the ɔː form whereas, informant O mainly pronounces the ɔː form. In other cases that all the older speakers pronounce the əː form he adopts ɔː (cf. Diagram 3). In addition, it is shown as [ɔː] but, more specifically, is a slightly closer, slightly more front, open-mid un-rounded back vowel [ʌ̟] and occasionally sounds like a vowel between that of [ɔ] and [ə]. For both informants analogical change occurred in conjugated declined words (yŏlda 열다 "to open" [jɔːnda, jɔːlmjɔn, jɔrɔsɔ]).

Both N and O maintain the open-close distinction of front vowels in word-initial syllables.

In terms of the quantity of vowels, there are an increasing number of examples of vowel shortening and in case where length has been maintained it is becoming more and more difficult to make a distinction between long and short vowels because of insufficient length of long vowel.

[7] Informant P (date of birth: January 1963)
Informant Q (date of birth: September 1963)
Informant R (date of birth: July 1964)

For the vowel əː, as shown in the examples in Diagram 4, P used the i form during childhood but now generally employs the ɔ form. All other examples indicate the pronunciation ɔ. Informants Q and R pronounce all examples

with ɔ. Furthermore, although the vowel is broadly transcribed by [ɔ], in actual fact the pronunciation is more front and slightly closer, mid-open un-rounded vowel [ʌ̟]

All three informants have lost the open-close distinction of front vowels.

As for the quantity, vowels may become phonetically longer in duration (becoming approximately semi-long) depending on the environment, but duration is irregular and not consistent even with the same word. Consequently, it is apparent that the contrast in vowel duration has been lost phonemically.

4. The diachronic change of vowels

In section 3, I examined the vowel system of Seoul dialect in relation to each generation. As a result of this I have not only been able to clarify the relationship between the vowel system of the present-day Seoul dialect and the generation of the speaker, but also have been able to more or less follow the process of change of the system through the different generations.

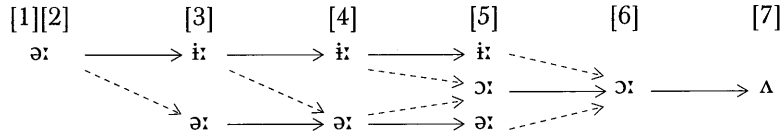
The process of change of the vowel which correspond to the rising pitch-accented vowel *e* of Middle Korean can be summarized as follows:

[1] and [2]: The vowel əː appears in the speech of A, B, C and D.
[3]: E exhibits the phonemic change of əː to iː and also it could be roughly true with the case of F and G. This is limited to vocabulary acquired during childhood (cf. Diagram 3) and all other cases exhibit the əː form as acquired from the older generation. This is considered as interference of the language of the older generation.
[4]: At this stage, in the vocabulary pronounced with iː developed from əː in E's speech, examples pronounced with əː have been increased and exist alongside with ones pronounced with iː. This is considered as interference of the language of the older generation. In addition, there is also an increase in case of length reduction with əː in certain environments where vowel is apt to be short.
[5]: At this stage we can find examples which are pronounced with ɔː, besides with iː and əː, as for pronunciation adopted for əː. That is to say that while iː and əː have each been inherited from the older generation, in so-called 'difficult' vocabulary the pronunciation ɔː comes to exist due to interference from the written language. On the other hand, there are factors working to amend the contradiction in the written form of vocabulary including the iː form, such that pronunciation of ɔː also comes to exist.
[6]: Due to interference of the written language and analogical change in conjugated declinable words, əː has disappeared and been substituted by ɔː. The iː form is being used less or is not employed at all due to the contradiction in the written form.

[7]: Here ɔː changes to ʌ phonetically. Contrast in vowel duration is also lost.

The above processes of change are shown in Diagram 5. Phonemic changes are shown by solid lines, and changes due to interference of the written language, language of the elderly, and analogy are shown with dotted lines.

Diagram 5



Diachronic vowel-changes appear with each generation very gradually, with the influence of the older generation working against the change as well as the influence of the written language and analogy causing the change in another direction.

This is probably the reason why the different vowel systems can coexist at the same period within the same language society.

