

SOUTH KYENGSANG TONES AND PITCH ACCENT¹

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1. Introduction

Middle Korean was a tone language. Most varieties of modern Korean have lost tone as a distinctive phenomenon, but two major dialect areas retain a reflex of Middle Korean tone in pitch accent systems. These are North and South Hamkyeng Korean, located along the eastern periphery of North Korea and North and South Kyengsang² Korean, located in southeastern South Korea. The first work to describe modern Korean tone in any detail was He Wung (1954) writing on the South Kyengsang dialect, published in English translation in He Wung (1985). Several accounts of Korean tone/pitch accent using various modern linguistic frameworks have appeared since the 1970's. These include Ramsey (1975), G.-R. Kim (1988), Y.-H. Chung (1991), N.-J. Kim (1997), Kenstowicz and Sohn (1997), J.-H. Jun et al. (2006), and Kim and Schuh (2006). Ramsey (1975) focuses on South Hamkyeng Korean and is the only work (at least in English) on a Hamkyeng dialect as far as we know, but Ramsey also discusses the South Kyengsang dialect. Kim and Schuh (2006) likewise focus on South Kyengsang Korean. The remainder of the works cited focus on North Kyengsang. Although there are important differences between North and South Kyengsang Korean, the dialects are alike in the crucial ways that relate them to their Middle Korean ancestor, and most features of the analysis proposed here would apply to both varieties of Kyengsang.

Despite the rather substantial amount of attention that has been devoted to Korean tone/pitch accent, none of the analyses in these works is entirely satisfactory. Most propose underlying forms and rules that are suspect at best as characterizations of speakers' knowledge. They are all a bit fuzzy on the relationship of "tone" and "accent" and, strikingly, none of them make anymore than a passing reference to the well-described pitch accent system(s) of Japanese with which, as it turns out, Korean has striking typological similarities. None, with the partial exception of Kim and Schuh (2006), explicitly cover pitch phenomena in the full range of combinations lexical patterns. And most of them fail to capture in a direct way a number of generalizations regarding possible and impossible tonal patterns that hold across the Korean lexicon and in tonal phrasing.

The direction for analysis that we apply here is simple. We assume that the tonal patterns that the language learner will acquire as "basic" will be the tonal patterns that are most frequent and/or are those that are heard in the least marked contexts. Moreover, the learner will seek to generalize tonal classes where possible. For example, suppose that a learner has heard a number of trisyllabic words with a tone pattern HHL and a number of disyllabic words with the tone pattern HH. Moreover, when a monosyllabic suffix is added to words of the HH word, the learner notices that the pattern is always HHL, never HHH or some other combination. The clear generalization is that the HHL trisyllables and the HH disyllables belong to the same prosodic class.

This paper has the following structure. We first propose the lexical prosodic classes of the *phonological word*. As suggested in the preceding paragraph, lexical roots must sometimes be extended by suffixes in order to reveal the class that they belong to. We will argue that the existent and non-existent prosodic classes are not a random assortment

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² Most published works spell the name of these dialects "Kyungsang", presumably following a Romanization that represents the vowel /ɔ/ (pronounced [ɔ] by most speakers of modern Korean) with the letter "u". In the Yale Romanization that we are using, this phoneme is written with the letter "e".

but rather conform to a small number of straightforward constraints. Following the presentation of lexical classes, we insert a brief excursus on the history of tone and pitch accent in Korean, showing how the modern Kyengsang classes relate to their Middle Korean antecedents. We then turn to the tonal behavior of words in *accent groups*, combinations of words that are morphosyntactically connected such that the lexical tone pattern of one word may affect the tones of another. We argue that much of the tonal behavior that has come under scrutiny in works on Korean pitch accent can be understood in terms of a HL tonal drop representing an *accent point*, and concomitantly, that absence of such an accent point in an accent group accounts for apparently otherwise anomalous facts. To conclude the presentation of the basic facts, we discuss the tones of “particles”, a large and important set of monosyllabic suffixes.

Following this presentation of data, we propose an analysis in which only the position of high (H) tone is represented in the input, with the ultimate tonal melody being a result of rules (in an autosegmental account) or ranked constraints (in an optimality account). One outcome of this analysis is that, although identifying a HL accent point is crucial in determining the melody of an accent group, there is no need to identify *accent* as a prosodic property distinct from *tone*. We conclude with summaries of previous accounts, comparing the underlying representations and analyses proposed in those accounts with the one we suggest and critiquing what we view as shortcomings and problematic analyses.

2. The Phonological Word

A phonological word comprises a root and any monosyllabic particles that are attached to the root. Some of the relevant particles are *-un/-nun* topic marker, *-i/-ka* subject marker, *-ul/-lul* direct object marker, *-man* ‘only’, *-to* ‘also’, and *-tul* ‘plural’. Phonological words can bear more than one particle. The table below shows all the possible lexical tone patterns that phonological words of at least three syllables can bear. We will illustrate with nouns because they present the widest array of syllable structures in roots and the clearest root+particle combinations, but the same tone patterns apply to other word classes.

Table 1. South Kyengsang lexical tone/pitch accent classes

	ACCENTED			UNACCENTED	
	HL(L)	HHL	LHL	TONELESS	LHH
Mono-σ roots	-----	nwún(túl)(ì) eye(pl)(nom)	-----	mál(tùl)(ì) horse(pl)(nom)	sà:y(túl)(mán-ì) bird(pl)(only-nom)
Di-σ roots	méli(kà) head(nom)	mókí(kà) mosquito(nom)	-----	kàcí(tùl) eggplant(pl)	sàlám(túl-ì) person(pl-nom)
Tri-σ roots	myénùlì daughter-in-law	múcíkày rainbow	mìnálì parsley	pòkswúngá(-tùl) peach(pl)	
Quadri-σ roots	hàypálákì sunflower				

All morphologically unanalyzable words of four syllables have a LHHL tone pattern.³ For other lexical roots, a phonological word of at least three syllables (whether a trisyllabic root or a word expanded to three syllables by addition of particles) is required to determine the full lexical tone pattern. For example, *pàlám* ‘wind’ and *sàlám* ‘person’ both have the citation pattern LH, and *mál* ‘horse’ and *mál* ‘a measure of 18 liters’ both have the citation pattern H. Only by extending these words with particles can we see that *pàlám-ì* ‘wind-nom’ has the lexical TONELESS pattern whereas *sàlám-í* ‘person-nom’ has the LHH pattern and that *mál-màn-ì* ‘only-horse-nom’ has the TONELESS pattern whereas *mál-mán-ì* ‘only-18 liter measure-nom’ has the HHL pattern. Likewise, only by extending *mǎ:l* ‘speech’ with particles, e.g. *màl-mán-í* ‘only-speech-nom’ can we see the full LHH lexical pattern. Because the choice of host determines the tone patterns that show up when phonological words are extended by particles and because a given host affects all particles in the same ways, the tonal difference must be associated with the hosts, not the particles.

Looking first at the patterns of nouns other than the TONELESS class, we find that the surface tonal patterns of phonological words are subject to the following constraints:⁴

(1) Constraints on surface tonal patterns of nouns

*[L]_{PHON. WORD}: A phonological word cannot consist of only low tones.

*#LL: A phonological word cannot begin with more than one L syllable.⁵

*HHH: A phonological word cannot have three H syllables.

*XLH (X ≠ null): H cannot follow non-initial L, i.e. the only LH sequences are initial.

Patterns of TONELESS words conform to these constraints. The reason for considering such words to be toneless rather than being lexically associated with specific tone patterns becomes evident when we consider the behavior of these words in *accent groups* comprising a root and a non-particle. To account for the patterns seen in Table 1, we assume, first, that L is associated with the initial syllable of word if the initial syllable is not associated with a lexical tone unless this would violate the *[L]_{PHON WORD} constraint, and H is associated with the last syllable of a TONELESS root in order to avoid violation of the *[L]_{PHON WORD} constraint. If necessary, the H spreads leftward to avoid violation of the *#LL constraint. We thus account for the patterns of TONELESS nouns in the table:

mál ‘horse’: H rather than L because L would result in violation of *[L]_{PHON WORD}

kàcí ‘eggplant’: L on the initial syllable, H on the last syllable

pòkswúngá ‘peach’: L on the initial syllable, H on the last two syllables to avoid *#LL

We can assimilate quadrisyllabic roots to this account as well. Recall that all quadrisyllabic roots have the pattern LHHL. Let us assume that all quadrisyllabic roots are lexically toneless. L is associated with an initial syllable that has no lexically associated tone. Let us amend the account of TONELESS words to say that H is associated with the *last ELIGIBLE syllable* of a root rather than the last syllable. In a quadrisyllabic

³ We know of no morphologically unanalyzable words of more than four syllables. It is unlikely that even four-syllable words, from a historical point of view, are simple roots, but there are numerous four-syllable words in modern Korean that must be taken as morphological units.

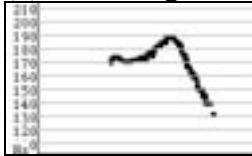
⁴ For the moment, we remain agnostic as to analysis. The generalization expressed by these constraints could be incorporated into either a rule-based or constraint-based analysis.

⁵ For typographical convenience, we use notations like “LL” to mean “L associated with two consecutive syllables”. In autosegmental notation, this would, of course, be represented as a single L associated to the two syllables.

root, the last eligible syllable cannot be the final syllable because, in order avoid a violation of the *#LL constraint, the H would have to spread two syllables to the left, which would violate the *HHH constraint. The last eligible syllable is thus the penultimate. A root like *hàypáláki* 'sunflower' has the following derivation: /haypalaki/ ASSOCIATE L → *hàypaláki* ASSOCIATE H → *hàypaláki* H SPREAD → *hàypáláki* DEFAULT L → [hàypáláki]. The last step associates L to any unassociated syllable(s) after the H, thus avoiding a *HHH or a *XLH sequence. A quadrisyllabic word could, in principle, have lexical patterns LHLL, HHLL, and HLLL, all which would also conform to the constraints and which do exist in accent groups comprising more than one root. The fact that all quadrisyllabic roots have a single pattern seems to be a result of the fact that words of more than three syllables are all rather unusual, low frequency words that have all gravitated to what may be the least marked pattern.

Citation forms of the LHH class in Table 1 need more comment. A two syllable word like *sàlám* 'person' has LH associated with the first two syllables and the presence of an additional floating final H shows up if a particle is affixed. Monosyllabic LHH words with no particles are pronounced with long vowel with Rising (R) tone and a final falling contour because of a boundary L%, as shown in the F0 tracing in the figure.

