

“The Vowel System of Late Middle Korean”

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“The Vowel System of Late Middle Korean”

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INTRODUCTION

The vowel system of Late Middle Korean has been widely discussed, mainly in Korea, within the frameworks of neogrammarians as well as of generative linguists. There remain, however, still a number of arguments about the vowel system of Late Middle Korean.

In discussing problems regarding the vowels of Late Middle Korean, we will be concerned only with the vowels and diphthongs which were used to represent native Korean elements. We will deal with these problems in the following order:

- (1) the individual vowels and some special problems concerning some vowels will be examined and a possible answer to each problem will be proposed;
- (2) the individual diphthongs will be dealt with, some issues on this subject will be raised, and some possible solutions will be presented;
- (3) the vowel harmony will be investigated, and several problems will be discussed and will hopefully be solved;
- (4) tones and tone-marks will be discussed, and some major issues will be raised and some possible solutions will be offered; and
- (5) a brief conclusion will be reached and the need for further study will be raised.

[I] Vowels

Although the terminology used to explain the medial letter for a single vowel in Hunmin Chōngūm Haerye (HCH) is ambiguous, this book has been considered most authoritative by Korean linguists. On the basis of the HCH, the following two vowel systems, (a) and (b) have been proposed by the two linguists, Yi Sung-Nyong and Kim Wang-Jin respectively (Yi, Ki-Moon 1977 3-4):

[i] - [ɨ] ㅍ [u] ↓ [ə] ㅅ [o] • [ʌ] ㅃ [a]	[i] ㅍ [u] ㅅ [u] - [ə] • [ɔ] ↓ [e] ㅃ [a]
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(a)

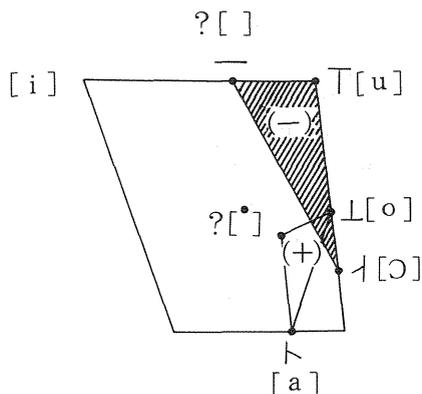
(b)

In each system a phonetic value must be assigned to each letter in order to interpret the HCH terminology accurately. Yi Ki-Moon's article (1977 3-4) suggested that the vowel system of Late Middle Korean was closer to system (a) than to system (b) because of the vowel correspondences between Middle Korean and Middle Japanese described in Irop'a and between Middle Korean and Middle Chinese described in Hongmu Chǒngun Yōkhun. Yi proposed the following vowel system:

$$\begin{array}{l} | [i] \quad - [ɨ] \quad \top [u] \\ \uparrow [\ə] \quad \perp [o] \\ \downarrow [a] \quad \bullet [\wedge] \end{array}$$

When we compare the three proposals with one another, we can assume that the phonetic value of the vowels \downarrow , $|$, \perp and \top might have undergone some phonetic changes; nevertheless, the phonetic value of these vowels in Late Middle Korean would appear to have been practically the same as that in Modern Korean. There are three vowels, \uparrow , $-$, and \bullet , which seem to be very controversial because of disagreement over the phonetic value of these three vowels. We will discuss those controversial vowels in the following order: \uparrow , $-$, and \bullet .

While some scholars (Izui, Hisanosuke & Jong-Ho Ra 1968 5-6) consider the phonetic value of \uparrow in Late Middle Korean to be [ɔ] (or even a farfetched [e] as in (b) above), some other scholars, such as Yi Ki-Moon or Hō Ung, regard its phonetic value as [ə]. The latter view is more likely correct because of the rules of vowel harmony in Middle Korean. \uparrow is harmonic with $-$ and \top . If \uparrow were [ɔ], however, it would be impossible to harmonize these vowels and the triangle of one harmonic group would overlap that of another harmonic group. This is shown below:



Moreover, if \uparrow were [ɔ], there would be no clear distinction between \uparrow and \bullet (Izui Ra 1968 5-6), both of which are considered non-high and non-front.

