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# A Note on Phonological Phrasing in South Kyungsang

## Abstract:

The contrasting tonal profiles of *swúl* (H≈L), *mwúl* (HH), and *tõn* (LH) are used as probes of phonological phrasing. It is shown that monosyllables combine with the following word to form a single Minor Phrase when they appear at the beginning of a Major Phrase.

## 1. Introduction

The South Kyungsang (SK) paradigms in (1) are familiar to all students of Korean accent.<sup>1</sup>

(1) swúl	mwúl	tõn	pêl	citation
swúl-i	mwúl-í	ton-í	pêl-i	nominative
swúl-tul	mwúl-túl	ton-túl	pêl-tul	plural
swúl-tul-i	mwúl-túl-i	ton-túl-í	pêl-tul-i	plural nom.
swúl-aykay	mwúl-áykay	ton-áykáy	pêl-aykay	dative
swúl-tul-aykay	mwúl-túl-aykay	ton-túl-áykay	pêl-tul-aykay	plural dative
swul-célem	mwúl-célem	ton-célém	pêl-celem	like
swul-ttáy-	mwúl-ttáy-	ton-ttáy-	pêl-ttay-	because of
mwúnay	mwunay	mwúnay	mwunay	
‘wine’	‘water’	‘money’	‘bell’	

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<sup>1</sup> We follow the Yale system of transliteration. High tone syllables are marked with an acute accent. Unmarked syllables are low in tone. Thanks to Hyesun Cho for help with spectrograms.

The *swúl* and *mwúl* words are essentially indistinguishable in citation form but consistently contrast in inflection. The latter is marked by the so-called double-H accent, which is realized as a rise from roughly the mid point of the speaker's pitch space to a peak aligned with the first part of the following syllable's vowel (Chang 2007, Kenstowicz et al. 2007, Lee 2008). The *swúl* class alternates between the presence of a peak on the stem and its absence before polysyllabic (consonant-initial) particles. In its citation form the *tǒn* class has a long vowel with a low (L) rising contour [tǒ:n] that is deconstructed to LH(H) in inflection. The double high of this contour has the same shallow rise as the *mwúl* class. As observed by M. Kim (1997), the Kyungsang dialects have a fourth tonal class for monosyllabic loanwords (e.g. *pêl* 'bell') that is marked by a sharp fall and lengthened vowel (see the contours in Y-H Chung 2006). The length and falling contour are maintained in inflection: [pê:l], [pê:l-i].

There have been a variety of proposals in both the traditional and generative literatures to represent these contrasts in a formal grammar. Due to space limitations we can only site some of them here: M. Kim (1997), Kenstowicz & Sohn (1997), N-J. Kim (1997), Hwangbo (2003), Lee (2008). Our representational assumptions are firmly rooted in the autosegmental tradition that recognizes one-many and many-one relations between tones and tone-bearing units. Given the lengthened rise of *tǒn* [tǒ:n] 'money' and its LH realization in *ton-î* [tòní], it seems most natural to represent this class with a /LH/ tonal melody. Constraints against floating tones and tonal deletion will force lengthening in monosyllables while one-to-one association holds in polysyllabic forms. The same treatment is possible for the fall in loans such as *pêl* [pê:l] 'bell', which will be represented with /HL/. However, for this class the falling tone and length are maintained in inflection [pê:li], suggesting that the loans have not been fully integrated into the native phonological system and necessitating a special faithfulness constraint ranking to the citation form for loanwords (see Kenstowicz & Sohn 2001 and Chung 2006 for discussion). The *mwúl* 'water' class is /H/ with constraints forcing a doubling of its tone. The *swúl* 'wine' class resists doubling and shows up as low in some of its realizations. This suggests an underlying /L/ that will be supplanted by a H to satisfy the requirement that every phonological word (Minor Phrase) have a pitch peak. SK follows Russian and Hebrew (Fainleib 2009) in inserting the H on the final syllable of the stem, a generalization that is seen in disyllabic stems such as *palám* 'wind', which pattern with *swúl* in allowing the H of the particle to appear. Only underlying H tones are doubled, not those that are inserted to ensure a pitch peak. We might view the doubling as a strategy to enhance the perceptibility of the tone for purposes of lexical access. Since inserted H's are not present in the lexical representation, it makes sense that they are not doubled.<sup>2</sup> Chang (2007) reports that the H of the *mwúl* class is realized at slightly higher F0 value than the