(2) F0 tracing of the LHH monosyllable *mǎ:l* 'speech'



As we will see in the next section, LHH words come from Middle Korean words that had a R tone on the first syllable. Modern SKK must be pronouncing words like *mǎ:l* 'speech', *pǎ:m* 'chestnut', *nwǔ:n* 'snow', *sǎ:y* 'bird', etc. in almost the same way they were pronounced 700 years ago! Once a particle is affixed, however, both the phonetic R and the length disappear. An expression like *mǎl-ún* 'speech-topic' has the same surface prosodic properties as a disyllabic LHH word like *sàlám* 'person' (and also as a lexically TONELESS word like *pálám* 'wind'). We propose that to avoid violating the *[L]_{PHON. WORD} constraint, at least the initial LH of the lexical tone pattern must be phonetically realized.⁶ In order to realize the LH on a monosyllable, a mora of length must be added to the vowel, but when the phonological word is extended by a particle, a second mora is available in the prosodic word to be associated with the H.

3. Historical excursus

The tonal nature of Middle Korean was well understood by the 15th century scholars, led by King Sejong, when they created the *hankul* writing system. The original *hankul* system marked tones with "side dots" to the left of each syllable: H tone was marked with a single dot (·말 *mál* a unit of measure), L tone was marked by absence of any dots (말 *mál* 'horse'), and rising tone was marked by two dots (:말 *mǎl* 'speech').

Table 2 shows all the possible tone patterns of Middle Korean words of one to three syllables and their modern correspondences in South Hamkyeng and South Kyengsang Korean. Middle Korean and South Hamkyeng are from Ramsey (1975); Middle Korean tones were checked in Yu (1964).

⁶ More accurately, the first H must be realized, since the L will be supplied by rule or required by constraint.

Table 2. Middle Korean tone patterns with modern correspondences

MK tone	MK example	Hamkyeng	S. Kyengsang	Gloss
L	màl	màl	mál	‘horse’
H	psál	ssál	ssál	‘cooked rice’
LL	pòli	pòlí	pòlí	‘barley’
LH	mèlí	mèlí	méli	‘head’
HH	mókÁy	mókì	mókí	‘mosquito’
HL	kwúlwùm	kwúlùm	kwúlúm	‘cloud’
LLL	sàtÀlì	sàytáí	sátáí	‘ladder’
LLH	mÀyàcí	màyáci ⁷	màngácì	‘colt’
LHL	kàmóthì	kàmúlchì	kàmùlchì	‘mullet’
LHH	àhÁláy	àúli	áhùlèy	‘nine days’
HHH	twúlwúmí	twùlími [sic]	twúlwùmì	‘crane’
HHL	tyéngpákì	(no reflex)	ccéngpáykì	‘crown of head’
HLH	hánàpí	hálàypì	háláypì	‘grandfather’
HLL	kúlssùkì	(not in Ramsey)	kúlssúkì	‘writing’
R	mǎl	mál	mǎ:l	‘speech’
RL	sálÀm	sálàm	sàlám	‘person’
RH	ùsán	wúsán	ùsán	‘umbrella’
RLH	sámàkóy	sámàkwì	sámákwí	‘mole’
RLL	kwǎngnAlÁ	(not in Ramsey)	kwàngnáló	‘river port’
RHL	kícíkèy	(not in Ramsey)	kícíkèy ~ kícíkéy	‘stretching’
LR	yèswŭyn	yèswún	yéswùn	‘sixty’

Middle Korean must have been a “real” tone language, with every syllable bearing a lexically determined tone and with no restrictions on the distribution of tones within words.⁸ This is not true for any modern Korean dialect. Reflexes of Middle Korean tones in South Hamkyeng are as follows:

- (i) MK words with at least one H: Any syllables following the first H became L. MK LLH became LHH, i.e. the final H spread left leaving only the first syllable L. Three syllable words with initial H are inconsistent in their outcomes in South Hamkyeng, sometimes becoming expected HLL, sometimes LHL. This seems to result from a sporadic shift of HLL to LHL in Hamkyeng, since the outcomes of MK HXX in Kyengsang quite consistently show the reflex of the MK initial H (see below). Ramsey (1975) does not discuss words longer than three syllables and we have no Hamkyeng data from other sources to know what happened with longer words, assuming that such words exist.
- (ii) MK words where the first non-L is R: R became H, and if there were following syllables, they became L. Thus, all reflexes of R have fallen together with H in Hamkyeng.
- (iii) MK words with all L: These words retained L on the first syllable and remaining syllables became H.

⁷ Ramsey (1975:136) gives the Hamkyeng form as *màyáci* [mèècí], but his rules and his table showing application of rules on pages 95-96 make it clear that this would be pronounced LHH.

⁸ This was true even for R tone. There are many words with internal R and even sequences of RR.

Changes (i) and (iii) must be a shared innovation dating from the ancestor to all modern tone/pitch accent dialects of Korean. It would be remarkable for the modern dialects to have undergone nearly identical convergent developments from Middle Korean. Hamkyeng and Kyengsang dialects have the same tone patterns on reflexes of MK words with all L tones except that reflexes of Middle Korean L monosyllables, like *màl* ‘horse’ have L in Hamkyeng, H in Kyengsang. Table 2 shows, however, that words that had a H or a R in Middle Korean differ in their outcomes in the two dialect areas. For words with a H, Ramsey (1975:95-98) explains the differences by the KYENGSANG ACCENT SHIFT: “Shift the accent one syllable to the left.” This accounts for the following Hamkyeng vs. Kyengsang correspondences

(3) Correspondences resulting from the KYENGSANG ACCENT SHIFT

<u>MK</u>	<u>HK</u>	<u>KS</u>			
LH	LH	HL	as in HK <i>mèlí</i>	KS <i>méli</i>	‘hair’
LLH	LLH	LHL	as in HK <i>màyáci</i> ⁹	KS <i>màngáci</i>	‘colt’
LHL	LHL	HLL	as in HK <i>kàmùlchì</i>	KS <i>kámùlchì</i>	‘mullet’
HL	HL	HH	as in HK <i>kwúlùm</i>	KS <i>kwúlúm</i>	‘cloud’
HXX	HLL	HHL	as in HK <i>hálàypi</i>	KS <i>háláypi</i>	‘grandfather’

For words where Hamkyeng has initial H, as in the last two examples in (3), the KYENGSANG ACCENT SHIFT created a floating H preceding the word, called “preaccent” by Ramsey (1975). In modern Kyengsang dialects, these words now have initial HH in citation form and when initial in a longer phrase, an outcome for which we frankly have no explanation,¹⁰ but as we will see in later discussion, the “preaccent” still has effects when such words are non-initial in a phrase.

The KYENGSANG ACCENT SHIFT reveals two aspects of the history and status of Korean tonal prosody. First, the changes in (i) must have affected the common ancestor of Hamkyeng and Kyengsang, i.e. the KYENGSANG ACCENT SHIFT is coherent only if applied to a prosodic system like that of Hamkyeng, not that of Middle Korean. Second, the KYENGSANG ACCENT SHIFT makes clear that there was a change from a purely *tonal system* like that of Middle Korean to a *pitch accent system* like that of Japanese. Consider the following data, repeated from Table 2:

	Middle Korean	Hamkyeng	Kyengsang	
LL	pòli	pòlí	pòlí	‘barley’
LH	mèlí	mèlí	méli	‘head’

These words were differentiated by tone in Middle Korean. Both now have LH citation tones in Hamkyeng Korean, but the KYENGSANG ACCENT SHIFT has affected only *méli*, i.e. the word that had a H tone in Middle Korean. Ramsey (1975:83) shows that when a particle is affixed to the Hamkyeng forms, they reveal different patterns: *pòlí-ká* ‘barley-nom’ has H on the nominative particle *-ka*, whereas *mèlí-kà* ‘head-nom’ has L. Ramsey’s interpretation, and the one we adopt, is that *mèlí*, where the final H is a reflex of Middle Korean H, is *accented*, causing deaccentuation of the particle, but *pòlí*, from

⁹ The second syllable is H because of the leftward spread of H mentioned above in (i).

¹⁰ Cho, Kenstowicz, and Kim (2007:2) interpret the Kyengsang Accent Shift as a push chain LL > LH > HL > HH, where the LL > LH shift initiates shifts of other patterns, leaving HH as the only “vacant” spot for MK HL. This interpretation of the KYENGSANG ACCENT SHIFT seems unlikely. If a shift of LL > LH initiated the push chain, one wonders why Hamkyeng did not follow the same chain as Kyengsang, since both dialects share this change. Moreover, homophony of citation tone patterns seems to play little role in the history or synchronic behavior of Korean lexical prosodic classes. Middle Korean LL has become LH in Hamkyeng as well as in Kyengsang, yet in Hamkyeng, these words have remained lexically distinct from LH words that are reflexes of Middle Korean LH, as we will see immediately below. Moreover, Kyengsang itself has lexically distinct classes with identical citation tones (see Table 1).

Middle Korean LL, is *atonic*, i.e. *unaccented*, allowing the particle to bear H (the tone it bore in Middle Korean). The final H of *pòlí* from the point of view of a synchronic analysis is not lexical but is accounted for by rule or constraint. The KYENGsang ACCENT SHIFT has thus shifted *accent*, not *tone*.

The KYENGsang ACCENT SHIFT also explains some gaps in Table 1. There are no monosyllabic roots with a lexical HL pattern and no monosyllabic roots with a LHL pattern. These tone patterns have more tones than syllables, but we cannot explain absence of the patterns by an aversion to floating tones, since there are patterns that do have floating tones. The explanation is historical. These patterns would have no Middle Korean source. Kyengsang HL would have to have come from LH, but Middle Korean monosyllables could have had only H, L, or R as lexical patterns. Kyengsang LHL would have had to come from Middle Korean LLH, but Middle Korean disyllables could have had only LL, LH, HL, HH, RL, or LR.

We turn finally to reflexes of Middle Korean R tones. Hamkyeng, North Kyengsang, and South Kyengsang have each gone in different directions. As noted in (ii), the Middle Korean H and R have merged as H in Hamkyeng. South Kyengsang (and presumably North Kyengsang, though we have not checked relevant forms) also have leveled the R vs. H distinction for non-initial R. Thus, Middle Korean *yèswúyn* ‘sixty’ has the South Kyengsang reflex *yéswùn*, where the H < R has undergone the KYENGsang ACCENT SHIFT, undifferentiated from reflexes of Middle Korean H.