When the vowel ㅏ in Modern Korean is looked at from the viewpoint of dialectology, this vowel has three different phonemes (Izui & Ra 1968 10): [ɔ] in the western dialect and in the central dialect as a short vowel, [ɨ] or [u] in the central dialect as a long vowel, and [ə] in the southern dialect. We know, however, that this vowel in Late Middle Korean did not have allophones which later became these three phonemes since Hunmin Chōngūm (HC), which was compiled on the basis of the central dialect, did not mention any allophones. Therefore, ㅏ might have been either [ɨ], [u], or [ə]. It is also possible that there was an unknown original vowel which later ramified into the three different phonemes [ɔ], [ɨ] & [u], and [ə] in Modern Korean. However, this possibility can be eliminated because there is no evidence that there was such a vowel in Early Middle Korean.

When vowel harmony is considered once again, ㅏ in the negative harmonic group corresponds to ㅓ in the positive harmonic group, so it would be natural to regard ㅏ as [ə] rather than as [ɨ], or [u]. Thus, Yi's and Hō's findings would seem to be correct.

In terms of the quality of — in Middle Korean, some linguists suggest that — must have been [u] or [ɯ], while other linguists, such as Yi and Hō, insist that — must have been [ɨ]. Neither Yi nor Hō give us any explicit reasons for their claims. However, this view was probably based on the explanation of the vowel — in the HCH (Hō, Ung 1964 303-315):

With —, the tongue retracts a little and the enunciation is neither deep nor shallow. ㅓ is the same as —, only the mouth is contracted.
ㅏ is the same as —, only the mouth is spread.

Their interpretation of this terminology is very crucial in identifying the phonetic value of this vowel. Not only Yi and Hō but also some other linguists have interpreted such terms as 'deep', 'shallow', 'contracted', and 'spread' in the following manner:

'deep' vs. 'shallow' as 'back open' vs. 'front closed' respectively.
'contracted' vs. 'spread' as 'round' vs. 'unround' respectively.

If we accept their interpretation of the terminology, then this definition of the vowel — pinpoints the area where only the vowels [ɨ] and [u] fit, therefore, [ɯ] must be eliminated, while the lip-roundness of — relative to that of ㅓ and ㅏ leads us towards [ɨ] rather than [u]. This view is also supported by the rules of vowel harmony; • in the positive group corresponds to — in the negative group, so — keeps nearly the same distance from both ㅏ and ㅓ, and • keeps about the same distance from both ㅓ and ㅏ. Thus, the vowel — must have been [ɨ] in Late Middle Korean.

The phonetic value of the vowel • is highly controversial. This controversy is

quite important because the disappearance of this vowel strongly affected the diachronic changes in the whole Korean vowel system and also bears sharply on the breakdown of the rules of vowel harmony in Late Middle Korean.

Hō (Yi 1977 7) treats various aspects of this issue quite extensively: (1) the position of tongue for the vowel; (2) the auditory impression of the vowel; (3) a comparison of this vowel with ㅏ and ㅓ; (4) the fluctuation of the phonetic value of this vowel with different suffixes; (5) the diachronic changes of the phonetic value of this vowel; (6) a comparison of this vowel with transcribed Chinese vowels in Korean; and (7) dialectal differences. In each category, Hō tries to pinpoint the phonetic value of this vowel by comparing and contrasting it with some other vowel whose phonetic value was already known. The contrastive method appears to be the best method to determine the phonetic value of this vowel. He determines that the vowel • holds the same distance from either ㅏ or ㅓ and that, since the vowel • (in the positive group) corresponds to the vowel - (in the negative group), • must be the closest positive vowel to -. This would seem to indicate that the vowel • must be either [ʌ] or [ə]. Since [ə] is ㅓ in Late Middle Korean, however, [ə] cannot be •. Therefore, this vowel must be [ʌ], although Hō hesitates to regard it as [ʌ].