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<sup>2</sup> In our view (cf. Kenstowicz et al. 2007) the double-high accent was originally introduced to keep \*HL stems distinct from \*LH stems, which systematically retracted their pitch peak in Kyungsang, leading to a classic push-chain: LH > HL > HH.

inserted H of *swíl* in citation forms, another possible indication of the different phonological status of these two tonal classes. Inflectional case suffixes lack a contrast of H vs. L so we treat them as toneless. They will receive a default L unless they have been assigned a H by tone doubling. Finally, nouns can be followed by various particles that display the same three-way range of tonal contrasts found in stems. However, the tones of particles only show up when added to stems in the *swíl* class—stems that lack an underlying pitch peak of their own. When added to stems in the *mwíl* or *tǒn* class, the tones of the particles are supplanted by the H-H and L-HH contours that are properties of the stem. Based on this fact, the literature has concluded that the particles and stems form a prosodic word, which is characterized by a single pitch peak. We share this interpretation.

## 2. Phrasal Phonology

In their analyses of phonological phrasing in North Kyungsang Korean (NK), Kenstowicz & Sohn (1997) and N-J. Kim (1997) assume two levels of prosodic grouping. Lexical categories (noun, verb, adjective) combine with inflections and particles to form a minor accentual phrase containing a single pitch peak. Minor Phrases in turn combine to form a Major Phrase. The primary reflex of a Major Phrase is the relative F<sub>0</sub> height of the pitch peak of one Minor Phrase with respect to that of the following one. Sohn (1999) finds that when a disyllabic word with a nonfinal H such as *mánul* ‘garlic’ is combined with a following word, the pitch peak of the following word is downstepped if it belongs to the same Major Phrase. When the pitch peak is found on the final syllable of a word such as *tongséyng* ‘younger sibling’ then it will spread up to the peak of the following word, which may be realized at a higher F<sub>0</sub> level (upstepping). However, if the following word belongs to the doubled-H class then this process is blocked and the tone of the first word becomes the peak. We find that SK has a similar prosodic organization as far as the first two diagnostics are concerned, but we do not find a reflex of the third. Pitch tracks for tokens of the phrases *sépwu khaliphonía* and *seccók khaliphonía* ‘Western California’ illustrate the downstep vs. upstep (see Appendix).

The basic phrasing algorithm for Kyungsang Korean developed in Kenstowicz & Sohn (1997) and elaborated in Sohn (1999) employs the two constraints in (2). Wrap-XP was proposed by Truckenbrodt (1995) to do the work of government in the earlier phrasing literature (Hale & Selkirk 1987). It optimizes for large phonological phrases that coincide with maximal syntactic constituents where all the arguments of a verb fall in the same phrase as the verb, as in Chichewa. Align-XP optimizes for more granulated groupings where each argument phrases separately except the one closest to the verb, as in Chimwini.

- (2) Wrap-XP: enclose a lexical head and its arguments in one Major Phrase

Align-XP: align the left/right edge of XP with the left/right edge of a Major Phrase

Chichewa: [V NP NP]      Wrap-XP » Align-XP-Right

Chimwini: [V NP] [NP]      Align-XP-Right » Wrap-XP

Korean is the left-hand dual of Chimwini. In a sentence with several arguments, a direct object groups with the verb and each preceding XP falls in a separate Major Phrase: [NP] [NP V]. The normal phrasing can be interrupted by focus, due to the constraint that a focused word begins a Major Phrase. Kyungsang Korean is thus a language in which focus is signaled by the organization of words into phonological phrases rather than by shifting the prominence, as in English and other Germanic languages, or by changing the word order, as in Romance.

