

The Origins of /h/-Final Nouns in Middle Korean

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ABSTRACT

The investigation of lexical asymmetries and exceptions serves as the basis for internal reconstruction and provides an insight into the development of the current synchronic state. This study investigates the unique phonological patterns and semantics of /h/-final nouns in Middle Korean. From a phonological perspective, they show a tone pattern that does not align with nouns ending in an obstruent but aligns with those ending in a vowel or a sonorant. This suggests that the stem-final /h/ might have been absent at some point. From a semantic perspective, spatial and temporal nouns are disproportionately represented within /h/-final nouns. Finally, the concatenation of a spatial or temporal noun with a locative suffix typically forms a single linguistic unit. This study integrates these phonological, morphological, and semantic observations and proposes that the stem-final /h/ observed in some /h/-final nouns originated from a reanalysis of the initial consonant of the locative suffix **kyu*.

Keywords: Middle Korean, /h/-final nouns, internal reconstruction, locative, reanalysis, lexicalization

1. Introduction

In Middle Korean (MK), there is a group of nominal stems that end with /h/. This /h/ only appears when these stems combine with other words or suffixes. Examples are demonstrated in (1) and (2).

(1) stem	isolation form	locative form	comitative form
<i>sta</i> ‘earth’	<i>sta</i>	<i>stahaj</i>	<i>stakhwa</i>
<i>hanol</i> ‘sky’	<i>hanol</i>	<i>hanolhaj</i>	<i>hanolkhwa</i>

(2) isolation form	isolation form	compound
<i>anh</i> ‘inside’	<i>pask</i> ‘outside’	<i>anhask</i>

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It appears as /h/ before the suffixes beginning with a vowel, as illustrated in the locative forms in (1), and aspirates the following consonant when preceding roots or suffixes beginning with a consonant, as demonstrated in the comitative forms in (1) and compounds in (2). We call these "/h/-final nouns" or "/h/-final nominal stems". Seventy-seven /h/-final nouns are attested in the fifteenth century.¹⁾ They are listed below in (3).²⁾

- (3) *kalh* ('sword', Hb), *kyezulh* ('winter', LH), *kwoh* ('nose', H), *kwutulh* ('hypocaust', LH), *kuluh* ('stump', LL), *kinh* ('string', Hb), *killh* ('road', Hb), *konolh* ('shade', HH), *kozolh* ('autumn', LL), *kowolh* ('county', LL), *nalah* ('country', LH), *nacwoh* ('evening', LL), *nah* ('age', Hb), *nayh* ('stream', R), *neyh* ('four', R), *nwoh* ('twine', L), *nimah* ('forehead', LH), *nimcah* ('master', RL), *nomolh* ('vegetable', LL), *noh* ('twine', H), *noh* ('blade', Hb), *tyeh* ('pipe', L), *twolh₁* ('ditch', R), *twolh₂* ('bridge', H), *twolh₃* ('stone', R), *twulh* ('two', R), *twuyh* ('behind', R), *tuluh₁* ('field', LH), *tuluh₂* ('eaves', LL), *tolh* ('many', H), *mah₁* ('monsoon', L), *mah₂* ('powdered medicine', H), *malh* ('post', H), *mwoyah* ('shape', LR), *mwoh* ('vertex', Hb), *mwoyh* ('mountain', R), *milh* ('flour', H), *mozolh* ('town', LL), *moyh* ('field', Hb), *patah* ('sea', LH), *palah* ('sea', LL), *pwoh₁* ('girder', L), *pwoh₂* ('cloth', L), *polh* ('arm', L), *ptulh* ('garden', Hb), *seyh* ('three', R), *syewulh* ('capital', RL), *swoh₁* ('mold', H), *swoh₂* ('pond', Hb), *syoh* ('temporality', L), *swuh₁* ('forest', Hb), *swuh₂* ('male', H), *sukwulh* ('countryside', HL), *sumulh* ('twenty', HH), *solh* ('flesh', Hb), *stah* ('earth', Hb), *stolh* ('source', Hb), *zywoh* ('mattress', L), *anh* ('inside', Hb), *alh* ('egg', H), *amh* ('female', H), *enh* ('bank', Hb), *yeleh* ('many', LH), *yelh₁* ('ten', H), *yelh₂* ('hemp', L), *wolh* ('this year', L), *wuh* ('top', L), *wulh* ('fence', Hb), *wumh* ('hut', H), *wuyanh* ('garden', HH), *cah₁* ('seat', L), *cah₂* ('foot', Hb), *cwoh* ('millet', L), *cholh*

1) The number of /h/-final nouns differs among studies, ranging from 51 (Kim, M. 51) to 91 (Lee, J. 2009), depending on the criteria employed by each study. In reviewing nine previous studies that offer a complete inventory of /h/-final nouns, I found no two lists that were exactly the same. For this study, I exclude any words from list (3) if there was no example that shows the stem-final /h/ in the fifteenth century. I did this even if the stem-final /h/ is attested in later centuries. This is due to the observations that some words seem to have obtained a stem-final /h/ after the fifteenth century (see chapter 5 for more detail). In addition, I do not include compound words in the list if they contained an /h/-final noun that was already listed.

2) The three tones of MK are represented by L(ow), H(igh), and R(ising). Ha refers to nouns that always appear as H, whereas Hb appears as L when combining with locative suffixes or other roots and as H otherwise. It is listed as just H if neither Ha nor Hb can be identifiable.