Initial R, however, has had special fates in Kyengsang dialects. It is well-established that Middle Korean R was accompanied by vowel lengthening, presumably to add a mora that would accommodate the L+H components of the R tone. This lengthening is retained as distinctive vowel length even in dialects that have lost lexical tone. For example, in conservative Seoul speech, *말: ma:l* ‘speech’ < MK *mál* is distinct from *말 mal* ‘horse’ < MK *màl*, and modern Korean dictionaries mark length on their headwords. With this background, consider the data in Table 3:

Table 3. Reflexes of Middle Korean #LH.. and #R... in Kyengsang dialects

MK tones	Middle Korean	North Kyengsang	South Kyengsang	
L	màl	mál, mál-tò	mál, mál-tò	‘horse(-also)’
LL	pÀlÀm	pàlám	pàlám	‘wind’
LLL	sàtÀlì	sàtálí	sàtálí	‘ladder’
LH	mèlí	méli	méli	‘hair’
LHL	kámóthì	kámùlchì	kámùlchì	‘mullet’
H	múl	múl, múl-tó	múl, múl-tó	‘water(-also)’
HL	kwúlùm	kwúlúm	kwúlúm	‘cloud’
HLH	múcìkéy	múcíkày	múcíkày	‘rainbow’
R	mǎl	má:l, má:l-tó	mǎ:l, mǎl-tó	‘speech(-also)’
RH	wùsán	wú:sán	wùsán	‘umbrella’
RLH	kēmèlí	ké:méli	kēméli	‘leech’

North and South Kyengsang are alike in reflexes of Middle Korean L... and H... . Both dialects cite reflexes of both L and H monosyllables with H and both dialects differentiate them in the same way when particles are attached. Middle Korean words that had all L tones have reflexes in both Kyengsang dialects with L on the first syllable but H on subsequent syllables (*sàtálí* ‘ladder’). Both dialects reflect the KYENGsang ACCENT SHIFT in reflexes of Middle Korean LH... words (*kámùlchì* ‘mullet’), and both dialects pronounce Middle Korean H... words with initial HH, i.e. Ramsey’s *preaccent* class (*múcíkày* ‘rainbow’). The dialects differ in terms of reflexes of Middle Korean initial R, however. In North Kyengsang, the lengthening that accompanied Middle Korean initial R, mentioned in the paragraph above Table 3, has been retained, but

tonally, these words have fallen together with reflexes of Middle Korean H... words.¹¹ Thus, *kwúlúm* ‘cloud’ and *wú:sán* ‘umbrella’ behave alike tonally but are in contrast in terms of vowel length. This generalization applies to monosyllables, disyllables, and trisyllables.

South Kyengsang, on the other hand, has lost vowel length. The only class of words with phonetically long vowels are reflexes of Middle Korean R monosyllables, mentioned at the end of §2, following (2). In South Kyengsang, lengthening of the vowel in these words is clearly driven by tone, viz. addition of a mora to accommodate the contour L+H tone on one syllable. Reflexes of trisyllabic Middle Korean words with initial R have merged with TONELESS words, i.e. words like *kéméli* ‘leech’ < R... and *sátáli* ‘ladder’ < LLL are prosodically identical in all contexts in South Kyengsang. Disyllabic words like *wúsán* ‘umbrella’, though tonally identical to TONELESS words like *pàlám* ‘wind’ in citation, behave differently when particles are affixed (*wúsán-tò* ‘umbrella-also’ vs. *pàlám-tò* ‘wind-also’). Particles with the former bear H, which we have accounted for by claiming that such words have a LHH lexical pattern, whereas particles with the latter bear L, which we account for below by supplying the particle with a default L.

We conclude this section by raising a couple of questions for which we have no certain answers: (1) How did the KYENGSANG ACCENT SHIFT apply to R tone? (2) Why do monosyllabic and disyllabic reflexes of Middle Korean #R... have a LHH tone pattern in modern South Kyengsang Korean? With respect to the first question, Ramsey (1975:§3.6) gives a variety of reasons for considering Middle Korean R to be L+H spread over the two moras of a syllable, and this conforms to the way contour tones are best analyzed in many African languages. Ramsey also presents arguments that R should be considered an accent point. One might therefore expect the KYENGSANG ACCENT SHIFT to apply to R as well as H. Looking just at North Kyengsang, this looks like the correct analysis, i.e. the data in Table 3 suggest that Middle Korean R and H have ended up the same, differentiated only by the (originally tonally conditioned) vowel length distinction inherited from Middle Korean. The facts of South Kyengsang make this neat scenario seem not so neat. The reflex of Middle Korean R monosyllables is actually R in citation forms in South Kyengsang, and di- and trisyllables have L (without vowel length) on the initial syllable. It seems unlikely that proto-Kyengsang would have undergone the accent shift, resulting in the HH... citation pattern characteristic of both North and South Kyengsang in reflexes of Middle Korean H... words, then South Kyengsang took just those words that originally had R and changed the initial syllable to L. A more likely scenario is that Middle Korean R and concomitant vowel lengthening were retained intact into proto-Kyengsang. After the North-South Kyengsang split, North Kyengsang leveled the R to H but retained vowel length (now as a contrastive feature), whereas South Kyengsang lost vowel length except in the one case where it was most salient, viz. monosyllables, where there still are numerous minimal sets like *mǎ:l/mál* ‘speech/horse’, *pǎ:m/pám* ‘chestnut/night’, *nǔ:n/nún* ‘eye’, *ǐ:l/íl* ‘work/two’, *sǎ:y/sáy* ‘bird/new’. In longer words, with the loss of vowel length, the H component of the R (= L+H) was absorbed into the following H.

¹¹ With respect to tonal behavior, this is true for disyllabic and trisyllabic words. Data recorded from Yong-Hee Chung, to whom we are grateful, raise some question about monosyllables, however. Cho et al. (2007), in a phonetic study that contrasted reflexes of MK initial R in monosyllables and disyllables in NKS and SKS, found that words like SKS *nǔ:n*, NKS *nú:n* ‘snow’ had R in SKS but H in NKS, and when particles were suffixed, as in SKS *nùn-í*, NKS *nú:n-í* ‘snow-nom’, SKS had a short vowel on the noun and a LH pattern whereas NKS retained vowel length and had the HH pattern characteristic of “preaccent” words, i.e. reflexes of Middle Korean words with initial H. Our recordings of Young-Hee Chung, limited though they are in number, have a fairly clear rise on such words in isolation and a LH pattern when a particle is affixed, though the vowel of the noun remains long. The differences in the findings of Cho et al. (2007) and our recordings may reflect variation within NKS.

An answer to the second question is harder to come by. Why should an original R on the first (or only) syllable impose a H on a suffix or a following item in the same phrase (see below)? In Hamkyeng, particles affixed to atonic words (those from all L in Middle Korean) have H, whereas those affixed to accented words have L. From a Hamkyeng perspective, reflexes of Middle Korean R... words in South Kyengsang seem to be atonic, but the KYENGSAANG ACCENT SHIFT should have moved H off all particles, regardless of accent on the host! At the moment we admit to having no coherent account of the facts.

With this historical background as a reference point, we return to the analysis of modern Kyengsang pitch accent.

4. Accent groups

An accent group is a string of one or more morphemes that are tonally phrased together. The right edge of an accent group is signalled by a boundary L%, which will be either a falling intonation from a H (*mál* ‘horse’, *sàlám* ‘person’, *pòkswúngá* ‘peach’) or a string of one or more L tones following a H (*mál-màn* ‘horse-only’, *múcíkày-kà* ‘rainbow-nom’, *myénùlì-tò* ‘daughter-in-law-also’). Grouping of elements into an accent group signals a close morphosyntactic connection between the elements. Common types of accent groups are, N+N compounds (*sìnkúmchí-nàmùl* ‘seasoned spinach’—spinach-seasoned vegetables), N+suffix (*màl-chélèm* ‘horse-like’), pre-noun+noun (*chó-yélùm* ‘beginning of summer’—first-summer),¹² number+noun (= “counter”) ([*yenphil*] *tù cálwú* ‘two [pencils]’—[pencil] two “brushes”), and object+verb (*mánùl mèknùntà* ‘eats garlic’). Formation of accent groups is, to some extent, pragmatically conditioned, so whether or not a string is analyzed as an accent group in part relies on the rather circular criterion of whether or not the string exhibits the tonal and intonational characteristics of an accent group.

The lexical tonal properties of a root always show up when that root is the first element in an accent group. That is, the tone patterns of all classes, with the exception of certain TONELESS words, will always show up over the first three syllables of the accent group. The significance of the division between ACCENTED and UNACCENTED words in the table on the first page becomes apparent in accent groups. ACCENTED words are those that have a HL drop as part of their lexical tone pattern. Let us call this HL drop the *accent point* of an accent group. Consider the tones of accent groups in (3) with HL and LHL nouns as the first member:

Table 4. Accent groups where the first member has a lexical HL drop (*accent point*)

HL + toneless	únhà yng	nàmú	únhà yng-nàmù	ginkgonut tree
HL + LHH	kwúlì	wùsán	kwúlì-wùsán	copper umbrella
HL + HL	kwúlì	pàncì	kwúlì-pàncì	copper ring
HL + LHL	yélùm	sònàkì	yélùm-sònàkì	summer rain shower
LHL + toneless	pèngé lì	càngkáp	pèngé lì-càngkáp	mitten (dumb-glove)
LHL + LHH	èmé nì	cànglyéysìk	èmé nì-cànglyèysìk	mother’s funeral
LHL + HL	nòlìkày	càngsìk	nòlìkày-càngsìk	decoration
LHL + LHL	tòkkáypì	pàngmàngì	tòkkáypì-pàngmàngì	bat (ghost bat)

In all these accent groups, once the accent point is reached, the remainder of the accent group has all L tones, or at least the lexical H tones following the L are greatly attenuated. Ramsey (1975:186) says, “In normal speech some—if not most—of the

¹² “Pre-noun” is the traditional Korean term for a number of elements that can precede nouns in noun phrases, such as determiners like *ku* ‘this’ and a small group of “adjectives” such as *sáy* ‘new’.

phrases within a clause [after an accent point] have reduced accents [where “accent“ = H tone]; it is very rare for all the accents even to be audible.” Some studies of Kyengsang dialects have described this phenomenon as H deletion (Chung (1991) and other refs.***). Both Kenstowicz and Sohn (1997) and Jun et al. (to appear), however, present F0 tracings that show a “ghost” of the lexical tones rather than complete deletion of H’s.¹³ We propose that either outcome—complete loss of H or considerable attenuation of H—can be understood if the HL drop in pitch is an *accent point*, i.e. that tonal dialects of Korean have pitch accent systems very much like that long accepted for Japanese. As in languages with stress accent, Korean pitch accent is *culminative*, i.e. there is a single point of prominence in an accented domain that leads to attenuation, if not complete loss of other prominence points (= other stressed syllables in a stress language, other H tones in a pitch accent language).

Most descriptions of Kyengsang pitch phenomena make what we view as an analytical error in equating H tone with “accent”.¹⁴ This analysis seems suspicious simply on the basis of the fact that several surface tone patterns bear H tones that have no demonstrable accentual effects, but what is particularly surprising is that no one, to our knowledge, has cited the considerable typological similarity between Korean tonal/pitch accent dialects and Japanese, where linguists have long accepted a pitch accent analysis with a HL drop signalling an accent point.¹⁵ For two syllable nouns, the facts of Hamkyeng Korean are identical to those for Tokyo Japanese, as shown by comparing often-cited Japanese minimal sets, e.g. Haraguchi (1999:6), to Hamkyeng Korean nouns with comparable patterns, taken from Ramsey (1975:83):

Table 5. Hamkyeng Korean and Tokyo Japanese tone/accent sets

Lexical tone	Hamkyeng citation	Hamkyeng w. particle		Japanese citation	Japanese w. particle	
H	páy	páy-kà	boat-nom	é	é-gà	picture-nom
accentless	pày	pày-ká	pear-nom	è	è-gá	handle-nom
HL	mókì	mókì-kà	mosquito-nom	hàsì	hàsì-gà	chopstick-nom
LH(L)	mèlí	mèlí-kà	hair-nom	hàsí	hàsí-gà	bridge-nom
accentless	pòlí	pòlí-ká	barley-nom	hàsí	hàsí-gá	edge-nom

The surface tonal facts in Kyengsang Korean are somewhat different because of the KYENGSANG ACCENT SHIFT, but as we will see, the basic picture is the same.