N-J. Kim (1997) and Sohn (1999, 2001) investigate the phrasing associated with single long XP's. Given that an XP aligns with a Major Phrase, all Minor Phrases inside the Major Phrase should constitute a single Major Phrase. In fact, they find a bias for rhythmic alternations in which the XP is broken up into binary Major Phrases. The same finding obtains for SK. The left-branching VP in (3) consists of four Minor Phrases that share the same left edge. The constraint requiring an XP to be aligned with the left edge of a Major Phrase and Truckenbrodt's Wrap-XP would be satisfied by grouping the entire sentence into a single Major Phrase. But as observed, the VP is broken into two Major Phrases, signaled by a resetting of the pitch space so that the F0 peak on *állli-nun-kye* is higher than the preceding one in *nól-a-t-ta-ko*. Major Phrases are indicated by brackets and Minor Phrases by parentheses. See the pitch track in the Appendix.

(3) [ (nól-li-ko) (nól-a-t-ta-ko) ] [ (állli-nun-kye) (nául-ke-ta) ]

256 Hz    215 Hz                    232 Hz                    189 Hz                    F0

'(it) would be better to tell that we enjoyed making fun of (someone)'

### 3. South Kyungsang

We now return to SK and the three tonal classes of (1). How is this contrast reflected at the phrasal level? Given a preference for binary prosodic constituents, we may expect *swúl*, *mwúl*, and *tõn* to combine with neighboring words. If so, will the resultant tonal patterns recapitulate those found in inflection? Will they combine at the level of the Minor Phrase or the Major Phrase? Will there be any positional preferences? Since they operate on novel combinations of words in the phrasal phonology, the tonal patterns that emerge exemplify a

productive use of the system. To the best of our knowledge, these questions have not been posed before for SK. The following is a report of our findings and an analysis of the data.

When an XP contains two disyllabic words then we find that each retains its pitch peak. The second is downstepped in comparison to the first if an intervening L appears. Care must be taken to distinguish these phrases from compounds, which form a single prosodic word.

- (4) námphyen imcá ‘husband’s master’  
 éymí wusán ‘mother’s umbrella’  
 ádul cóngi ‘son’s paper’

But when the first element is monosyllabic we find that the tonal pattern of the phrase is altered. The data in (5) survey these cases for genitive noun constructions and direct object plus verb. First, we indicate the citation and nominative forms of the individual words to verify their underlying tonal structures (5a). Then the combinations are shown (5b,c,d).

- (5) a. ttál, ttál-í ‘daughter, mál, mál-i ‘horse’, cǒng, cong-í ‘servant’  
 méli ‘head’, éymí ‘mother’, imcá ‘master’, Kím, Kím-i personal name,  
 cíp, cíp-i ‘house’, kel-cá ‘let’s bet’, cwú-ca ‘let’s give’, ssá-lá ‘pack!’

b. X’s Y

ttál méli	cong méli	mal méli
ttál éymi	cong ímcá	mal ímcá
ttál ímca	cong éymí	mal éymí

c. X’s Y-nom.

ttál cíp-i	cong cíp-í	Kim cíp-i
ttál mwúl-i	cong mwúl-í	Kim mwúl-í
ttál tón-i	cong tón-í	Kim tón-í

d. direct object + verb

swul kélcá	swul cwúca	swul ssálá
mwúl kélca	mwúl cwúca	mwúl ssála

ton kélcá      ton cwúca      ton ssála

The basic generalization is that the tonal contours recapitulate those seen in (1). Phrases headed by words drawn from the *mwúl* class such as *ttál* ‘daughter’ consistently show the double H at the left edge. Those beginning with words from the /LH/ *tõn* class such as *cõng* ‘servant’ show LHH. Finally, phrases beginning with words from the alternating *swúl*  $\approx$  *swul* class such as *mál* ‘horse’ or *Kím* consistently show the low-tone alternant. The tonal contours of the disyllabic second word are eliminated in the first two cases but appear faithfully when combined with a monosyllable taken from the *swúl* class: cf. *ttál ímca* ‘daughter’s master’ and *cong méli* ‘the servant’s head’ vs. *mal méli* ‘the horse’s head’ and *mal ímca* ‘the horse’s master’. The latter satisfies the SK requirement that a later H spread backwards to the penultimate syllable replacing the otherwise expected L LH with L HH (Kim & Jun 2009, Lee & Davis 2009). Two conclusions can be drawn from these data. First, the monosyllable is combining with the following word to form a single Minor Phrase. Second, the tonal class of the first word determines the tonal contour of the Minor Phrase.