('source', Hb), *theh* ('foundation', Hb), *hanolh* ('sky', LH), *honah* ('one', LL)

From the early days of researching the history of Korean language, their unique way of declension and compounding patterns have attracted considerable attention. This attention has primarily centered on where this 'h' belongs (Kim, 1952; Nam 1957; Kim, 1963 among others) and its phonological nature (Lee, 2003; Pae, 2005; Yi, 2009 among others). In other words, the majority of research on /h/-final stems has focused on the segment /h/, and no studies have comprehensively addressed the characteristics of /h/-final stems as a whole.

This paper examines the peculiar correspondence between the tone and segment of /h/-final nouns. When this phonological peculiarity is considered along with the morphological and semantic properties of /h/-final nouns, an intriguing conclusion can be drawn regarding the origin of /h/-final nouns. Specifically, I will suggest that the /h/ in a number of /h/-final nouns may have originated from reinterpreting the initial consonant of the locative suffix as the final consonant of a nominal stem. This reanalysis is facilitated by a strong bond between nouns and the locative suffix, as well as the structural pattern observed in MK, where most case suffixes begin with a vowel.

Subsequent chapters will furnish evidence in support of this hypothesis. Chapters 2 and 3 investigate the distinctive phonological structure of /h/-final nouns, particularly their tone-segment correspondence, which deviates from established patterns in previous studies. This discrepancy is reconciled by postulating that /h/ was absent during the phonological change responsible for generating MK tones, suggesting a later reanalysis that incorporated /h/ from the locative suffix. Chapter 4 highlights the prevalence of /h/-final words denoting spatial concepts, leading to their frequent co-occurrence with the locative suffix. This and their cognitive proximity have obscured the boundary between spatial nouns and the locative suffix, examples of which are presented in Chapter 5. Chapter 6 encapsulates the study, offering potential evidence to bolster the assumptions made in this work.

2. Sources of /h/-Final Nouns

Some /h/-final nouns are known to have been borrowed from Chinese and Altaic languages. According to previous research such as Kim (2006) and Yi (2009), there are approximately fourteen Chinese loanwords; their list, with the

proposed original Chinese characters, are presented in (4).³⁾

- (4) *kwoh* (庫), *nwoh* (羅; L), *nwoh* (艫/櫓), *tyeh* (笛; L), *pwoh₁* (桴; L), *pwoh₂* (袱; L), *swoh₂* (沿; Hb), *sywoh* (俗; L), *swuh* (藪; H), *zywoh* (褥; L), *cah* (尺; Hb), *cwoh* (粟; L), *chwoh* (醋), *chywoh* (燭)

kwoh, *nwoh*, *chwoh*, *chywoh* are excluded from list (3) since they are not attested in the fifteenth century documents.⁴⁾

Among the remaining ten nouns, *tyeh*, *pwoh₁*, *pwoh₂*, *sywoh*, *zywoh*, *cah*, *cwoh*, *chywoh* ended with /k/ in Middle Chinese (MC), which weakened to /h/ at some point, resulting in /h/-final stems of MK (Lee, 1972; Kim, 1991; Kim, 2006).

The words with Altaic origin are *theh* (Hb), *wuh* (L), and *twolh₃* (R) (Kim, 1982). Their list, with Altaic cognates, are presented in (5).

- (5) *theh* (Hb): Manchu *texə*, Mongolian *teken*, etc.
wuh (L): Mongolian *ögede*, Ewen *öyəy*, etc.
twolh₃ (R): Mongolian *čilaγun*, Old Turkish *taš*, etc.

Words of Altaic origin also ended with a velar obstruent, similar to the Chinese loanwords in (4), undergoing a /k/ > /h/ lenition.

A native /h/-final noun, *narah* (LH), also ended with /k/ in OK. *narah* is represented as 國惡 in the *Hyangka* text, which is believed to record **narak*. The Chinese loanword *cah* and the Altaic word *tolh* are also rendered as 作 (**cak*) and 珍惡 (**twolak*) in *Kyeylimywusa* and *Samkewuksaki*, respectively (Yang 1942, Lee 1968). These examples indicate that some /h/-final words used to end with velar obstruents, which later lenited to /h/.⁵⁾ The rest of /h/-final nouns, however, do

3) While Yu (1994) and Kim (2020) includes *stah* (地) into this list, this paper treats it as a native word.

4) Kim (2006) regarded *nwo* (櫓) 'paddle' as Chinese borrowing /h/-final noun, but the example he provides is *nwoh* meaning 'twine' and no instances of *nwoh* 'paddle' are found in the fifteenth century.

5) Considering various data sources, it is evident that a change from *k* to *h* occurred in Korean. While this sound change seems to have occurred regardless of phonological environment, it is likely have taken place within a word. Even though the examples cited above may suggest changes at the end of stems, if these are interpreted as instances of weakening in forms suffixed with case markers, they can be classified as word-internal changes. The presence of doublets such as *tutuhl~tutkuh* 'dust', *twutkeb~twutheb* 'be thick' (Kim, 1996) in MK, as well as dialectal forms such as *swuch* (<MK *swusk*) 'charcoal', *yachap* (<MK *noskab*) 'be low' (Ramsey 1977; Lee, 1983), further suggests that the *k>h* change occurred not only in the intervocalic position, but also in between consonants.

The *k>h* sound change does not appear to have been confined to a single period; rather it seems to have occurred sporadically across various eras in individual words. This is evidenced by examples of

not have evidence of once having a velar obstruent in stem final position.

When classified based on tone, /h/-final nouns can be divided into Chinese loanwords and the rest.