Furthermore, in clarifying the process of change an important point to note is that one was able to grasp the actual situation of change through a separation of the spoken language from the written language. In particular in the case of Kanji morphemes, it is not the case that the same Kanji are always employed in exactly the same way and it is necessary to take into account the degree to which the word, which that Kanji appears in, is basic or not.

The open-close contrast in front vowels is clearly distinguished in word-initial syllables in the case of [1] and [2]. For non-word-initial syllables, the distinction has already been lost in this stage. However, at a morpheme-boundary, there are examples of a second morpheme whereby open vowel appears in the pronunciation of words which are semantically significant, but only closed vowel appears when they are pronounced within a phrase. In the stages following [2] people who lose this distinction start to appear. E in [3], H and I in [4] and J and L in [5] do not have this distinction at all. What is interesting is that all of these informants are relatives of the informant H. M in [5] and both N and O in [6] maintain this distinction, but the distinction is completely lost for the informants P, Q and R in [7].

Through the above processes the system comprising nine vowels, each with contrasting duration changed to a simple system comprising only seven short vowels.

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Notes

1) Lee Ki-mun (1974, 1998), Nam Kwang-u (1984), Lee Hyŏn-bok (1989) etc.
2) Lee Sŭg-jae (1993), Lee Ik-sŏp et al. (1997) etc. The Hangul letters in the diagram are shown with IPA symbols.
3) Lee Hyŏn-bok (1971b, 1989), Lee Sŭng-jae (1993), Yu Man-gŭn (1977a), Nam Kwang-u (1984), Nam et al. (1984), KBS(1993) etc. Lee Pyŏng-gŭn (1971) explains the difference between this vowel and o as being due to the presence or not of lip-rounding. Kim & Fujisaki (1974) also gave similar explanations in the diagram of vowel system based on an analysis of the control of the jaw, tongue and lip movements.
4) cf. Umeda (1957)
5) cf. Umeda (1983: p. 74f.) for a more detailed explanation of the proof for lip-rounding.
6) Middle Korean is shown by Roman transliteration according to Kôno (1947) and Modern Korean according to Kukrip Kugŏyŏn'guwŏn (1995).
7) The author read a paper on Korean vowels at a meeting of Dae-Dong Munhwa Research Institute, Sŏng'gyun'gwan University held at April 29th, 1992. On this occasion the only professor who agreed with the author's phonemic interpretation was Professor Yu Man-gŭn.
8) A different explanation is given on page 29 of Lee Hyŏn-bok (1993).
9) cf. Kŏno (1955), Umeda (1957), Lee Ki-mun (1974, 1998), Nam Kwang-u et al. (1984), KBS (1993), Lee Ik-sŏp et al. (1997) etc. Examples of words exhibiting the opposition of length for each vowels can be found in Hattori et al. (1981).
10) This research was carried out together with Professor Tamotsu Nakamura (Professor Emeritus, Tohoku University) and Professor Dong-Jun Kim (Professor Emeritus, Kanda University of International Studies). But, the author is wholly responsible for the analysis itself. This research was supported by a research grant from the Monbushō International Scientific Research Program (Project Number 63041014, 1988-1989).
11) cf., Hangŭl Hakhoi (1992), Nam Gwang-u et al. (1984) etc.
12) As stated in the previous chapter, the vowel in yŏl 열 "ten" became long by analogy with the fact that all numerals from 1 to 9 are of two morae, and kkŏmŏn 꺼먼 "black" is emphatic form.
13) ə: changes phonemically to i: and has been influenced at various levels by the written language. The differences in pronunciation are dependent on the degree of colloquialism of the words. For convenience these are divided into three classes.
First class: ə: appears as i: in Mrs. W's speech as in the cases the vocabulary has been acquired by word of mouth before study of the written language took place. Second class: In the speech of Mrs. W there are the i: form and the ə: form. It is possible to divide further into 3 classes according to the circumstances of use of these forms: 1- In informal daily conversations the i: form is used to a great extent, but in written-style expressions the ɔ: form is also used. 2- It appears that the ɔ: form has entered through the written language but presently is used together and to the same extent as the i: form. 3- The ɔ: form is used to a great extent. Third class: Sole use of the ɔ: form as in the speech of Mrs. W.