To account for the stable tone patterns in (4) vs. the reparsed ones in (5), we appeal to the constraints in (6). They are analogs of the constraints in (2) but operate at the level of the Minor Phrase.

(6)      Wrap-X-Lex: the left and right edges of a lexical category align with the left and right edges of a single Minor Phrase

\**(X-nonLex)*: penalize a Minor Phrase composed entirely of a nonlexical category

Minimal-Binarity: penalize a Minor Phrase composed of a single syllable

Wrap-X-Lex optimizes for a one-to-one relation between lexical words and Minor Phrases. It conflicts with the constraint \**(X-nonLex)* that penalizes phonological words/Minor Phrases built over nonlexical categories (particles). SK formations such as *swul-célem* ‘like wine’ and *ton-célem* ‘like money’ as well as *ádul-celem* ‘like son’ vs. *ádul cóngi* ‘son’s paper’ show that Wrap-X-Lex is demoted below \**(X-nonLex)*. It is also demoted below Minimal-Binarity so that the Minor Phrase will expand to take in another lexical category to improve its phonological form. (7) shows the prosodic parsing that results from these constraints for *ttál ímca* ‘daughter’s master’.

(7)	/ttál imcá/	Min-Bin	Wrap-X-Lex
	☞ a. (ttál imca)		**
	b. (ttál) (imcá)	*!	

The ranking in (6) predicts that possessive or object+verb constructions composed of monosyllables should form a single Minor Phrase with the tone pattern determined by the first element. The data in (8) below show that this is a correct prediction.

(8)	ttál cíp	‘daughter’s house’	swul tó	‘give wine’
	cong cíp	‘servant’s house’	mwúl tó	‘give water’
	cong tón	‘servant’s money’	ton tó	‘give money’

We find a positional asymmetry in the behavior of Minimal-Binarity. For XP’s composed of a disyllabic first word followed by a monosyllable, the two lexical categories remain in separate Minor Phrases. This is most evident for monosyllables from the *tõn* class, which retain their signature rising tone and extra length even if it is downstepped due to a HLH sequence in the Major Phrase. A few examples appear in (9).

(9)	námphyen mwúl	‘husband’s water’	kkókkal tó	‘give a hat’
	éymí tõn	‘mother’s money’	táncí tó	‘give a jar’
	Yénga swúl	‘Youngah’s wine’		

To account for these cases we revise the Minimal Binarity constraint to penalize a monosyllabic Minor Phrase when it stands at the beginning of a Major Phrase: \*[(σ).

(10)	/éymí tõn/	*[(σ)	Wrap-X-Lex
	☞ a. [(éymí) (tõn)]		
	b. [(éymí ton)]		*!



Next we turn to XP's composed of three successive monosyllables. The first case involves a genitive phrase plus a verb. Here we find that the verb retains its H tone, indicating that it forms a separate Minor Phrase from the object. This is predicted by the analysis since the monosyllable is not at the beginning of the Major Phrase. The tableau in (11b) shows the phrasing assigned by our analysis.

- (11) a. mal mwúl tó            'give the horse's water'  
          ttál swúl tó            'give the daughter's wine'  
          cong tón năy           'pay the servant's money'

b.

/ttál swul tó/	*[(σ)	Wrap-X-Lex
☞ a. [(ttál swúl) (tó)]		**
b. [(ttál swúl to)]		***!
c. [(ttál) (swul tó)]	*!	**

The next case we consider involves a dative construction in which the first monosyllable belongs to a separate XP from the second. Recall that earlier research had established that the left edge of an XP is the site of a Major Phrase break. Will the compulsion to avoid monosyllabic Minor Phrases at the left edge of a Major Phrase override the normal phrasing algorithm that aligns an XP with a Major Phrase? The answer is no. The SK speaker has the strong sense of a contrast between the paradigm in (11), where the first two words group into a single Minor Phrase, and the one in (12), where they are in separate phrases. Moreover, we find no downstep of the verb *tó* with respect to the high tone in the indirect object. This would also make sense if the VP composed of the direct object and verb is separated from the indirect object by a Major Phrase break.