Table 1. Tonal distribution of /h/-final nouns

	Chinese loanwords	Non-Chinese loanwords
L	7	6
H	3	29
R	0	8

As shown in Table 1, monosyllabic Chinese loanwords predominantly carry a low tone (70%), contrasting sharply with the 43 monosyllabic non-Chinese loanwords, 67.4% (29/43) of which carry a high tone. While they also exhibit a small number of low and rising tones, non-Chinese loanwords predominantly feature high tones.

This tone asymmetry observed in monosyllabic /h/-final nouns, specifically the tone distribution in non-Chinese loanwords, raises intriguing questions about their original structure, particularly in light of the segment-tone correspondences demonstrated in MK stems.

3. Phonological Peculiarities of /h/-Final Nouns

The seminal works of Ramsey's (1978, 1986) have established a clear link between the tones of monosyllabic verbal stems and their segmental features, i.e., the type of consonant at the end of a stem determines its tone. Whitman (1993) and Ito (2013) later identified a similar correlation between syllable endings and tone in monosyllabic nominal stems. Despite minor discrepancies, the correspondences between verbal and nominal stems are comparable, as illustrated in Table 2.⁶⁾

k>h changes in texts from different periods, such as the change of locative suffixes in *Hyangka* (see footnote 9), *-kwokun > -kwohon*, *-akun > -ahon* found in *Sektwokkwukyel* (Lee, 2002), doublets in MK texts, and dialectal variations in PDK.

6) The majority of the noun data used in this study was obtained from Hankulhakhøj (1992) and verified with photocopies of significant texts. Because this table only includes native words, the specific numbers differ slightly from Ito (2013), but the overall trend is consistent. The verb data is Ramsey's

Table 2. Tonal distribution of /h/-final nouns

Coda (Nouns)	L	Ha/Hb	R	Coda (Verbs)	L	Ha/Hb	Ra/Rb
Plain obstruent	59	53	10	Plain obstruent	88	3	4
Aspirated obstruent	15	15	2	Aspirated obstruent	26	0	0
Sonorant	20	77	48	Sonorant	17	26	101
/j/	5	34	18	/j/	14	16	27
vowel	7	33	2	vowel	0	78	1
/h/	6	29	8	/h/	7	1	2

The aspects particularly pertinent to the current study are summarized in (6).

- (6) a. While the majority of monosyllabic verbal stems ending with a plain or aspirated obstruent tend to be a low tone, nominal stems lack this tendency.
- b. Monosyllabic nominal stems ending with a sonorant typically have a high tone, whereas their verbal counterparts typically have a rising tone.
- c. Both nominal and verbal monosyllabic stems ending with a vowel usually have a high tone.
- d. Verbal stems ending with /h/ tend to have a low tone, while nominal stems tend to have a high tone.

Ramsey (1986, 1991) attributed this segment-tone correlation to historical developments, assuming that native words in Proto-Korean (PK) lacked distinctive tone. Instead, a default right-to-left iambic rhythm was assigned for each stem (Ito, 2013). Subsequent weak vowel syncope, apocope, and various tone deletion and contraction processes gave rise to the MK tone system (see Ramsey 1986, 1991, Ito 2013 for more details). Ramsey (1986) initially proposed this idea through an examination of verbal stems, and Whitman (1994) later demonstrated that the nominal stems exhibit a similar pattern.

For (6a), Ramsey (1986) reconstructed PK *CVC[-voice]V for MK obstruent-final

(1986:189). Ra refers to verbs that always appear as R, while Rb appears as L when combining with vowel initial suffixes and as H when combining with consonant initial suffixes.

verbal stems. These then underwent apocope, leading to the deletion of H tone in the second syllable. Whitman (1994) proposed that a similar change may have occurred in nominal stems. Regarding the difference in the distribution of H stems between verbal and nominal stems, Whitman (1994) argued that the difference in the default tone is responsible: L for verbal stems and H for nominal stems.

The H preference in nominal stems, however, could result from phonotactic constraints, such as the minimal word restriction requiring at least one H for each phonological word. Verbal stems in L tone do not violate this restriction, as they never appear in isolation and are always combined with the suffixes carrying H tones. But nominal stems can stand alone in a sentence, and if their tone is L, they would potentially violate the minimal word requirement.⁷⁾ This may have served as a trigger for change from L to H in nouns.

For (6b), Ramsey (1986) reconstructed PK *CVC[+voice]V for MK sonorant-final verbal stems, assuming that they also underwent apocope. However, because sonorants can bear a tone, the H tone in the second syllable was not deleted. Likewise, for nominal stems, Whitman (1994) and Ito (2013) reconstructed *CVC[+voice] for H stems and *CVC[+voice]V for R stems. For (6c), Whitman (1994) reconstructed *CV with a default tone H, whereas Ito (2013) proposed disyllabic *{i, ʌ}CV(C), arguing that *CV violates the minimal word restriction of PK.

The validity of this reconstruction requires further examination. However, given that the development of the difference in the syllable coda consonant into tonal differences is uncommon across languages (see Ratliff, 2015), the correspondence between segments and tones observed in monosyllabic stems in MK appears to be a by-product of the segmental change.⁸⁾

/h/-final nominal stems, however, do not conform to the reconstruction. Verbal stems ending with /h/ prefer a low tone, consistent with other plain and aspirated obstruents, whereas nominal stems ending with /h/ prefer a high tone, aligning with vowel final stems. In the case of /h/-final nouns, there are more number of

7) Ito (2013) also suggests that there are many verbal stems with L because each verbal stem must combine with suffixes to form a word.