Like Hō, Yi also considers the vowel • to be [ʌ]. Unfortunately, he does not present his reasons. Other linguists, such as Ch'oe Hyōn-Bae (1954), however, claim that • must be [ə]. This view, seems to be incorrect for two reasons. First, ㅓ is already accepted as the vowel [ə]. Second, the rules of vowel harmony prove that • is located between ㅏ and ㅓ, not between ㅏ and -. Thus, the vowel in question cannot be [ə]; instead, it must be [ʌ].

The phonetic value of each vowel in Late Middle Korean seems to be the one proposed by Yi Sung-Nyong and Yi Ki-Moon, although the exact location of each vowel is slightly different in the two vowel systems.

[II] Diphthongs

Hō claims that Late Middle Korean had at least twelve diphthongs, which are divided into the following three groups:

- [rising] : wa wə
- [rising] : ya yu yo yə
- [falling]: ay uy oy əy ʌy ɨy

Hō discusses the possibility of the existence of all of these diphthongs and presents many examples of them. He first raises a basic question as to whether the monoph-

hongs 외, 에, and 에 in Modern Korean were diphthongs in Late Middle Korean. He argues that these monophthongs must have been diphthongs in Late Middle Korean because if they had been monophthongs at that time, there would have been no need to connect the two letters together to express one vowel (⊥ and ⊥; ⊥ and ⊥, ⊥ and ⊥). His answer seems to be correct, although no examples are presently available.

There are some gaps in the pattern on the chart; y^ and y±. Did these diphthongs exist in Late Middle Korean? If so, do we have evidence of this? While Hō does not even deal with these diphthongs, Yi Ki-Moon, with some reservation, lists them as diphthongs. Although they are found in the HCH with a very brief explanation, they are, however, not attested in any other documents or written records except that only y^ is attested in some dialects, in which y^ turned into yə in Seoul and into ya in some other dialects (Yi 1977 7); y±, however, is not. Now, a basic question we must raise here is: how we can decide whether Late Middle Korean also possessed y±, which is not attested in any dialects or in any written records except for the HCH. It would be better to treat y± as a diphthong that existed for two reasons. First because it is mentioned in the HCH and second because the tonal symmetry between y^ and ^y makes it possible or even probable to assume the tonal pair y± and ±y. It is likely that these diphthongs existed around the time of Early Middle Korean and disappeared toward the end of the 15th century. Thus, we can conclude that these diphthongs must have existed around the beginning of the Late Middle Korean period.

Yi (1977 6) touches on the possible existence of the diphthongs wi, yi, and iy in Late Middle Korean. In fact, however, only wi and iy seem to have existed in the Late Middle Korean period. Although the diphthong yi may have existed in the Early Middle Korean period, it had probably died out by the end of the Early Middle Korean period.

Since Yi supposes that there was no way of representing the diphthong wi in Hangŭl, he insists that -βi>-wi became -i in most cases, and in a few cases became -uy, -oy, or even -wəy, which are allegedly the phonetic variants of wi. But how do we know that uy, oy, and wəy are just variants of wi? If examples of these variants are available, he should have presented them for comparison with equivalents in dialects of that time. In fact, we believe that Hangŭl was able to represent the diphthong wi as u + i, just as wa is now written as o + a, the former of which was attested in some documents (Ch'oe, Bōm-Kong 1981 32). Therefore, this diphthong must have existed in Late Middle Korean.