Having laid the groundwork for an analysis that incorporates HL as an accent point, we now return to lexical patterns where words do not always incorporate a HL tonal sequence in the roots cited in isolation. Consider first the HHL class, where, in isolation, monosyllables have a H citation pattern and disyllables have a HH citation pattern. Is the final HL of the putative full lexical pattern an accent point, or is the L that is heard in trisyllabic words such as *múčíkày* ‘rainbow’ assigned by rule to avoid an illegal *HHH sequence in a root? The answer is that for this pattern, HL is an accent point. This is most evident when HHL monosyllabic words are the first member of an accent group. The HHL pattern overrides the tone pattern of any second member, regardless of its lexical tone class. A sequence of more than three H tones is legal across a boundary in an

¹³ Kentstowicz and Sohn (1997) account for the drop in pitch of H following a HL as tonal *downstep*. We discuss their analysis in a later section.

¹⁴ The one description that we are aware of that considers a HL drop rather than just H to be an accent point is Jun et al. (to appear).

¹⁵ The morphosyntactic typological similarity between Japanese and Korean, presumably through centuries of intense contact, is so striking that some linguists have gone so far as to say that sentences of one language could be translated into the other simply by making morpheme for morpheme substitutions (reference?). For the pitch accent systems of the two languages NOT to be alike is what would need explanation!

accent group (e.g. *sàkwá-námú* ‘apple tree’, *kàúl-múčíkày* ‘autumn rainbow’). An analysis that says that the final L of *múčíkày* ‘rainbow’ is necessary in order to avoid a *HHH sequence therefore cannot explain why the lexical H of *mínàlì* ‘parsley’ becomes L in the accent group *múl-mínàlì* ‘water parsley’. The sequence HHL in this accent group must come from the lexical pattern of *múl*, which includes a HL drop, in this case as floating tones that show up on following material in an accent group, whether that material be particles or another root.

Table 6. Accent groups with an initial HHL noun

H(HL) + t-less 1	páp	cíp	páp-cíp	rice house
H(HL) + t-less 2	thóng	nàmu	thóng-námù	a whole log
H(HL) + t-less 3	múl	sámákwí	múl-sámàkwì	praying mantis (sp.)
H(HL) + LHH	pí	wùsán	pí-wùsán	rain umbrella
H(HL) + HLL	páp	ácìmè	páp-ácìmè	women that cooks rice
H(HL) + HHL				
H(HL) + LHL	múl	mínàlì	múl-mínàlì	water parsley
HH(L) + toneless	swúkcwú	nàmúl	swúkcwú-nàmùl	beansprout salad
HH(L) + HL	kwúlúm	cèncì	kwúlúm-cèncì	ubiquitous clouds
HH(L) + HHL	kúlím	múlqkám	kúlím-mùlqkàm	picture dye
HH(L) + LHL	hínsáyk	tòhwàcì	hínsáyk-tòhwàcì	white sketch paper

Words of the TONELESS class come historically from Middle Korean words with all L tone. Above we have proposed that words of this class have no lexically associated tone but take on a LH pattern as a way to avoid prohibited pitch sequences. Words with this pattern have been called “final accent” in some studies, and a number of analyses have been proposed for why words with “final accent” does not “delete” the H of a following element in an accent group. The answer is straightforward in an analysis that takes a HL drop, rather than just H, to be an accent point and requires such an accent point for reduction/deletion of following potential prominence points. The examples of accent groups here have disyllabic TONELESS members in initial position and second members from classes other than HHL in second position. Accent groups with TONELESS monosyllabic initial members and/or HHL second members require special comment, to which we return below.

Table 7. Accent groups with initial TONELESS noun

t-less 2 + t-less 1	nàmú	kkwún	nàmú-kkwún	woodcutter
t-less 2 + t-less 2	sàkwá	nàmú	sàkwá-nàmú	apple tree
t-less 2 + t-less 3	nàmú	kwùkyéngkkwún	nàmú-kwùkyéngkkwùn	tree sightseer
t-less 2 + LHH	nàmú	wùsán	nàmú-wùsán(i)	wood umbrella
t-less 2 + HL 2	nàmú	thómàk	nàmú-thómàk	woodchip
t-less 2 + HL 3	nèké	myénùlì	nèké-myénùlì	your daughter-in-law
t-less 2 + LHL	nèké	àcèssì	nèké-àcèssì	your uncle

The final class to be considered in initial position of an accent group is the LHH class from Table 1, such as *sě*: ‘bird’,¹⁶ *sàlám* ‘person’. The full pattern is revealed only when such words are part of a construction of at least three syllables. In the table on the first page, the patterns are distributed over the noun and added particles. The LHH pattern

¹⁶ Recall that when cited as a root alone, monosyllabic members of this class have R tone and a long vowel. See the end of section 2 following (2).

also (nearly) always shows up in accent groups with other items as the second member. Here is the full set of patterns for these words.

Table 8. Accent groups with LHH initial member

2 nd member	LHH 1 st		LHH 2 1st	
TONELESS 1	kàyttóng(í)	dog shit	sàlámttóng(í)	human excrement
TONELESS 2	kàytótúk(í)	dog thief	sòchélnámú	pine tree
TONELESS 3	kòmmánwúlà	bear-like wife	sèwúlpókswúngà	Seoul peach
LHH 1	pànmál(í)	familiar speech style	sèwúlmál	Seoul speech
LHH 2	nùnsálám	snowman	sàlámpángkwú	human fart
HL 2	pànkélúm	half-stride	sàlámméli	human head
HL 3	sèmácìmày ¹⁷	island wife	sèwúlmyénulì	Seoul daughter-in-law
LHL 3	tòncwúménì	money pocket	sèwúlácéssì	Seoul uncle
HHL 1	pàntál(í)	halfmoon	tàychwúmúl	jujube water
HHL 2	tòntáncí	money jar	sàlámchékchwú	human spine
HHL 3	silmúcífkày	thread-like rainbow	sèwúlháláypì	Seoul grandfather

As noted, accent groups with a LHH first member appear to have the LHH spread over the first three syllables in nearly all cases. This includes accent groups with monosyllabic first and second members, where the full tone pattern shows up only when a particle is added, as in *kàyttóng(í)* ‘dog shit’ (the toneless second member alone plus a particle would have HL, e.g. *ttóng-ì* ‘shit-nom’). Of interest for the claim that a HL drop constitutes an accent point with attenuation of subsequent potential prominence points are cases like *sèwúl-ácéssì* ‘Seoul uncle’ and *sàlám-chékchwú* ‘human spine’, which have LHHH over the four syllables. The underlined H tones in these accent groups can be explained only as coming from the lexical pattern of the respective nouns (HHL *chékchwú* and LHL *ácéssì*). Above we saw that these H tones would be attenuated/deleted when the first member had a lexical HL drop (*yélùm + sònàkì* → *yélùm-sònàkì* ‘summer rain-shower’). The lexical LHH pattern, however, does not include a HL drop, i.e. these words are not accented. Therefore, when these words are the first member of an accent group, a H in the second member retains its prominence.

The one item in Table 7 that disturbs the claim that the LHH pattern is imposed over the first three syllables of an accent group is the boldfaced item *sèm-ácìmày* ‘island wife’, which has L on the the third syllable. It looks as if the HLL lexical pattern of *ácìmày* is retained, blocking the imposition of the LHH pattern. We propose to account for this by restricting the LHH pattern to initial position in the configuration $[\sigma_1^3]_{\text{ACCENT GROUP}}$, i.e. initial in an accent group consisting of no more than three syllables. Neither the location of morpheme boundaries nor the morpheme category (root or particle) within the group make a difference. In all other contexts “LHH” words fall together with TONELESS words. Because of the interplay of constraints and syllabic combinations, the only accent group type where the effect of this distributional restriction of the LHH pattern shows up overtly is in an accent group of the shape $[[\sigma]_{\text{LHH ROOT}}[\sigma \sigma]_{\text{HLL ROOT}}]_{\text{ACCENT GROUP}}$. Crucially, however, both the LHH and the toneless categories lack a lexical HL accent point, and a coherent analysis seems possible only if one treats this class of words as TONELESS except in the $[\sigma_1^3]_{\text{ACCENT GROUP}}$ environment (see section 6).

Before looking at other lexical tonal combinations in accent groups, let us return to the constraints on tone patterns that we found to apply within phonological words.

¹⁷ See discussion below for the tones on this word.

- *[L]_{PHON. WORD}, *#LL: Phonological words cannot bear all L tones nor can they begin with two L syllables. These constraints carry over when words are combined into accent groups. We thus reformulate the first as *[L]_{ACCENT GROUP}, which includes phonological words and larger combinations.
- *XLH (X ≠ null): This constraint prevents a rise to H once there has been a drop from H to L (note that X would have to include a H). This, too, is a general constraint on accent groups that follows from the culminative effect of reaching a HL accent point, which attenuates any following prominence points (= H tones). If an accent point has not been reached by the first syllable of the second member of an accent group, that syllable has H tone.

sàkwá + TONELESS nàmú → sàkwá-námú
 nàmú + TONELESS kwùkyéngkkwún → nàmú-kwùkyéngkkwùn
 nàmú + LHH wùsán → nàmú-wùsán
 nèké + LHL àcèssi → nèké-àcèssi

We can account for this by assuming that initial L in citation patterns in Table 1 is not part of the lexical tonal pattern. Only H is associated lexically. L is then associated with the initial syllable of an ACCENT GROUP if that syllable does not have a lexically associated tone. If there is a H later in the accent group, it spreads leftward to syllables that are not associated with a tone.¹⁸ Using an autosegmental account, *nèké-àcèssi* ‘your uncle’ would have the following derivation as a first approximation:

(4) Assigning tone to initial root syllables

H L		L H L		L H H L
/neke accessi/	INITIAL L →	neke accessi	H SPREAD →	[neke accessi]

(In a canonical autosegmental treatment, the last step would be shown as leftward spread of the H, not association of separate H’s to each syllable, of course.)