8) A correspondence that appears to be a phonetic development also observed in MK. The majority of stems beginning with an aspirated obstruent or a consonant cluster beginning with /s/ or /p/ are H (L: 8, H: 56, R:1, Unknown: 1), which conforms to the cross-linguistic tendency that a syllable with voiceless onset tends to develop into a syllable with high tone (Hombert et al. 1979). This is also evident in Modern Korean (Kang 2014). Nonetheless, Ramsey (1986, 1991), Whitman (1994), and Ito (2013) consider this correspondence to be the consequence of syncope in the same manner as other tone-segment correspondences in MK.

R stems than vowel-final nouns. However, the eight examples with R tone (*najh*, *tolh₁*, *tolh₂*, *tujh*, *mojh*, *tulh*, *sejh*, *nejh*) all have /j/ or /l/ before /h/. The tones of nouns ending with /j/ and /l/ predominantly take the R or H tones. Thus, these sounds can be seen as the reason for the R tone in these nouns. Excluding the R stems from the list of /h/-final nouns, the resulting distribution closely resembles that of the vowel-final nouns.

The phonological and phonetic status of /h/ is controversial. However, in Korean, /h/ should be classified as an aspirated obstruent, considering its phonological behavior, including morpheme structure condition, nasalization, consonant cluster simplification, etc. (Lee, 2003). Additionally, even most of the studies that argue Korean /h/ is glide do not view it as syllabic or sonorant (Kim-Renaud, 1974 among others). It is same in MK, as /h/-final verbal stems exhibit similar behavior to other obstruents final verbal stems. This suggests that Ramsey's (1986, 1991) internal reconstruction remains valid, yet it poses a challenge to explain the divergent behavior of /h/-final nominal stems as opposed to other obstruent final stems. It implies that /h/-final stems may require a different reconstruction from other obstruent-final nominal stems.

I would like to direct attention to the phonotactics of /h/-final nouns, with a particular emphasis on the phoneme preceding /h/. Previous works have highlighted a distinctive characteristic of /h/-final stems: the sound immediately before /h/ is either a sonorant /n, l, j/ or a vowel. Although there is a slightly higher occurrence of R tone nouns, sonorant- and vowel-final nouns typically carry an H, much like /h/-final nouns. Consequently, if we suppose the absence of the final /h/, the peculiar behavior of /h/-final stems becomes comprehensible. In other words, the /h/ of the /h/-final nouns may not have existed in PK and could have originated from a different source.

A possible explanation for the origin of /h/ is the locative suffix **kuy*, observed in *Itwu* and *Hyangka* as 中 (Nam, 1977). This suffix is assumed to have developed into the locative suffix *uy/oy* in MK. In the process of the lenition of the initial consonant, it underwent a stage of *huy*, which is attested as 希 in *Hyangka*.⁹⁾ At this stage, when a nominal stem is combined with the locative suffix, /h/ may be

9) There are varying interpretations regarding the sound denoted by 希 in *Hyangka* texts. *Hyangka* includes at least four different transcriptions for locative suffixes: 良, (良)中, (良)希, and (良)衣[矣]. While some scholars propose that 中, 希, and 衣[矣] all correspond to the same sound *kuy*, *huy* or *uy*, others suggest that 中 represents *kuy*, 希 represents *huy*, and 衣[矣] represents *uy*, indicating a historical lenition process in the sound of locative suffixes. In this paper, following Hwang (2006), I treat these three characters as representing distinct sounds.

reanalyzed as the final consonant of the stem, rather than as the initial consonant of the locative suffix.¹⁰⁾ This reanalysis might be feasible as a result of analogy created from the fact that the majority of case suffixes begin with a vowel.

If this is the case, it is no longer puzzling why there are so few CV words in MK. Only 31 of the 443 monosyllabic nouns examined in this study are CV. Considering its status as the most unmarked syllable structure, its small number is unusual. Therefore, Ito (2013) argued that there is a prosodic constraint that bans *CV words in PK and reconstructed initial weak vowels due to the rarity of CV nouns in MK, noting that the majority of them are either bound nouns or pronouns.¹¹⁾ If we assume that some /h/-final stems in PK did not have /h/ at the end, the number of CV words in PK increases, circumventing the typologically odd generalization that PK lacked CV words.

The question remains as to whether this assumption is supported by evidence other than the asymmetries observed in the correspondence between segments and tones. Fortunately, semantics of /h/-final nouns and morphological properties of locative suffixed forms appear to support such an analysis.

4. Semantic of /h/-Final Stems

Several studies noted at the outset of the study of /h/-final nouns that they are words of basic and primitive concepts. Kim (1952:14) describe them as embodying "basic vocabulary of prototypical concepts," including world, nature, earth, direction, number, etc. Kim (1963:192) added to this by noting that the half of /h/-final nouns are included in the Swadesh 200 list. Similarly, Kim (1967:72) observed that a substantial number of /h/-final nouns signify primordial and nature objects. However, Kim (1952) and Kim (1963) also admitted that the meaning of /h/-final nouns cannot be elucidated by the concept of 'basic vocabulary' alone, as some of the most fundamental words such as mother, father and house do not end in /h/.

Indeed, the term 'primordial' and 'basic' do not encompass the full range of meanings associated with /h/-final nouns. Furthermore, it is difficult to define what

10) Hwang (2006:323) suggests that /h/-final nouns can be formed by reanalyzing the OK locative suffix. However, he did not provide additional elaboration on this assumption.

11) Contrary to Ito's (2013) assertion, only 14 out of 32 C(C)V words in my list are either bound nouns or pronouns.