The diphthong iy is considered in Yi Ki-Moon's (1977 8) discussion on the morphophonemic level of the two types of ti-:

ti- 'to fall': low tone prefinal form: tikə final form: tiko
ti- 'to fell': rising tone prefinal form: ti'ə final form: ti'o

He argues that the morph -o appeared in Middle Korean only after a stem which ended in r or y, so ti- must have the stem ti- (low tone) plus a causative suffix -i- (high tone), and the form has one syllable and behaves morphologically like verb stems ending in y. He concludes that the causative form ti- must be tiy-, but it was written as a monosyllabic ti-, which looks exactly like the intransitive stem. Hence he regards ti- 'to fell' as a rising tone. Our view on this issue is basically the same as that of Yi's, so we would like to support his view in terms of tones (to be mentioned). The causative suffix -i- had a high tone and the ti- 'to fall' had a low tone, so the combined form tii->tiy- had a rising tone, which was proven by one of the sandhi rules (to be discussed). Then it was orthographically contracted into ti-, although the tone was retained. In order to strengthen our view, we will need to examine the vowel length of the vowel ti- 'to fell' for further study. This idea is based on the well-known fact that a cluster of the identical vowels with a rising tone usually becomes a long vowel in Modern Korean. Thus, we conclude that there was a diphthong iy in Late Middle Korean.

As far as yi is concerned, Kim Wan-Jin (1972) claims that the suffix of deverbal adverb was -yi in the 15th century, though there was no yi listed in the HC. He states that the labial fricative β became w in the 15th century and this w was dropped before the suffix -yi: ko β-i > koi 'beautifully'; tərə β-i > tərəi 'dirtily'. However, as Yi Ki-Moon (1977 6-7) points out, this is not a legitimate argument because w also drops before the causative suffix -i such as tərə β-i > tərəi- 'to make dirty'. Therefore, there is no way to distinguish -yi (if it ever existed) from -i-. Hō does not even touch on this diphthong. Thus, for the time being, it is safe to say that the diphthong yi may not have existed in Late Middle Korean.

As a result of this analysis, the diphthong chart originally presented can be extended to include at least sixteen diphthongs in Late Middle Korean:

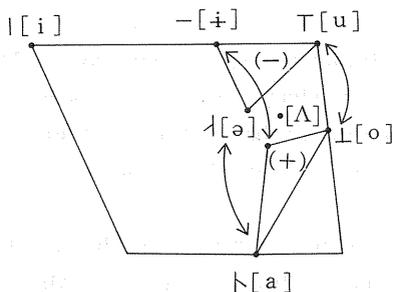
'rising tone' : wa wə wi
 'rising tone' : ya yu yo yə yʌ yɨ
 'falling tone' : ay uy oy əy ʌy ɨy iy

[III] Vowel Harmony

The vowel harmony was the most prevalent feature in Middle Korean. The rules of vowel harmony usually applied up to endings of verbs and suffixes of nouns, but some lexical items did not follow the rules of vowel harmony.

The vowel harmony in Late Middle Korean consisted of the two harmonic groups -, ʌ, ʌ and •, ʌ, ʌ and a neutral vowel |. The phonetic value of each

vowel was established in Section I. The arrows in the diagram below indicate how the approximate position of each vowel in the negative harmonic group corresponds to the approximate position of each vowel in the positive harmonic group.



This type of vowel harmony is called a 'diagonal and palatal' harmony. The difference between the two groups is that the negative group has 'high' vowels and the positive group has 'non-high' vowels.

It is interesting to note that the two non-high vowel • and ㅗ in the second syllable of a word have often shifted into some high vowels like - or ㅍ in Modern Korean, whereas all the high vowels remained intact in Modern Korean. There is an intriguing problem concerning vowel harmony in Modern Korean: there is only one instrumental suffix 으로 (Izui & Ra 1968 14), which does not follow the rules of vowel harmony. But it is probable that there were two forms of the suffix in Middle Korean depending on the vowel preceding the suffix: they must have been ㅓ로, used with a stem with non-high vowels, and 으루, employed with a stem with high vowels. Although ㅓ로 is not attested in any dialects of Modern Korean, 으루 is attested in the northern dialect, which is used for 으로. Since we know that the suffix 으루 is not a recent development from 으로, 으루 surely supports the claim that the two forms existed in Late Middle Korean.