- *HHH: A phonological word cannot have three H syllables. This is a constraint applying within phonological words, but not accent groups, as can be seen in a number of the accent groups above that have three consecutive H syllables. However, this constraint holds for phonological words WITHIN accent groups, which accounts for an otherwise curious fact. In citation form, trisyllabic TONELESS words have a LHH pattern, e.g. *èngténgí* ‘rump’, *mànúlá* ‘wife’, *pòkswúngá* ‘peach’. However, in accent groups with no internal accent, all such trisyllabic words as the second member of the accent group have the tone pattern HHL, e.g. *màl-éngténgì* ‘horse’s hindquarters’, *kwùm-mánúlà* ‘bear(like) wife’, *sèwúl-pòkswúngà* ‘Seoul peach’. In the discussion above, we saw that the initial L of citation forms applies only to the initial syllable of an accent group. A HHL pattern for the trisyllabic words as the second member in these accent groups is thus the only legal pattern:

**mál-ènténgí* (with citation tone of *mál* ‘horse’) violates *XLH (X ≠ null)
 **màl-ènténgí* violates *#LL
 **màl-éténgí* violates *HHH within a phonological word
màl-éténgì is the only pattern that does not violate any constraints on tone patterns

¹⁸ These rules express essentially the same generalization as Ramsey’s (1975:85) Pitch Assignment Rule I.

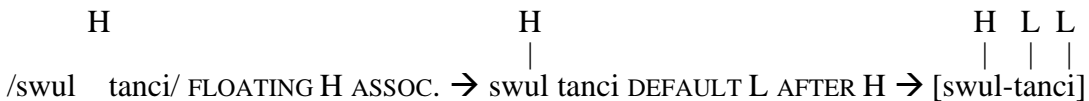
We now turn to accent groups that present analytical problems and/or require comment in addition to the general principles laid out to this point. Let us consider first accent groups comprising a TONELESS monosyllable and HHL word.

Table 9. Accent groups with TONELESS 1 first member, HHL second member

2 nd member	TONELESS 1 ^{1st}		TONELESS 2 1st	
HHL 1	kkóchmùl *kkòchmúl(H)(L)	flower water	tòtúknòm *tòtúknóm(H)(L)	thief bastard
HHL 2	swúltàncì *swúltáncí(L)	wine jug	nèkécàsik ~ nèkécásík(L)	your children
HHL 3	àphcéngpákì	front of head	kàúlmúciókày	autumn rainbow

Rather than the attested forms, we would expect the starred forms. The first syllable of the TONELESS first member should be associated with L as the first syllable of an accent group, and because TONELESS words, by definition, do not have a HL drop (= accent), the second member should retain its HHL tone pattern. However, the three starred forms have a H on the last or only syllable of the TONELESS first member and L on the second member. Ramsey (1975) provides the historical explanation for the attested forms. Words that we have been referring to as HHL are the reflexes of words that had H initial tone in Middle Korean. The KYENGSANG ACCENT SHIFT shifted all tones one syllable to the left, and Middle Korean initial H became a floating H preceding the word—in the terminology of Ramsey (1975), these words became *preaccent*. If the preceding word in an accent group was *atonic* (= Middle Korean all L), the floating H of a preaccent word associated with the final syllable of the preceding atonic word.¹⁹ The attested forms in the table above are a reflex of the situation after the Kyengsang Accent Shift but before the change of the citation form of preaccent words to the modern HHL pattern. With this historical explanation, the expression for ‘wine jug’ would thus have the following derivation.

(5) Assignment of “preaccent” to a preceding TONELESS syllable



Language change leaves all sorts of bits and pieces of history as anomalies in the synchronic patterns of languages, and the attested patterns rather than the starred ones in the table above are such a case.²⁰ It would, of course be possible, to propose a clever analysis, using special underlying forms and rules operating on them to yield the attested patterns. Kim and Schuh (2006), following Ramsey (1975),²¹ essentially do this by proposing a “preaccent” class, with lexical forms having an initial floating H that associates with the preceding word if there is one and a rule that moves the floating H to

¹⁹ If the first word of the accent group has a lexical accent (a HL drop), the “preaccent” of the second word is lost, as expected, as in the HL + “preaccent” accent group /yé'lùm + H-mucikay/ → [yé'lùm-mùcìkày/ ‘autumn rainbow’.

²⁰ The R tone and long vowel of LHH monosyllables such as *mǎ:l* ‘speech’ constitute another such case in SKK. While a number of other dialects of Korean, including North Kyengsang and some non-tonal dialects, retain vowel length as a distinctive lexical property. SKK has this single remnant of vowel length, which it retains only in the service of the lexical LHH tone pattern on monosyllables cited without additional syllables to carry the floating H.

²¹ We do not attribute claims about underlying forms and derivational processes to Ramsey. His intent was to relate modern Korean tone patterns to their Middle Korean antecedents, not to propose a comprehensive formal analysis of modern Korean phonology.

the second syllable if the preaccent word is phrase initial. The latter rule, however, is merely a statement of the facts, not an outcome that flows from some deeper principle.²² In fact, we have no idea why Middle Korean words that were pronounced HL(L) are now pronounced HH(L).²³ As an account of the facts of modern SKK, we propose that monosyllabic and disyllabic “preaccent/HHL” words have two lexically distinct allomorphs, /H-X/ (X = the mono- or disyllabic root) and /HHL/. The former appears only as the second member of an accent group where the first member is a TONELESS monosyllable or disyllable, the latter elsewhere.

This almost surely has to be on the right track from the point of view of *learning*—modern SKK speakers learn the HHL pattern as the base, but learn that words of this class have “special” pronunciation in certain limited cases. By far, the pattern that the learner would most frequently hear is the HHL pattern. This is the citation pattern and the pattern in first position of an accent group for all the words in question. It is also the only pattern for trisyllabic nouns of this class when they are the second member of an accent group following a TONELESS first member, even though, from a historical point of view, they should have a preaccent that would associate with a preceding word to yield a ...H-LLL pattern. This latter observation provides further evidence that the actually audible HHL pattern has replaced the “covert”, albeit historically “correct”, preaccent pattern as the base pattern, leaving the latter as a bit of historical detritus that we formalize as a contextually limited allomorph of mono- and disyllabic members of this class. Trisyllabic HHL words have abandoned a “preaccent” lexical allomorph, and disyllabic HHL words seem to be moving in this direction as well, as suggested they the alternant realizations *nèké-càsik* ~ *nèké-cásik* ‘your uncle’.²⁴ Jun et al. (2004), in investigating our TONELESS class as first member and our HHL as second member of an accent group for the North Kyengsang dialect report that their six subjects, all in their 20’s, use only the HHL tone pattern in this context.

Finally, there is a tonal anomaly among accent groups with a TONELESS first member and a LHH second member.

Table 10. TONELESS first members and LHH second members

2 nd member	TONELESS 1 ^{1st}		TONELESS 2 1st	
LHH 1	kkóch-màl	flower meaning	nàmú-sók(ì)	tree interior
LHH 2	cìp-kwúltwúk(ì)	house chimney	nàmú-wúsán(ì)	wood umbrella

In the discussion following Table 8, we suggested that the lexical LHH pattern is restricted to initial position in $[\sigma_1^3]_{\text{ACCENT GROUP}}$, and that elsewhere words of this class fall together with the TONELESS class. This would include all cases where nouns of the LHH class are not initial in their accent group and hence would account for all the items in Table 10 except for monosyllabic TONELESS+monosyllabic LHH, as in *kkóch-màl* ‘flower meaning’. The HL pattern of *kkóch-màl* is unexpectedly like that for monosyllabic TONELESS+monosyllabic “preaccent” (*kkóch-mùl* ‘flower water’) rather than monosyllabic TONELESS+monosyllabic TONELESS (*kkòch-pyéng* ‘flower vase’). The first thought is to invoke effects of the KYENGSAANG ACCENT SHIFT as we did in accounting for the different behavior of HHL/“preaccent” words depending on whether they were initial or non-initial in an accent group (see Table 9). However, the accent shift seems not to

²² Kenstowicz and Sohn (1997) also propose a single underlying form to which the same criticism can be leveled (see §7.2).

²³ The explanation surely lies in the historical telescoping of several changes which are forever lost to us. Note that the HHL outcome fills a gap in the possible combinations of H and L over three syllables, excluding the illegal strings *HHH and *LL preceding a H.

²⁴ We need to check whether this ambivalence extends to all combinations of this type. Do speakers vary? Are some expressions frozen with one pattern or the other? Does the internal syntax of the accent group make a difference?

have affected Middle Korean R, which is the source of the LHH class (see Table 3 and discussion), even in the other forms in Table 10. Inasmuch as no principled account of the HL pattern of *kkóchmàl* emerges from any of the more general constraints or principles that we have seen to apply, we leave this as an unaccounted for anomaly.

5. Tone of particles and HL as an accent point

In Middle Korean, all monosyllabic particles bore H tone. In the Hamkyeng dialect studied by Ramsey (1975), the H reflex of the Middle Korean tone shows up on particles that are affixed to atonic words as in the Hamkyeng form *pòlí-ká* ‘barley-nom’ seen in Table 5, but if a particle is affixed to a word with a lexically associated H (which Ramsey calls an *accent*) the particle is L, as in *mókì-kà* ‘mosquito-nom’, *mèlí-kà* ‘hair-nom’. Ramsey’s (1975:85) Pitch Accent Rule I assigns L to all syllables following an accent (= lexically associated H). A Japanese-type account, however, defines accent as a HL drop. The HL drop of *mèlí-kà* shows that *mèlí* ‘hair’ is an accented word and hence shows a drop in pitch if a syllable is available to bear the L. The absence of a drop in *pòlí-ká* shows that *pòlí* does not have an accent. The particle *-ka* does not have a tone of its own. The tone it bears is a function of the type of word that it is affixed to. Under this analysis, the tonal properties of particles have been reinterpreted from a situation in Middle Korean where particles had a lexical H tone to a situation where they have no tone.

In Kyengsang Korean, the facts are somewhat different. Following Ramsey’s (1975) scenario, the Kyengsang Accent Shift has displaced the Middle Korean H tone of particles to the left, such that this tone shows up on the final syllable of atonic words. We have used this scenario to explain the LH-L pattern seen in *tòtúk-nòm* ‘thief bastard’ from Middle Korean LL *tòcÁk* ‘thief’ + H *nóm* ‘guy’. In Hamkyeng, where there has been no accent shift, and Kyengsang, the tonal treatment of particles differs in striking ways.

Table 10. Comparison of Hamkyeng and Kyengsang nouns with particles

Hamkyeng lexical tone	Hamkyeng citation	Hamkyeng w. particle	Kyengsang lexical tone	Kyengsang citation	Kyengsang w. particle	
H	páy	páy-kà	HHL	páy	páy-ká	boat-nom
HL	mókì	mókì-kà	HHL	mókí	mókí-kà	mosquito-nom
accentless	pày	pày-ká	TONELESS	páy	páy-kà	pear-nom
accentless	pòlí	pòlí-ká	TONELESS	pòlí	pòlí-kà	barley-nom
< MK R	mál	mál-í ²⁵	LHH	mǎ:l	màl-í	speech-nom
< MK R	sàlám	sàlám-ì	LHH	sàlám	sàlám-í	person-nom
LH(L)	mèlí	mèlí-kà	HL	méli	méli-kà	hair-nom

In Hamkyeng, particles bear H only when affixed to “accentless” (= TONELESS) roots. Under the Japanese-type scenario above, they bear H tone because the word has no lexical accent, which would be signaled by a HL drop. For an accented word like *mèlí* ‘hair’, it is the L on the particle in *mèlí-kà* that shows that the word is accented.