'primordial and basic' concepts are. However, the situation becomes intriguing when we narrow our focus to 'spatial concepts.' An interesting asymmetry comes to light, as demonstrated in Table 3.

Table 3. Semantic categories of /h/-final nouns

	Spatial nouns	#	Temporal nouns	#	etc.	Total
σ	<i>kih, nayh, tolh₁, tolh₂, twih, mwoh, mwoyh, moyh, ptulh, soh₁, soh₂, swuh, stah, stolh, anh, enh, wuh, wulh, wumh, cah₁, cah₂, cholh, theh</i>	23	<i>wolh</i>	1	29	53
$\sigma\sigma$	<i>kwutulh, kuluh, konolh, kowolh, nalah, tuluh₁, tuluh₂, mozolh, patah, palah, syewulh, sukwulh, uyanh, hanolh</i>	14	<i>kozolh, kyezolh, nazwoh</i>	3	7	24
Total	37		4		36	77

Table 4. Distribution of spatial nouns within /h/-final nouns

	/h/-final nouns	Spatial nouns among /h/-final nouns	Nouns not ending with /h/	Spatial nouns not ending with /h/
σ	53	23 (43.3%)	390	18 (4.6%)
$\sigma\sigma$	24	14 (54.1%)	438	34 (7.8%)

Table 3 reveals that approximately fifty percent of /h/-final nouns denote spatial concepts. When we compare this to the proportion of spatial nouns in the entire MK lexicon, as shown in Table 4, it becomes evident that this is an unusually high percentage. In particular, more than half (23/41 [56.0%]) of monosyllabic spatial nouns end with /h/, despite them only constituting 12.0% [53/443] of entire monosyllabic nouns. For disyllabic spatial nouns, the proportion of /h/-final nouns is 29.2% [14/48]. While it is less than the proportion for monosyllabic nouns, but the ratio within /h/-final nouns is even higher, with spatial nouns making up 54.1%. This stands in stark contrast to the proportion of remaining spatial nouns relative to the rest of the MK disyllabic nouns. Therefore, the distribution of spatial nouns within and outside of /h/-final nouns are statistically significant ($\chi^2 = 133.96, p < 2.2e^{-16}$), highlighting the semantic distinctiveness of /h/-final nominal stems.

The significant presence of spatial nouns among /h/-final nouns underscores a

robust correlation between /h/-final nouns and the locative suffix. Due to their conceptual proximity, spatial nouns frequently co-occur with the locative suffix in sentences. This is evident in table 5, which shows the percentage of ten nouns immediately followed by locative suffixes in MK.¹²⁾

Table 5. Proportion of locative suffixes attached to spatial nouns

Noun	% of Nom.	% of Acc.	% of Loc.	% of Gen.	% of Isolated form	etc.
<i>kih</i>	21.2% (181/853)	17.8% (152/853)	31.5% (269/853)	3.5% (30/853)	18.3% (156/853)	7.6% (65/853)
<i>twuyh</i>	2.9% (4/140)	12.1% (17/140)	45.7% (64/140)	10.7% (15/140)	15.0% (21/140)	13.6% (19/140)
<i>stah</i>	19.9% (314/1,575)	17.4% (274/1,575)	47.0% (741/1,575)	3.0% (47/1,575)	10.2% (161/1,575)	2.4% (38/1,575)
<i>mwoyh</i>	17.9% (80/448)	6.7% (30/448)	41.7% (187/448)	18.8% (84/448)	8.7% (39/448)	6.3% (28/448)
<i>anh</i>	9.1% (69/760)	4.3% (33/760)	61.7% (469/760)	3.3% (25/760)	7.5% (57/760)	14.1% (107/760)
<i>wuh</i>	1.7% (28/1,683)	4.3% (73/1,683)	63.2% (1,063/1,683)	6.7% (113/1,683)	10.0% (168/1,683)	14.1% (238/1,683)
<i>tuluh</i>	5.7% (2/35)	5.7% (2/35)	34.3% (2/35)	31.4% (11/35)	17.1% (6/35)	5.7% (2/35)
<i>hanolh</i>	23.1% (177/766)	8.1% (62/766)	25.2% (193/766)	21.9% (168/766)	19.7% (151/766)	2.0% (15/766)
<i>konolh</i>	13.6% (6/44)	9.1% (4/44)	45.5% (20/44)	0.0% (0/44)	20.5% (9/44)	11.5% (5/44)
<i>mозolh</i>	17.4% (23/132)	15.2% (20/132)	46.2% (61/132)	3.0% (4/132)	11.4% (15/132)	6.8% (9/132)

Given that only 9.7% of suffixed nouns are combined with the locative suffix in Present Day Korean (PDK) (The National Institute of the Korean Language 2005), spatial nouns clearly have a preference for locative suffixes.¹³⁾ The frequent

12) The frequency data presented in Table 5 were derived from the Sejong Historical Corpus, with minor modifications made by the author. Since the frequency counting was conducted manually due to the lack of morphological parsing, there may be some inaccuracies in the data. Nonetheless, these figures still provide a reliable indication of the general pattern. When counting forms with the genitive case suffix *s*, only instances where the subsequent word appears three times or less were included. This criterion was adopted because phrases that occur frequently are hard to distinguish from compound words.

co-occurrence of the two highlights their close conceptual relationship.¹⁴⁾ The conceptual proximity of them may have led speakers to recognize combinations of spatial nouns and the locative suffix as single units, thereby obscuring the word boundary and clear the path for reanalysis.