- (12) ttál ton tó            'give money to the daughter'  
          mál swul tó           'give wine to the horse'  
          cồng ton tó           'give money to the servant'

We can account for this contrast if Align-XP with a Major Phrase dominates the \*[(σ) constraint.

(13)	/mal <sub>NP</sub> swul <sub>NP</sub> tó <sub>V</sub> /	Align-XP	*[(σ)	Wrap-X-Lex
	☞ a. [(mál)] [(swul tó)]		*	**
	b. [(mal swúl tó)]	*!		***

The final case to consider is phrases composed of a monosyllabic dative NP combined with a monosyllabic VP. Here constraints on minimal Major Phrases could override the alignment constraint on XP's. In fact, we find a contrast. The first word maintains its own tonal contour, suggesting that it has not been grouped with the following monosyllable.

- (14) mál tó 'give (it) to the horse' cf. mal tó 'give a horse'  
 ttál tó 'give (it) to the daughter'  
 cǒng tó 'give (it) to the servant'

The tableaux below show how the contrast between *mál tó* 'give it to the horse' (15a) vs. *mal tó* 'give a horse' (15b) is derived. In (15a) Align-XP penalizes the [(mal tó)] candidate since it fails to align the VP composed of *tó* with a Major Phrase. But in (15b) the left edge of the VP is found at the object and so the lower ranked \*[(σ) constraint steps in to prefer the rhythmically more optimal L H tone pattern associated with the (*mal tó*) Minor Phrase.

(15)	(a)	/mal <sub>NP</sub> tó <sub>VP</sub> /	Align-XP	*[(σ)
		☞ a. [(mál)] [(tó)]		**
		b. [(mal tó)]	*!	
	(b)	/mal <sub>NP</sub> tó <sub>V</sub> /		
		a. [(mál)] [(tó)]		*!*
		☞ b. [(mal tó)]		

The diagram in (16) summarizes the constraint ranking that generates the phrasal groupings required to account for the tonal patterns associated with the SK *swúl-mwúl-tǒn* tonal contrast. The rhythmic constraint \*[(σ) penalizing monosyllabic minor phrases at the start of a Major Phrase overrides the alignment of lexical categories with phonological

words/Minor Phrase demanded by Wrap-X-Lex. But \*[(σ) itself is dominated by the requirement that Major Phrases align with syntactic constituents.

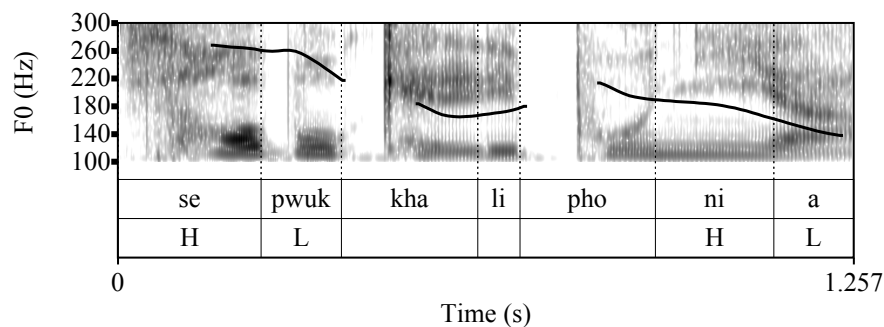
(16) Align-XP » \*[(σ), \*(X-nonLex) » Wrap-X-Lex