In Kyengsang, particles bear H only when they are associated with H that is part of a lexical tone pattern (the second H of the HHL pattern for *páy-ká* ‘pear-nom’, the first H of the LHH pattern for *màl-í* ‘speech-nom’, and the second H of the LHH pattern for

²⁵ Ramsey (1975:149-150) does not give any examples of Hamkyeng reflexes of Middle Korean R words with particles. However, he says, “But the correspondences to the ‘rising tone’ are now short in South Hamkyeng, and since they are accented, they have merged with the accented one-mora syllables...” Assuming that Middle Korean R tone syllables have completely fallen together with H syllables in both vowel length and pitch, presumably the tones of particles with reflexes of the two classes have also fallen together.

sàlám-í ‘person-nom’). Otherwise, particles bear L tone. In effect, accent plays no role at all in assigning tone to particles in Kyengsang.²⁶ Stated in autosegmental terms, Hamkyeng particles are associated with L when affixed to accented words, H elsewhere; Kyengsang particles associate with a lexical (floating) H but with (default) L elsewhere. In neither dialect would particles need to have a lexical tone—tone would be assigned by the roots to which particles are affixed or as a default.

We have referred to the HL drop as an “accent point”. We have referred to this drop as “accent” because when this point is reached, potential prominence points later in an accent group are attenuated, an effect much like that associated with primary stress in a stress accent language. If it turns out that any HL drop has this effect, there would be no need, at least in Kyengsang Korean, to have “accent” as a phonological property distinct from tone.

In Hamkyeng Korean, a particle bearing L will always be post-accent, so the issue will never arise as to whether a HL drop where the L is associated with the particle constitutes an accent point. In Kyengsang, however, a construction like *pòlí-kà* ‘barley-nom’, comprising a lexically TONELESS word + particle includes no lexical accent (indeed no lexically assigned tones at all), yet it has a surface HL drop. Is this drop an accent point? In most constructions, particles would close an accent group such that the attenuating effect of a HL accent point would not show up on following material, i.e. that material would constitute the beginning of a new accent group. There is, however, at least one construction where a particle can be interior to an accent group. This is OBJECT + VERB where the object NP bears the accusative case marker. In such a construction, the object can be tonally phrase with the verb.²⁷ Consider the following sentences that have the HL verb *mékèsstà* ‘ate’ as the second member:

(6) Object NPs preceding a HL verb

TONELESS object, no particle, one accent group:	<i>nàmúl mékèsstà</i>	‘ate salad’
TONELESS object with particle, two accent groups:	<i>nàmúl-ùl mékèsstà</i>	‘ATE salad’
TONELESS object with particle, one accent group:	<i>nàmúl-ùl mèkèsstà</i>	‘ate SALAD’
HL object, w. or w.o. particle, one accent group:	<i>chámchì(-lùl) mèkèsstà</i>	‘ate tuna’
HL object, object with particle, two accent groups:	<i>chámchì-lùl mékèsstà</i>	‘ATE tuna’
HHL object, no particle, one accent group:	<i>páp mékèsstà</i>	‘ate rice’
HHL object, with particle, one accent group:	<i>páp-ùl mèkèsstà</i>	‘ate RICE’
HHL object, with particle, two accent groups:	<i>páp-ùl mákèsstà</i>	‘ATE rice’

When the object has no particle, object+verb phrase as one accent group, with the tonal properties illustrated in noun+noun constructions. When the accusative particle is present, the noun+particle acts like a word with lexical accent. Thus, in *nàmúl-ùl mèkèsstà*, the underlined HL drop causes attenuation/deletion of the lexical H on the verb, and in *páp-ùl mèkèsstà*, the initial H of the verb is lost as when HHL nouns precede nouns with initial H (Table 6).

²⁶ When affixed to disyllabic HHL words, a particle will bear the L of the HL drop, as in *mókí-kà* ‘mosquito-nom’, but unlike Hamkyeng Korean or Tokyo Japanese, where the tone on the particle is, itself, the indicator of the presence of an accent, the tone of the particle in Kyengsang could be assigned by rule, for example, as a default tone assigned after a HH sequence in a phonological word.

²⁷ Ramsey (1975:177), illustrating with data from the Kimhay dialect of South Kyengsang (the dialect described in the present paper), states that a particle blocks phonological phrasing of following material into a single accent group. Our data, however, show that this is not necessarily the case. Phrasing as an accent group is, in part, conditioned by pragmatic factors such as focus. It is not clear from Ramsey’s data, drawn from a 1955 paper by He Wung, whether blocking of accentual phrasing over a particle is an absolute grammatical restriction or a tendency.

6. Toward an Analysis

We have now arrived at a point where we can suggest an analysis for the data laid out in the sections above. We first argue that lexical forms specify only the association of H tones, with all syllables not lexically linked with a H being unspecified for tone. We then lay out a rule-based autosegmental analysis for deriving the surface tone patterns of accent groups. Finally, we provide some ideas for a constraint based analysis for those who care to tinker with it.

Data at the end of the previous section show that particles, which are arguably unspecified for tone, can, nonetheless be part of a HL accent point. This suggests that the HL drop, which we have defined as an accent point, and the prosodic property of “accent” itself are derived rather than prosodic primes. Another piece of evidence comes from quadrisyllabic words like *hàypáláki* ‘sunflower’, which we suggested are lexically toneless, with their LHHL citation pattern following from constraints on tone sequences. The surface pattern of such words has a HL drop, and indeed, this acts as an accent point. For example, *hàypáláki-kkòch* ‘sunflower blossom’ has L on *kkoch* ‘flower’ rather than H as it would have in citation form.

Table 11 gives the lexical representations for words whose citation tones are shown in Table 1.

Table 11. Underlying tonal representations of the five South Kyengsang classes

Class in Table 1	Lexical tone	Examples	Surface	
HL	H σ σ ₁	H H meli myenuli	méli myénùli	head daughter-in-law
HHL	H / \ σ (σ) / [AcG___	H H H / \ nwun moki mucikay	nwún mókí múcíkàý	eye mosquito rainbow
	H σ(σ) / [AcG (σ)σ__	H H swul -tanci totuk -nom	swúltàncì tòtúkñòm	wine jug thief bastard
LHL	H σ σ σ	H minali	mìnàlì	parsely
LHH	H / \ σ (σ (σ))	H H / \ mal salam	mǎ:l sàlám	speech person
TONELESS	No lexical tone.	mal kaci pokswunga haypalaki	mál kàcí pòkswúngá hàypáláki	horse eggplant peach sunflower

6.1. Rule-based autosegmental account. The rules below derive the surface tone patterns. See the attached spreadsheet for examples.

1. FINAL HH DELINKING:
$$\begin{matrix} H & \rightarrow & H \\ / \quad \backslash & & / \quad \backslash \\ \sigma & (\sigma(\sigma)) & \sigma & (\sigma(\sigma)) \end{matrix}$$
 except in $[\sigma_1^3]_{\text{ACCENT GROUP}}$

“Delink final HH except in an accent group of three or fewer syllables.”

$$2. \text{ DEACCENTING: } \begin{array}{c} \text{H} \rightarrow \text{H} / [\dots \text{H } \sigma_1 \text{ ____}]_{\text{ACCENT GROUP}} \\ | \quad \uparrow \\ \sigma \quad \sigma \end{array}$$

“Delink a H if preceded by a H with one or more intervening syllables in an accent group.” In most cases, the intervening syllable(s) at this stage in the derivation will be unassociated with a tone. However, this will also delete an initial H of a HL word following a HHL word: ‘rice preparer’ /páp H-ácime/ → páp H-acime. The floating H will associate with the following syllable by FLOATING H ASSOCIATION, resulting in *páp-ácime* (ultimately [páp-ácimè]). What we would *like* this rule to do is to attenuate the H tone rather than delete it, but autosegmental formalism does not provide a straightforward way to do this.

$$3. \text{ MORA ADDITION: } \begin{array}{c} \text{H} \qquad \qquad \text{H} \qquad \qquad \text{H} \\ | \qquad \qquad | \qquad \qquad | \\ \sigma \qquad \qquad \sigma \qquad \qquad / \text{mal} / \rightarrow \text{ma:l} \quad \text{'speech'} \\ | \qquad \qquad / \qquad \qquad \backslash \\ [\text{AcG } \mu] \qquad \rightarrow \quad [\text{AcG } \mu \quad \mu] \end{array}$$

“Add a mora of length to monosyllabic LHH roots comprising an Accent Group.” Such words have lengthening only when cited alone.

4. FLOATING H ASSOCIATION: “Associate unassociated H to nearest available syllable.”

This rule applies to the following cases:

- HHL monosyllabic root + untoned s:
 - nún H+-i → nún-í ‘eye-nom’
 - pí H + wusan → pí-wúsàn ‘rain umbrella’
- TONELESS+“preaccent”: swul- H tanci → swúl-tanci ‘wine jug’
- LHH accent groups of no more that three syllables
 - ma:l HH → ma:1 ‘speech’
 - mal-tul-i → mal-túl-í ‘speech-plural-nom’
 - salam HH → salám ‘person’
 - salam-to HH → salámtó ‘person-also’

$$5. \text{ INITIAL L ASSOCIATION: } \begin{array}{c} \emptyset \qquad \qquad \text{L} \\ | \qquad \qquad | \\ [\text{AcG } \mu \quad \mu] \rightarrow \mu \quad \mu \end{array}$$

“Associate L to the first mora of an accent group that (1) does not have a tone associated with it and (2) comprises at least two moras.” In South Kyengsang, $\sigma = \mu$ except for monosyllabic LHH words like *mǎ:l* ‘speech’, which have a mora added by rule #3. The “two mora” requirement blocks associating L to monosyllabic TONELESS words like *mál* ‘horse’, which bear H tone in citation form.

$$6. \text{ DEFAULT H ASSOCIATION: } \begin{array}{c} \emptyset \quad \text{H} \qquad \qquad \text{L} \\ | \quad | \qquad \qquad | \\ \sigma \rightarrow \sigma / [\text{AC GROUP } (\sigma) \sigma_0 \text{ ____}] \end{array}$$

Condition: The affected syllable is the first or second syllable of a root.

“Associate a H tone with the last untuned syllable of an accent group with the condition that the syllable cannot be the third or later syllable of a root.”

7. H SPREADING:
$$\begin{array}{ccc} & H & H & & L \\ & | & / \backslash & & | \\ \sigma_1 & \sigma & \rightarrow \sigma_1 & \sigma & / [_{\text{ACCENT GROUP}} (\sigma) \text{---}] \end{array}$$

“Spread H leftward to any untuned syllables in an accent group.”

8. FINAL L:
$$\begin{array}{ccc} & \emptyset & L \\ & | & | \\ \sigma_1 & \rightarrow & \sigma_1 / H \text{---}]_{\text{ACCENT GROUP}} \end{array}$$

“Associate L with any untuned syllables following a H in an accent group.” In addition to substantive items in accent groups, this rule will assign L to particles that have not been associated with a floating H by rule #4.