Additionally, it is worth noting that a select number of temporal nouns also end with /h/. These temporal nouns show a similar preference for the locative suffix: 59.1% of *kozolh* and 81.6% of *nacoh* are attested with the locative suffix in MK. This affinity for the locative suffix is not coincidental, reinforcing the idea that there is a substantial number of spatial and temporal nouns ending with /h/.

In this context, it is worthwhile to revisit the Chinese loanwords presented in (4), particularly *swoh₂* and *swuh*, which did not end with /k/ in MC, denote spatial concepts. If we suppose that the stem-final /h/ in these words is the result of a reanalysis spurred by their frequent combination with the locative suffix, their high tone becomes understandable. Since they ended with a vowel, they carry a H tone. The conclusion is then inferred that Chinese loanwords ending with /k/ in MC, with the exception of *cah*, have a L tone, while those not ending with /k/ in MC have an H tone in MK. This pattern indicates a nativization of the tone in Chinese loanwords, aligning them with native Korean phonology.¹⁵⁾

5. Morphological Characteristics of the Locative Suffix in Korean

Korean is an agglutinative language, where the boundaries between nominal stems and suffixes, as well as between verbal stems and suffixes, are typically clear and discernible. However, given that ambiguity in discerning the boundaries between the stem and the suffix is a prerequisite for the reanalysis proposed in the previous chapters, some might question the likelihood of morphological change driven by such reanalysis in a language with such distinct boundaries. Kim (2015, 2023) highlights that despite these clear boundaries, the combination of verbal stems and suffixes tends to behave morphologically like a compound word, and

13) Because a morphologically parsed corpus for MK is unavailable, frequencies from PDK were used instead as a reference. The overall tendency would not be significantly different.

14) An anonymous reviewer noted that certain spatial nouns often combine with case suffixes beyond just the locative suffixes. The purpose of Table 5 is to illustrate the close conceptual relationship between spatial nouns and locative suffixes, rather than to suggest that spatial nouns exclusively combine with locative suffixes.

15) In this perspective, *cah* may not be a Chinese loanword.

certain combinations of nominal stems and case suffixes exhibit similar behavior. This is particularly noticeable with the locative suffix, which tends to fuse with the nominal stems, resulting in a distinct morphological pattern. This chapter aims to elucidate this phenomenon through various examples that demonstrate the strong bond between nouns and the locative suffix.

5.1. Leveling

In Standard Korean, only seven consonants are allowed in the syllable coda position, leading to various neutralization processes and a large number of allomorphs. For instance, the stem-final sound *kh* [k^h] in *pwuekh* 'kitchen' is pronounced as [k^h] in syllable onset position but becomes [k] in syllable coda position. However, in the PDK, their laryngeal contrast depending on the syllable position is diminishing, resulting in a consistent pronunciation of [k] for *pwuekh* regardless of its syllable position. Its allomorphs have been leveled, giving rise to the restructured form *pwuek*. In a similar vein, words ending with coronal consonants /t, th, c, ch, s, ss/ have undergone restructuring, now consistently appearing as /s/-final nouns.

Ko, K. (1989, 2014) proposed that the direction of leveling in nominal stems is determined by a preference for the isolation form and the type frequency of the word involved in the laryngeal alternation. Speakers typically memorize a nominal stem as its isolation form and derive the form before vowel-initial suffixes from it. Since the isolation form suffers from neutralization processes, it does not provide sufficient information to predict the form that should appear before vowel-initial suffixes. Consequently, speakers are left to infer the correct form, with the number of the stems (type frequency) that participate in this alternation playing a pivotal role. Because there are more stems undergoing /p/ → [p] than /ph/ → [p], labial-final stems tend to level towards /p/. Similarly, as there are more stems that undergo /s/ → [t] than /t/ → [t], /c/ → [t], etc., coronal-final stems tend to level towards /s/.

This leveling phenomenon first began in the Southwestern dialects and gradually spread to the rest of the dialects. In the late 20th century, nearly every dialect exhibits this leveling to some extent. However, as shown in Table 6, locative suffixed forms tend to resist this leveling.

Table 6. Southwestern dialect data (Lee, 1986; AKS, 1991)

	-i	-ul	-ey		-i	-ul	-ey
<i>kyeth</i> 'side'	-	-	<i>kyethey</i>	<i>pwuekh</i> 'kitchen'	<i>pwusaki</i>	-	<i>pwusakhi</i>
<i>kkoch</i> 'flower'	<i>kkosi</i>	<i>kkosul</i>	<i>kkosey</i>	<i>soth</i> 'pot'	<i>sosi</i>	<i>sosul</i>	<i>sothey</i>
<i>nac</i> 'daytime'	<i>nasi</i>	<i>nasul</i>	<i>nacey</i>	<i>iwus</i> 'neighbor'	<i>yusi</i>	<i>yusul</i>	<i>yucey</i>
<i>tech</i> 'trap'	<i>tosi</i>	<i>tosul</i>	<i>tosey</i>	<i>aph</i> 'front'	<i>api~aphi</i>	-	<i>aphey</i>
<i>mith</i> 'bottom'	<i>misi</i>	<i>misul</i>	<i>mithey</i>	<i>yeph</i> 'side'	<i>yepi</i>	-	<i>yephey</i>
<i>path</i> 'field'	<i>pasi</i>	<i>pasul</i>	<i>pathey</i>	<i>cec</i> 'milk'	-	<i>cesel</i>	<i>cesey~cecey</i>

Based on the Southwestern dialect data from Lee (1986) and The Academy of Korean Studies (1991) presented in Table 6, it is evident that while the neutralization of laryngeal contrast is lost before the nominative and accusative suffix, but it remains intact before the locative suffix. It is unlikely that speakers have better ability to identify the "correct" allomorph before the locative suffix. Rather, it suggests that speakers typically derive the forms for the nominative and accusative from the isolation form, whereas they tend to memorize locative suffixed forms in their entirety, as single units. This contrast shows that there is a strong bond between nouns and the locative suffix, facilitating the blurring of boundaries between them.