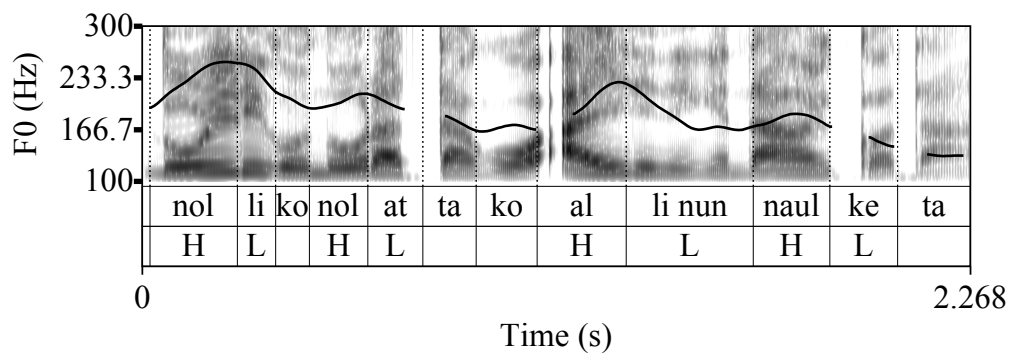
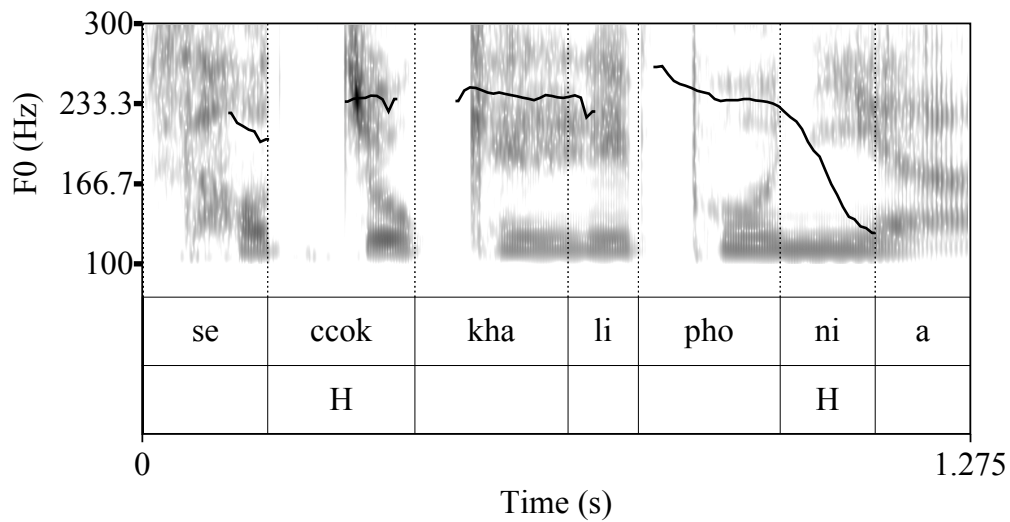
#### 4. Summary and Conclusion

This paper has situated the tonal patterns associated with the SK triple *swúl-mwúl-tǎn* contrast in the phrasal phonology. When they begin a Major Phrase they group with the following word at the level of the Minor Phrase and determine the tonal contour of that phrase, supplanting the tones of the second word when the first words belongs to the doubling *mwúl* and rising *tǎn* class. A monosyllable from the *swúl* class allows the tone of the second word to be faithfully realized modulo the requirement that a Minor Phrase not begin with two low-tone syllables. The tonal patterns that emerge recapitulate those found when a non-lexical particle combines with a preceding noun stem and indicate that the prosodic reorganization is at the level of the Minor Phrase where just a single pitch peak is found.

A couple of implications of more general theoretical interest emerge from the analysis. First, the fact that the three-way contrast appears in exactly the same form in three different morpho-syntactic contexts (inflection, cliticised particle, reparsed XP's) supports the model of grammar in which a single markedness hierarchy is enforced at multiple points of structure. Second, the tonal patterns involve faithfulness to the tones of the leftmost lexical item comprising the phrase even though they are typically realized on the prosodic (syllabic) structure provided by words later in the phrase. Space limitations do not allow us to explore the analytic challenges posed by this fact. It is left as a task for future research.

#### Appendix





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