6.2. Stuff for a constraint-based analysis. We will not attempt to formulate a constraint-based analysis. For those interested in doing this, we present things that seem relevant. The proposed input forms are those in Table 11. Here are constraints that are surface-true for the data.

Constraints specific to South Kyengsang Korean

- *[L]_{ACCENT GROUP}: An accent group cannot bear all L tones.
- *#LL: An accent group cannot begin with two L syllables.
- *XLH (X ≠ null): A H cannot follow a non-initial L within an accent group. This is *pitch accent* stated in terms of a constraint.
- [...HHH...]_{ROOT}: A root cannot have three syllables bearing H.
- *[H...]_{ACCENT GROUP}: This constraint is not mentioned anywhere above. Unlike the constraints above, it is violable inasmuch as there are words (hence accent groups) that begin with H, e.g. *méli* ‘head’. However, it seems that it will be necessary to account for why all accent groups begin with L unless the first syllable is lexically associated with H.

Some other constraints: There are other constraints that play roles in the tonal phonologies of many languages that are relevant to Korean. In addition to the universal faithfulness constraints MAX-TONE and DEP-TONE, at least the following markedness constraints will probably be needed:

*FLOAT: Disallow floating tones.

*T₁ T₂
 $\begin{array}{c} T_1 \quad T_2 \\ \diagdown \quad / \\ \mu \end{array}$
 μ: Do not associate two (or more) tones to a single mora. *CONTOUR is a constraint that is probably needed in many tone languages, but most languages that have a heavy ~ light syllable distinction allow contours on bimoraic syllables, indicating the need for two constraints referring to contour tones. Appeal to this constraint, in conjunction with *FLOAT and MAX-TONE is probably the way to account for lengthening of the vowel in words like *mǎ:l* ‘speech’.

*∅

|

σ: Disallow syllables that are unassociated with any tone.

7. Other Analyses

In the following sections, we briefly summarize previous accounts of Kyengsang Korean tone/pitch accent. The purpose here is not a detailed discussion and critique of these analyses, but rather a comparison with the present account, with highlighting of certain analytical problems, at least some of which we hope to have avoided. All these accounts except Ramsey (1975) focus on the North Kyengsang dialect, but South and North Kyengsang are alike in all respects relevant to the discussion here.

7.1. Ramsey’s (1975) historically oriented account.

Ramsey’s historically oriented account (particularly concept of pre-accent)

Problems:

- citation tones of “pre-accent” words
- no systematic account of LHH words (< MK Rising tone)
- does not build in constraints on tonal sequences
- conclusion: the history explains a lot, but is probably not = modern system

7.2. Kenstowicz and Sohn’s (1997) “downstep” and “upstep” account. Kenstowicz and Sohn (1997) propose lexical representations for pitch accent by triangulating between citation tone patterns and tonal behavior in phonological phrases (= our “accent groups”). Using tonal behavior as diagnostic of phrasal units, they propose an account of where pitch peaks will fall under various focus situations. We will not consider this latter aspect of their paper. In the table H = H associated with one syllable, HH = H associated with two syllables, L = L associated with one or more syllables, σ = syllable without associated tone.

Table ##. Kenstowicz and Sohn (1997) compared with the present analysis

Kenstowicz and Sohn (1997)	The present account
<p>Non-final accent: /σ₀HL/ H pitch accent plus following L conditions <i>downstep</i> on any H later in the phonological phrase.</p>	<p>HL, LHL: /Hσ₁/, /σHσ/ Lexically, roots are specified only for H. Roots that have syllables following the H will take a default L, which will show up as a HL <i>accent point</i>. H’s later in the same accent group will be <i>attenuated</i> because of the culminative affect of accent.²⁸</p>
<p>Final accent: /σ₀H(L)/ The final L is present only “when the deletion of an underlying case marker is suppressed” (page 4, following (7)), i.e. this L shows up only on case markers.²⁹ Otherwise, the “final” H spreads to a following word in a phonological phrase, cause <i>upstep</i> on the last H in the phrase.</p>	<p>TONELESS: /σ₁/ Lexically, such words have no associated tone. H is assigned to the last “eligible” syllable and spreads left. The last eligible syllable will be the last syllable of a root that would not create a HHH string in one root. Because TONELESS words of three or fewer syllables do not have an accent point, roots later in an accent group are not deaccentuated.</p>

²⁸ The autosegmental formalism that we use does not allow us to represent “attenuation” as distinct from “delinking”, but we accept the relevance of Kenstowicz and Sohn’s (1997) observation that the H tones in question are not “deleted”.

²⁹ We bring up “case markers” as a general issue below.

<p>Double accent: (LHL) Follow a <i>final accent</i> word, the final H plus the initial L of the lexical pattern of the double accent word triggers downstep on the medial H of the double accent word. At the beginning of a phonological phrase, however, the initial L is suppressed and the medial H associates with the first syllable, yielding a surface H(H(L)) pattern.</p>	<p>HHL: /HHσ/ in [AC GROUP__], /H σ₁/ elsewhere This class has two lexical allomorphs, conditioned by being in initial or non-initial position in an accent group. Initial, they spread the lexical HH pattern over the first two syllables and deaccent following H. Non-initial, the floating H is deaccented (essentially = deleted) if the first word has a HL accent, and otherwise the floating H is associated with the final syllable of the preceding word.</p>
<p>The North Kyengsang counterparts of this class have fallen together tonally with the <i>double accent</i> class, but they remain lexically distinct by having a long vowel in the first syllable in North Kyengsang.</p>	<p>LHH: /σ₁³ HH/ When initial in an accent group of no more than three syllables, these words have LHH pattern. Otherwise, they fall together with the TONELESS class.</p>

In addition to accounting for tones of words in isolation Kenstowicz and Sohn seek to account for two salient tonal phenomena in larger phrases: (1) the drop, but not complete loss, of a H peak in the second word or a phrase when the first phrase has a non-final H (/nwúnà tàngnákwi/ → [nwúnà tàng↓nákwi] ‘sister’s donkey’) and (2) an actual rise in the pitch of a H in the second word of a phrase after a final accent (/nàmúl mékèsstà/ → [nàmúl ↑mékèsstà] ‘ate salad’). The first they interpret as *downstep*, triggered with the lowered H follows “a HL sequence on the tonal tier—the high associated to the accented syllable and the low to the following syllable”. The second they interpret as an *upstep*. “We postulate a process spreading the high tone [of a final high word] rightwards until the tone of the following word is encountered at which point a sequence of two successive H’s is created. Here we assume an upstep operation which raises the second of two successive H’s...”. There are a number of problems, both terminological and substantive with this “downstep” and “upstep” account. Jun et al. (2004) use similar ideas, so we return to a general discussion of the issue in §7.3.

Careful reading of Kenstowicz and Sohn’s paper reveals that all their lexical classes have at least some members whose tone pattern is LHL. For *non-final* words like *tàngnákwi* ‘donkey’, the word is actually pronounced this way in citation form. For *double* words like *éngténgì* ‘hip’, they propose LHL, where the initial L conditions “downdrift” on the medial H when second in a phrase with a *final* word in initial position, e.g. /nòlwú ènténgì/ → [nòlwú èn↓téngì] ‘deer’s hip’, but when such a word is initial in a phrase, the L is delinked and the H on the second syllable associates to the initial syllable, e.g. /ènténgì/ → [ɛ̣ énténgì]). For *final* words like *nàmúl* ‘salad’, they postulate a final L that appears “when the deletion of an underlying case marker is suppressed”, e.g. *nàmúl-i* ‘salad-nom’. What?! In what sense is a suffixed case marker “underlying” such that it can be suppressed? Particles as a class all bear L tone when suffixed to Kenstowicz and Sohn’s final class. In fact, in North Kyengsang, the only environment where particles bear H tone is when suffixed to monosyllabic “double accent” words, and in this case, Kenstowicz and Sohn’s analysis predicts the H by association of the particle with the medial H of the LHL lexical pattern. It is clear that the L on particles is a property of the particles, not of their hosts. In short, as far we can tell, Kenstowicz and Sohn provide no way to distinguish the three types of LHL words other than to stipulate that the LHL pattern behaves in different ways for different word classes.

7.3. Jun et al. (2004) intonational account. Jun et al. (2004) rely heavily on instrumental data to support an analysis in which utterances are “sparsely specified for tone”. They recorded six native speakers of North Kyengsang Korean in their 20’s saying sets of utterances controlled for position of pitch peaks. They propose underlying forms and concepts of *downstep* and *upstep* to account for the observed intonational

patterns. Much of the paper is devoted to the tonal/intonational realization of focus. As for Kenstowicz and Sohn (1997), who also proposed an analysis of focus, we will not consider that aspect of the paper here. In the table, all lexical representations are given as having three syllables. Jun et al. used only trisyllabic words in their dataset.

Table ##. Jun et al. (2004:(6)) compared with the present analysis

Jun et al. (2004)	The present account
<p><u>Initial accent:</u> %LH*+L</p> $\begin{matrix} & & \\ & & \sigma \sigma \sigma \\ \underbrace{}_{w[} & & \end{matrix}$ <p>H pitch accent plus following L conditions <i>downstep</i> on any H later in the phonological phrase. A rising “scoop” leading to the initial H peak represents <i>undershoot</i> of the initial %L boundary tone.</p>	<p><u>HL:</u> /Hσ₁/</p> <p>(see Table ##)</p>
<p><u>Penult accent:</u> %L H*+L</p> $\begin{matrix} & & \\ & & \sigma \sigma \sigma \\ \underbrace{}_{w[} & & \end{matrix}$ <p>H pitch accent plus following L conditions <i>downstep</i> on any H later in the phonological phrase. L pitch on the first syllable comes from the initial %L boundary tone, not L tone associated with the first syllable.</p>	<p><u>LHL:</u> /σHσ/</p> <p>(see Table ##)</p>
<p><u>Final accent:</u> %L H*+L</p> $\begin{matrix} & & \\ & & \sigma \sigma \sigma \\ \underbrace{}_{w[} & & \end{matrix}$ <p>“...when there is no post-accent syllable ... the L tone deletes at the lexical level, and the accent H is phonetically realized as a medium peak.” The “post-accent” syllable would be a particle, i.e. particles are added at the lexical level, whereas <i>intermediate phrases</i> (ip = our <i>accent group</i>, Kenstowicz and Sohn’s <i>phonological phrase</i>) are post-lexical. The final accent H conditions <i>upstep</i> on a following word in an ip. Unlike Kenstowicz and Sohn’s H-Spreading from a Final accent word, Jun et al. note that F0 tracings show a “remnant” of the word level boundary %L on the second word, and they thus propose that upstepping applies to all syllables following the H up to the pitch peak. The upstepping causes undershoot of the medial boundary %L. As for preaccent syllables, the first takes the boundary %L and the pitch rises from there to the accent by <i>interpolation</i>.</p>	<p><u>TONELESS:</u> /σ₁/</p> <p>(see Table ##)</p>
<p><u>Double accent:</u> %L H*+L</p> $\begin{matrix} & & \wedge \\ & & \sigma \sigma \sigma \\ \underbrace{}_{w[} & & \end{matrix}$ <p>H pitch accent plus following L conditions <i>downstep</i> on any H later in the phonological phrase.. When second in an <i>ip</i>, this class behaved like Initial accent word in Jun et al.’s study, i.e. they are upstepped after Final, downstepped elsewhere. This is the same as in South Kyengsang for three syllable words of this class (see Table 9 and discussion). Jun et al. did not test one and two syllable words, which are the types that show unusual behavior as word 2 in an ip.</p>	<p><u>HHL:</u> /HHσ/ in [AC GROUP__], /H σ₁/ elsewhere</p> <p>(see Table ##)</p>
<p>Not found in North Kyengsang. See Table ##</p>	<p><u>LHH:</u> See Table ##</p>