Lee (1986) already suggested the same line of assumption that the final consonant of words like *nac* 'daytime' and *iuc* 'neighbor' is preserved only before the locative suffix because "they have become conventionalized expressions because they almost always co-occur with the locative suffix due to their semantic characteristics that denote spatial and temporal concepts." (translation: TK, p. 51)

5.2. Tone alternation in declension and compounding

When certain nominal stems with H tone combine with locative suffixes in MK, they are realized as L, as illustrated in the examples in (7). (Kono, 1951; Kim, 1973). In this paper, this type of tone is marked as Hb.

- (7) a. *pul* (Ha) 'fire': *pul-i* (HH), *pul-ul* (HH), *pul-ey* (HH)
 b. *mwom* (Hb) 'body': *mwom-i* (HH), *mwom-ul* (HH), *mwom-ay* (LH)

There are approximately sixty nouns that exhibit this tonal alternation (Ito, 2015). While Ito (2015) provided a phonological explanation on this alternation, I interpret it as indicative of a strong bond between nouns and the locative suffix. Ito (2015) noted that the nouns that undergo this tonal alternation tend to end with a fricative or an aspirated consonant, suggesting that this alternation is influenced by a phonological factor, specifically the relative noisiness difference of the first and the second syllables.

This tone alternation, however, is not founded on the phonetic factors of MK. If the difference in noisiness was significant in MK, other suffixed forms would likely undergo the same type of alternation. Since this alternation occurs exclusively when nouns combine with locative suffixes, the explanation must be found in the locative suffix itself. In this respect, it is worth noting that the same tonal alternation is observed in compound formation (Moon, 1966; Kim, 1999), as shown in (8).

- (8) a. *nwun* (Hb) 'eye' + *kwop* (H) 'sleep' → LH
 nwun (Hb) 'eye' + *sep* (L) 'brow' → LL
 b. *pwoy* (Ha) 'hemp cloth' + *thul* (Ha) 'cast' → LH
 poy (Ha) 'boat' + *twosk* (L) 'sail' → LL

This tonal alternation occur not only with Hb stems but also with Ha stems. Kim (1999) pointed out that most of the disyllabic nouns in MK are LH, proposing a surface tonotactic constraint in MK favoring LH in disyllabic words. This implies that the alternation from HH to LH indicates speakers' recognition of the compound words as simplex entities.

This principle also applies to locative suffixed forms. The strong bond between the nominal stem and the locative suffix leads speakers to recognize them as a single unit, resulting in tonal alternation. Ito's (2015) phonological condition, stating that Hb nouns often end with a fricative (/s/, /h/) or an aspirated consonant, is also a common characteristic of spatial nouns.¹⁶⁾ Also included in the Hb nouns are spatial and temporal nouns including *mwos* 'pond', *kwot* 'place', *kwut* 'hole', *nwon* 'rice paddy', *pam* 'night', *tet* 'a short time', *pwom* 'spring', etc, as well as body part nouns including *mwom* 'body', *ip* 'mouth', *nwun* 'eye', *kuy* 'ear', etc.¹⁷⁾ The cognitive proximity of these nouns to locative suffixes suggests that this alternation is rooted

16) For the discussion on the nouns ending with an aspirated consonant, see chapter 6.

17) For the discussion on body part terms, see chapter 6.

in morphological factors rather than phonological one.

5.3. Lexicalization of phrases containing locative suffixes

In MK, a number of nouns that denote spatial concepts have etymologically incorporated locative suffixes, as illustrated in the examples in (9).

- (9) a. *yekuy, kekuy, tyekuy* < *i, ku, tye + ungek + oy*
b. *icey, kucey, ecey* < *i, ku, *e + cek + uy*¹⁸⁾
c. *kutoy, etoy* < *ku, *e + to + oy*
d. *saypay, alay* < *saypak, *alah + oy*

The words on the left side of each line in (8a-c) are phonologically reduced forms of phrases, composed of the demonstratives *i* 'this', *ku* 'it', *tye* 'that' and **e* 'where', bound nouns *ungek* 'place', *do* 'place, thing', *cek* 'time' and the locative suffixes. In (8d), *saypay* and *alay* are reduced forms of the nouns *saypak* 'dawn' and *alah* 'bottom' with the locative suffix *oy*. These have either become lexicalized in MK (8b-d), or underwent lexicalization at a later stage (8a).

It is important to note that the nouns preceding the locative suffixes in these examples all denote spatial or temporal concepts. This conceptual closeness, coupled with their frequent co-occurrence, has led to the blurring of morphological boundaries within these suffixed phrases. The phonological contraction observed in these examples further suggests that speakers began to perceive and process these suffixed phrases as single, unified words.

To summarize, it becomes apparent that while the boundary between a nominal stem and a case suffix is usually clear, the division between spatial and temporal nouns and the locative suffix is not. The blurring of boundaries may be due to their frequent co-occurrence or their inherent conceptual proximity. Korean speakers tend to recognize them as a unified entity, leading to potential misanalysis of the boundary, influenced by the analogy drawn from the fact that majority of the Korean case suffixes begin with a vowel. This reanalysis explains the prevalence of many spatial nouns ending in /h/.