The vowel harmony in Middle Korean is similar to that of the Altaic languages. There is, however, a difference between the two: the Middle Korean vowel harmony had a palatal high vs. low contrast, whereas the Altaic vowel harmony generally had a palatal front vs. back contrast and the Turkic branch had a labial contrast, which may have developed from the palatal harmony. Although Middle Korean had a different type of vowel harmony, we may attribute this characteristic to its Altaic heritage.

Another interesting aspect of vowel harmony in Late Middle Korean is that there were many matching lexical items which were different only as to vowels and which remained as fossilized forms in Modern Korean (Izui and Ra 1968 24-5):

- (1) 머리 vs. 마리. : MoK. 'head' vs. 'neck' ; Mk. 'head'
 (2) 갖 7 다 vs. 갖 7 다: MoK. 'to carve' vs. 'to cut' ; Mk. 'to carve, cut'
 (3) 남다 vs. 넘다 : MoK. 'to remain' vs. 'to go beyond' ; Mk. 'to go beyond'
 [MoK. = Modern Korean Mk. = Middle Korean]

These few examples show that there were many matching lexical items in Middle Korean, which have branched off in meaning in Modern Korean. Matching lexical items probably did not share exactly the same meaning in Late Middle Korean, and the gap in meaning probably became bigger and bigger as time went on. It would be interesting to find out how and why these pairs branched off in Modern Korean.

A big historical issue on vowel harmony is the question of why and how the rules of vowel harmony started to disappear in Late Middle Korean. A clue to this question could be the loss of the vowel •, which probably confused the whole vowel harmony system. We do not know, however, why the vowel started to disappear, which brings us to a big question in historical linguistics: why linguistic change occurs.

[IV] Tones

Most linguists of Korean agree that there were three tonemarks in Late Middle Korean, but there is a question as to whether they were used to distinguish three different tones. These tonemarks were probably employed to contrast one tone with another in Middle Korean because if we distinguish fewer than two tones or more than three tones with the three tonemarks, we cannot make sense out of the function of the tonemarks. It is also because, as we will see below (Rosén 1974 27), the tonemarks distinguished each lexical item. Therefore, there is no doubt that the three distinct tonemarks were used to express the three different tones in Late Middle Korean.

tonemarks	tone names	illustration		examples
	p'yōng sōng (平)	□	\	˘nun 'snow' ; ˘nun 'eye'
•	kō sōng (去)	•□	/	˘moi 'mountain' ; ˘moi 'food'
:	sang sōng (上)	:□	∨	˘nil'ta 'rise' ; ˘nil'ta 'speak'

There appears to have been a fourth tone, which is somewhat controversial. Although the fourth tone was called ip sōng, it seems that it was not a separate tone. This is because, as the HCH says, "it (ip sōng) is not fixed", which means that ip sōng

was not only similar to kō sōng but also similar to p' yōng sōng and sang sōng depending on the case. Therefore, it is safe to say that Late Middle Korean had the three tones.

There are some cases where tonal differences affected the morphology of Late Middle Korean. Take na 'I' and no 'you' for example (Rosén 1974 44; Hō 1964 407):

The tonal differences distinguish the nominative from the genitive:

<u>stem</u>	<u>nominative</u>	<u>genitive</u>
<u>na</u> 'I'	<u>nai</u> < <u>na</u> + <u>i</u>	<u>nai</u> < <u>na</u> + <u>wi</u>
<u>no</u> 'you'	<u>noi</u> < <u>no</u> + <u>i</u>	<u>noi</u> < <u>no</u> + <u>wi</u>

The tones of the nominative are all regularly derived from the stem forms, but those of the genitive are all irregular and probably are at present almost impossible to be explained with respect to the general rules of sandhi phenomena. Some explanation for the irregularity of the genitive forms might be possible, however, if we were to list all the similar cases in order to see if there were any rules for the irregularities.