My comments are going to sound like saying, “My mind is made up, so don’t bother me with the facts,” but facts may be misleading. In the present case, I would question the extent to which details of intonation are relevant to the issue of Kyengsang lexical prosody. *Intonational phonology*, which accounts for overall melodies at phrasal levels, is distinct from *tonal phonology*, which accounts for lexically associated pitch phenomena. Jun et al. (2004), discussing trisyllabic Final accent words say,

“[Subjects] all show a gradual increase of f0 over the three syllables. This gradual rise can be interpreted as the result of an interpolation between word-initial L tone and the accent H tone of the word-final syllable, with the penultimate syllable unspecified for tone. This suggests that the surface

representation in NKK is sparsely, not fully specified for tone. Notice that this is not consistent with the previous analyses of NKK tones which assumed full specification of the surface representation.”

Reaching this analytical conclusion on the basis of pitch tracks is like observing that the wave form of “Why are you weary?”, composed only of sonorant sounds, is inconsistent with a level of representation in terms of individual phonological segments. It cannot be an accident that ALL previous accounts of Korean pitch accent by native speakers of Korean and non-native but tone-wise linguists alike, have assigned discreet H and L tones to individual syllables (see the list of references). Though my experience with Korean is limited, I have listened to and transcribed a large number of utterances in both South and North Kyengsang Korean. Words and short phrases sound to me very much like those of the many two-tone African languages that I have worked on, and I find no ambiguity in categorially assigning H or L tone to syllables. As far as I can tell, speakers do the same. Indeed, speakers may even make categorical assignment of tones to syllables when the pitches on which those syllables are pronounced might suggest other assignments.

Figures 1 and 2 compare words of the Penult (LHL) and Double (HHL) classes.³⁰ The (a) diagrams show “canonical” pitch contours, with the pitch peak on the second syllable, but with the Penult starting about 50Hz lower than the Double. Jun et al. (2004) would account for the rise from the initial syllable to the pitch peak of the Double word, whose H* accent is linked to both syllables, as *undershoot* of the boundary %L when the accent is associated to the first syllable. Surprisingly, the pitch contours in the (b) and (c) diagrams are essentially identical for the Penult and Double words, yet J-E Kim is unhesitating in identifying *kkàmákwi* ‘raven’ and *sàlángni* ‘wisdom tooth’ as Penult but *múcíkà* ‘rainbow’ and *sángswùli* ‘acorn’ as Double. The reason for the (b) and (c) Penult words beginning on a higher pitch than expected is the initial consonants. As is well-known, tense and aspirated consonants, *s*, and *h* have a pitch raising effect on phrase initial syllables (Jun 1993). Penult *kkàmákwi*, with a tense initial *kk*, has a pitch contour that is essentially identical to that of Double *kúkminsèng*, with a lax initial *k*, and that of Double *múcíkà*, with an initial sonorant. The contours of Penult *sàlángni* and Double *sángswùli*, both with initial *s*, are quite similar,³¹ though the overall pitch of the Double word is higher, starting above 300Hz whereas the Penult word starts at about 250Hz.

Figure 1. Penult accent (LHL)

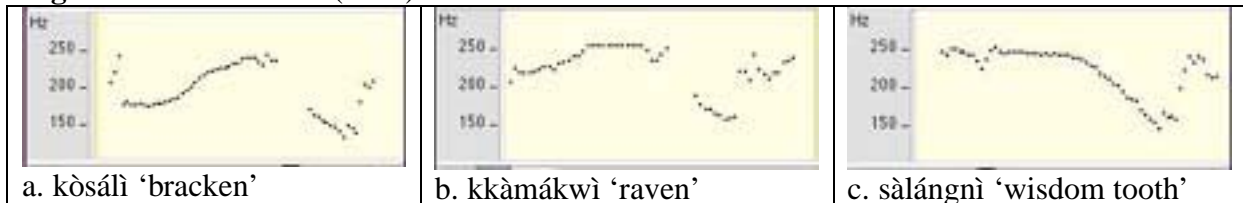
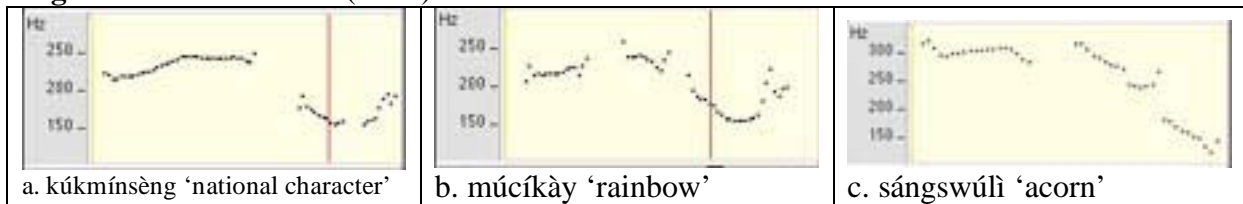


Figure 2. Double accent (HHL)



³⁰ These were recorded by Jieun Kim, a native speaker of South Kyengsang Korean, using a Sony DCR-TRV70 video camera and a Sony WCS-999 monaural wireless microphone. The audio track was digitized at 44.1Khz using Peak 5.2.0 software, and the pitch tracks were made using WaveSurfer 1.6.3.

³¹ The initial L syllable actually appears to be slightly higher than the medial H syllable in *sàlángni*, while there seems to be an expected slight rise over the initial H syllables of *sángswùli*.

Evidence such as that presented just above, plus that fact that essentially everyone who has worked on tonal dialects of Korean has identified individual syllables as H or L, is a strong indicator that from a phonological point of view, Kyengsang Korean is language in which tonal prosody is categorical and exhaustive, i.e. every tone bearing unit is uniquely associated with a tone. Intonation contours are derived based on post-lexical tone patterns, boundary tones (certainly final L% and perhaps initial %L), probable universals of intonation of tone systems (for example, assigning a phrasal pitch peak to the last H in a phrase, especially if the H is followed by L in the same phrase), and general phonetic factors (such as transitional gliding between L and H tones rather than sharp jumps in pitch).

Aside from the dubious procedure of translating raw intonation contours directly into tonal phonology, Jun et al.'s study has an additional methodological problem associated with data choice. By restricting the study to trisyllabic words, they avoid discussing issues that it is not clear how they would confront. The main such issues involve Double accent words. Trisyllabic Double accent words can accommodate the full HHL pattern (HH = H associated with two syllables). There are, however, monosyllabic and disyllabic Double accent words, where additional material is necessary for the full HHL pattern to appear. This is illustrated with particles in Table 1 and in accent groups (Jun et al.'s *ip*) in Table 6. Thus, the Double word 'water' is *múl* (H over one syllable), *múl-í* 'water-nom' (HH over two syllables), and *múl-mán-ì* 'water-only-nom' (HHL over three syllables). When combined with a Penult word such as *mínàlì* 'parsley', the extra tones fall on the second word, as in *múl mínàlì* 'water parsley'. In short, if there is an available host of any kind, the full tone pattern is realized. In Jun et al.'s analysis, Final accent words also end in HL. By their analysis, the HL shows up when a particle is present, as in *mál-ì* 'horse-nom', but not in an *ip*, as in Final + Penult *sàn-mínàlì* 'mountain parsley'. Jun et al. (2004) say that "... when there is no post accent syllable as in Final words, the L tone deletes at the lexical level ...". But if this is the case, why doesn't the post-accent L of the Double HHL pattern not also delete? Their answer (fn. 7) is that the deletion takes place only if the H is singly linked, but this is nothing but handwaving. As with Kenstowicz and Sohn (1997), the picture regarding particle is incoherent. The implication is that particles are added "at the lexical level", but what could this mean? Particles are not a lexically unified group—some mark case, some have adverbial functions, some are quantifiers. The only thing that unifies them is their monosyllabic form and their tonal properties. As argued in the discussion in §7.2, it is obvious that the tonal behavior of particles is a property of the particles themselves, not of their hosts. In the case of Double class words, there is independent evidence for a HHL pattern because it applies to word 2 of an *ip* as well as to particles. In the case of Final words, there is no evidence for a final L at all.

Returning the methodological issues raised by considering only trisyllabic word, monosyllabic and disyllabic Double words would also pose problems. Jun et al. (2004) note that in word 2 position, these words have a HHL pattern. This is also true

- boundary %L undergoes upstep: handwaving; there is a L tone!
Figures 15, 16, 17: no convincing evidence of a %L
- HHL after atonic: their speaker do not do it, i.e. they retain HHL

General problems with K & S and Jun et al.

- downstep and upstep
 - REAL downstep and upstep where it exist is a phonological operation on high tone, realized as an incremental drop (or rise) in the second of a sequence of H tones.

What they are calling "downdrift" is DOWNSTEP, i.e. lowering of the pitch of the second H in a HLH sequence compared to the pitch of the first H; but Korean "downstep" is distinct from downdrift in the African sense—the pitch drop is much greater than is typical for downdrifted H's in African languages, especially when a L follows the H; this is like destressing following primary or nuclear stress in a stress language, not normal "downdrift"

- there is no need for "upstep" at all; a simple, surface true statement that applies to both ip's with a Final as word 1 and also to Double words and trisyllabic Final words that have sequences of H's is "the pitch peak falls on the last H tone of an ip (accent group)"; this is not anything that needs to be accounted for in the tonal phonology at all

- "ghost" tones: lexical knowledge and intonational phonology
- application of a terms generally used in tone to refer to categorial phenomena
- here, an intonation issue like stress
- phonetic effects quite different
- upstep: "pitch peak at the last H tone" true to facts even in word
applies not only to phrase with Final as word 1 (HHL, LHH)

- particles

- nonsensical statement by K & S
- Jun et al.: "post accent syllable"; but follow words are post accent syllables
HH floats onto them and onto particle
- clearly, the tonal specialness is with the particles, not the N

- constraints on sequences

- 3 syllable atonics as first or second member
- 4 syllable words (why only one tone pattern?)

- boundary L%: neither make much of it

?G.-R. Kim

?Y-Y Chung

?N-J Kim

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