18) Hwang et al. (2001) propose an alternative etymology for (8b), suggesting *psku* 'time' as a more likely origin than *cek*. This suggestion stems from the fact that **ecekuy* is not attested. For the purpose of this discussion, I will not explore the etymology of (8b) in further detail, as it is not directly pertinent to the current discussion.

In this way, the number of /h/-final stems increase, there seemed to emerge an output-oriented generalization among MK speakers, suggesting that the spatial nouns typically end with /h/ or an aspirated consonant (see chapter 6 for more details). Evidence of this generalization is seen in several nouns that did not end with /h/ during the fifteenth century but ended with /h/ from the sixteenth century onwards. Examples include *nyek* 'side', *nyep* 'flank', *puzek* 'kitchen', *ko* 'storage', all of which are associated with spatial concepts.

6. Conclusion & Discussion

The presence of asymmetry and exceptions within the lexicon provides a starting point for internal reconstruction and a comprehension of how the current synchronic state developed. The focus of this study has been the peculiar phonology and semantics of /h/-final nominal stems in MK. Phonologically, they exhibit a tone pattern misaligned with other obstruent-final stems, aligning instead with vowel- or sonorant-final nominal stems, rendering the stem-final /h/ seemingly invisible in tone-segment correspondence. From a semantic standpoint, spatial and temporal nominal stems overwhelmingly more prevalent than other concepts within /h/-final nouns. Additionally, a spatial or temporal nominal stem coupled with a locative suffix tends to behave as a single unit. Taking these three aspects into account, this study proposes that the stem-final /h/ in certain /h/-final nouns may have originated from reanalyzing the initial consonant of the OK locative suffix as the final consonant of the preceding stem.

Unfortunately, there seems to be no definitive example to confirm that this reanalysis took place. The reanalysis may have occurred before the creation of Hankul, at a time when transcription systems like *Hyangga* and *Idu* were in use. The linguistic records from that time do not fully capture the phonological details of stems. These transcription systems had limited phonetic markers, only representing a handful of stem-final sounds such as /s/, /k/, /i/, etc. Consequently, it becomes a challenge to demonstrate that /h/-final stems in MK originally ended with a vowel in these transcription systems. This study, therefore, has opted for the internal reconstruction method due to these constraints. I hope that future research on OK texts will yield findings analogous to the discovery of Hittite.

Further support for this hypothesis may be found in the number of spatial nouns

ending with aspirated consonants. As mentioned in chapter 3, /h/-final nominal stems adhere to a restricted phonological structure; only sonorant class of sounds are permitted before /h/. However, considering the phonotactic constraint in Korean disallowing /h/ to appear before or after an obstruent, this restriction is not as limiting as it may first appear. In Korean, a sequence of a plain obstruent followed by /h/ or vice versa changes into an aspirated obstruent. Such sequences, therefore, are absent from surface forms, existing only in underlying representations and preserved in PDK orthography. However, MK adopted a phonological orthography, meaning that even if a stem ended with a sequence of a plain obstruent and /h/ in its underlying representation, it would not be transcribed as such in written documents. Consequently, it is impossible to distinguish an underlying aspirated consonant and a plain obstruent + /h/ sequence in MK. The nouns that end with an aspirated obstruent in MK, with special focus on those representing spatial concepts, are listed in Table 7.

Table 7. Distribution of spatial nouns within aspirated-final nouns

	Aspirated-final non-spatial nouns	aspirated-final spatial nouns
σ	<i>kach, nach, nath, niph, noch, twoth, tiph, pyeth, pwuph, pich, poych, soth, soch, ach, cich, phoch</i>	<i>kech, keyech, kyeth, kuth, math, mwuth, mith, pach, path, sath, such, alph, iph</i>
	16	13
$\sigma\sigma$	<i>nomoch, mwulwuph</i>	-
	2	0

While there are not many mono- and disyllabic simplex nouns ending with an aspirated obstruent, it is noteworthy that nearly half of these nouns pertain to spatial concepts. This proportion is comparable to the occurrence of spatial nouns within /h/-final nouns (37/77). The abnormally high percentage of spatial nouns within the category increases the plausibility that some of the aspirated-final stems arose as a result of the reanalysis presented earlier.

Another point of interest is the relatively high number of body part terms ending with /h/ or an aspirated consonant, such as *kwoh, nimah, polh, solh, nach* and *mwulwuph*. In addition *nyep* became *nyeph* in Early Modern Korean (EMK).¹⁹⁾

19) There are no attestations of the word *kyet* 'armpit' being combined with vowel-initial suffixes. On the other hand, *kyeth* 'side', which typically combines with the locative suffix *uy*, has been

Considering that there are roughly fifteen words for external body parts, a significant number of them end with /h/ or an aspirated consonant. Even though body part terms in MK are not frequently found in conjunction with the locative suffix, they still share a conceptual proximity, as evident from the abundance of body part terms in the Hb class (see section 5.2). This relationship might be linked to the fact that body part terms are typically grammaticalized into spatial and temporal words (Heine et al. 1991). Although they have not undergone grammaticalization into the spatial and temporal word in Korean, body part terms still convey the spatial and temporal implication, highlighting their intrinsic connection to the spatial-temporal domain.

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documented once with the locative suffix *ey*. Since the corresponding Chinese text for this phrase has not been discovered, interpretations may vary. While the prevalent translation is 'side', it is feasible to also interpret it as 'armpit'. If this is the case, we can add *kyeth* to the list.

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