Another basic aspect of tones in Middle Korean is their contraction (Rosén 1974 45):

- 1) p'yōng+kō>sang : \ + / > \ : kw 'it, he' kwi (nom.)
- 2) kō+kō>kō : / + / > / : ni 'tooth' ni'la (< ni + i'la) (descriptive)
- 3) sang+kō>sang : \ + / > \ : sai 'bird' sai (< sai + i) (nom.)

Each contraction seems very logical. Two independent syllables, each of which has its own tone, are contracted to one syllable with one distinct tone. This contraction of the tones is called 'sandhi' and occurred only within the limits of the 'word', i. e. within that semantic-syntactic unit recognized intuitively by the native speaker as a 'word'.

One of the most interesting issues about tones is as to whether there is any relationship of the tone system of Middle Korean with that of the Kyōngsando dialect. This issue has been dealt with by several scholars, such as Kōno Rokurō (1945), Nam Kwang-U (1953, 1955), Yi Sung-Nyong (1954), Hō Ung (1955), Kim Pyōng-Je (1959), and Chong Yoū-Ch'an (1960).

Before we look at the arguments, we have to know the tonal differences between Middle Korean and the Kyōngsando dialect:

<u>Middle Korean</u>	<u>Kyōngsando dialect</u>
kō sōng (/) <.....>	p'yōng sōng (\)
p'yōng sōng (\) <.....>	kō sōng (/)
sang sōng (\) <.....>	sang sōng (\)

We will cite Hō's and Chong's arguments since they have entirely opposite views about this issue.

Hō Ung claimed that it was improbable that these tone shifts occurred during the five hundred years (1450–present), which separated the tone system of Middle Korean from that of the Kyōngsando dialect. Thus, he concluded that the two tonal systems must already have been different from each other at the beginning of the Yi dynasty (Hō 1963 6. 2. 2). Chong, however, argued against Hō's theory in that if the short period of time from 1450 until the disappearance of the tones around 1600 (150 years) were enough time for a process that completely wiped out the tonal system in the central dialect, then it must be possible, and even probable, to assume that the Kyōngsando dialect could have undergone these tonal shifts during a longer period of 500 years (Chong 1960).

The two scholars are to be arguing without any linguistic evidence or any linguistic analysis of evidence. It appears that the tones existing in the Kyōngsando dialect are, in fact, the result of tonal shifts from Middle Korean. For one thing, it is impossible to think that the Kyōngsando area had already developed its own tonal system before the period of Late Middle Korean since the Kyōngsando area was not isolated from the rest of the area where the Middle Korean tonal system was being used. For another, although the data may not be completely reliable because the pitch of an isolated word may be different from that of the word within a sentence, comparative data (Rosén 1974 54–6) does show that there was a tendency of consistent tonal shifts from Middle Korean to the Kyōngsando dialect. This aspect (the difference between pitch in an isolated word and pitch in a sentence) has to be pursued further in order to settle this issue. Also, more linguists should deal with the very important questions of why the tonal system has remained intact only in the Kyōngsando dialect, and what the functional load of tones in that dialect is.

Except for the Kyōngsando dialect, in which the functional load of tones, of course, has to be considered, vowel lengths are much more important than tonal distinctions in Modern Korean. Thus, one important question that has to be raised is what the process was where tones apparently shifted to vowel lengths. Chu Si-Gyōng (1957) claims that the number of dots in Middle Korean texts indicated the three [sic.] different degrees of vowel length:

- (1) sang sōng : longest ; indicated by two dots
- (2) kō sōng : slightly long ; indicated by one dot
- (3) p'yōng sōng : normally long ; indicated by no dots
- (4) ip sōng : same as p'yōng sōng, kō sōng; pronounced more hastily

He concludes that the number of dots was only related to vowel lengths, but was not related to pitches or vowel colors, that words indicated by no dots and one dot

had the same vowel length, and there was no distinction between kō sōng and p’yōng sōng. Even though he listed the three different vowel lengths, he was aware of the fact that there were only two distinct lengths: long and short. He apparently did not recognize the possible relationship between tones and vowel lengths and assumed that the tonal system somehow changed into the vowel length system, which is unlikely to have happened.

We do not know any language in which tones changed to vowel lengths or vice versa. The only language family where pitch distinctions were shifted to stress distinctions is the Germanic family. Proto-Indo-European (PIE) must have had both kinds of distinctions, although the functional load of the pitch distinctions must have been much heavier than that of the stress distinctions. When PIE developed into Germanic, the functional load of pitch and stress was switched around for some reason (Meillet 1970 54-5). Generally, when we say that one type of distinction was shifted to another type of distinction it does not mean that one type completely disappeared and another type, instead, appeared, but means that the functional load of one type was replaced by that of another and both distinctions always coexisted. Thus, it is reasonable to think that Late Middle Korean had both tone distinctions and vowel length distinctions, although the functional load of the tone distinctions must have been by far heavier than that of the vowel length distinctions.

Ch’oe Hyōng-Bae (1954-96) seems to have recognized the following four tones. These were indicated by tonal differences as well as by qualitative differences. He demonstrated them in the following manner:

- (1) p’yōng sōng: short ; ; a plain and high sound
- (2) kō sōng : somewhat long ; • ; a falling sound
- (3) sang sōng : long ; : ; a rising sound
- (4) ip sōng : short, quickly terminating ; • ; a plain and short high sound

Despite this explanation, he insists that only length should be regarded as important and that pitch accent could almost be disregarded. His description of vowel lengths and tones seems to have been very much influenced by Chinese phonology, so his description must be biased. As we have seen earlier, his description of the tonal system is not reliable, although he did recognize the existence of a relationship between vowel lengths and tones, which is a valuable finding.

L.R. Koncevič (1960 50-1) discovered that the tonal distinctions, which had, he thought, originated under Chinese influence, had developed into the vowel length distinctions, and that there were two different origins of long vowels:

- (1) words with originally long vowels
e.g. 없다 <ō: pta>, 섬 <sō: m>, 일 <i: l>, 난 <na: t>
- (2) words with secondary long vowels (later development)
e.g. kahi → kaj: ‘dog’; tuβuul → tu: l ‘two’; nuuluuta → nū: lta ‘started’

His view is the same as that of Chu in that vowel length distinctions were developed from tonal distinctions, which, as we have discussed earlier, is impossible. However, it is an important discovery that there are two different origins of long vowels.

Rosén (1974 77-9) claims that vowel length coexisted with tone in Middle Korean sang sǒng words. When tones gradually vanished, the vowel lengths remained. He suggests that sang sǒng was a juxtaposition of the two tonemes p'yǒng and kǒ, and, if p'yǒng and kǒ were treated as one mora each, then sang sǒng might be considered two morae, that is, long compared to p'yǒng sǒng and kǒ sǒng. He also claims that this would be valid for stem forms of nouns and verbs but that a long vowel which was not produced by the sang sǒng would occur in conjugation. The following examples would be products of tone contractions in which the combination of each tone was not p'yǒng sǒng plus kǒ sǒng:

e.g.

ka + a > ka > CK [ka:] 'to go' na + a > na > CK [na:] 'to come out'

Regardless of tones, these forms obviously have different types of vowel length development, so they have to be excluded from this study. It seems that Rosén's analysis is basically sound, although he makes the ambiguous statement: "When tones gradually disappeared the vowel length remained." Does this mean that the tonality disappeared on the 'phonetic' level or on the 'phonemic' level? If it means the former, then he is completely wrong because, in any language, tones, vowel lengths and other suprasegmental features always coexist. However, if it means the latter, there is no problem with that statement. His solution appears exactly like the application of our Germanic example that was mentioned earlier. His volume of supportive comparative data must be accepted with some reservation because the pitch of an isolated word may be different from that of the word within an utterance. The pitch differences between the two, however, may be predictable just like the case of Japanese pitch accent. This aspect of tones will need a number of insightful detailed studies.

