

Korean Suffix Allomorphy in Optimality Theory

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1. Introduction

Optimality-theoretic (Prince and Smolensky 1993) approaches to phonologically conditioned allomorphy assume that certain alternating morphemes are represented in the input as sets of allomorphs, and candidates with each allomorph attached are evaluated by phonological grammar (Mester 1994, Mascaro 1996, 2005, among others). In this approach the Korean suffix allomorphic alternation can partly be accounted for by phonological constraints such as ONSET and NOCODA, though it does not always seem to be phonologically optimizing. Examples are provided in (1) below.

(1) Korean suffix allomorphy

a. Optimizing allomorphy: ONSET/NOCODA effects

Nominative: *-ka* after V-final stems, *-i* after C-final stems

Accusative: *-lil* after V-final stems, *-il* after C-final stems

b. Non-optimizing, or arbitrary allomorphy

Conjunctive: *-wa* after V-final stems, *-kwa* after C-final stems

Instrumental: *-lo* after *l*-final and V-final stems,

-ilo after other C-final stems

This discrepancy led researchers to appeal to reranking of constraints (Oh 1997) or to constraint conjunction (Kang and Kang 2000) specific to the exceptional cases, or to treat alternation of some affixes as morphologically specified (Lapointe 1999).

The goal of this paper is to propose a phonological analysis of Korean nominal and verbal suffix alternation, with the constraints and their ranking well motivated universally or language-internally. Section 2 introduces the patterns of allomorphic alternation of Korean suffixes. Sections 3 and 4 discuss the “problematic” cases in detail, and develop an Optimality Theoretic analysis. Section 5 concludes the paper.

2. Phonologically optimizing alternation: ONSET and NOCODA effect

Let us first look at the patterns of Korean allomorphic alternation. For many suffixes with a vowel-initial and a consonant-initial allomorph, consonant-final stems take the vowel-initial suffix allomorph and vowel-final stems take the consonant-initial allomorph.

(2) a. *il*~*lil* (accusative)

mom + *il* ‘body (ACC)’

k^ho + *lil* ‘nose (ACC)’

b. *in*~*nin* (topic/subject marker)

mom + *in* ‘body (TOP)’

k^ho + *nin* ‘nose (TOP)’

c. i~ka (nominative)

mom + i 'body (NOM)'

k^ho + ka 'nose (NOM)'

It seems rather clear that the allomorphy selection of these suffixes is phonologically optimizing, *i.e.*, it is in favor of CV syllables. However, onsetless syllables and syllables with a coda are allowed in Korean in general (3). Furthermore, it is not the case that all suffixes allow deletion of the initial consonant or vowel (4).

(3) a. na.i 'age' b. ka.ɪl 'fall'

(4) a. man 'only'

nun + man 'eye only'

k^ho + man 'nose only'

b. ɛkɛ 'to'

nun + ɛkɛ 'to eye'

k^ho + ɛkɛ 'to nose'

c. ni (interrogative)

kam + ni 'do you wrap?'

sa + ni 'do you buy?'

This means that the faithfulness constraints MAX (V) or MAX (C) dominate markedness constraints such as ONSET or NOCODA in Korean grammar. Therefore, the input representation for the alternating suffixes in (2) must include both allomorphs. In this way no violation of faithfulness constraints is incurred, whichever allomorph is selected, and the lower ranked markedness constraints choose the phonologically unmarked candidate as the optimal output. Thus, this is a typical example of TETU (The emergence of the unmarked, McCarthy and Prince 1994) in allomorphic alternation (Mascaro 1996). Examples (5) and (6) below provide the tableaux for topic suffix alternation.

(5) *mo.mɪn* 'body (topic)'

/mom + {-nɪn, -ɪn}/	MAX	ONSET	NOCODA
a. mom.nɪn			*!
☞ b. mo.mɪn			

(6) *k^ho.nɪn* 'nose (topic)'

/k ^h o + {-nɪn, -ɪn}/	MAX	ONSET	NOCODA
☞ a. k ^h o.nɪn			
b. k ^h o.ɪn		*!	

However, some nominal and verbal suffix alternation patterns deviate from what we observed above. The first exception to the TETU in allomorphic alternation is found in conjunctive suffix *kwa~wa*. Here consonant-final stems take *kwa*, leading to a violation of NOCODA. Vowel final stems take the *wa* allomorph (7c).

(7) kwa~wa (conjunctive)

a. mom + kwa

'body and'

*mom + wa

- b. pal + kwa 'foot and' *pal + wa
 c. k^ho + wa 'nose and' *k^ho + kwa

The second exception occurs when the suffix alternates between the forms beginning with $\#C$ and C, /l/-final stems behave like vowel-final stems rather than stems ending in other consonants. Vowel-final stems and /l/-final stems take the allomorph beginning with C, whereas stems ending in consonants other than /l/ take /i/-initial allomorph (8-10).

- (8) ilo~ lo (instrumental/locative)
 a. mom + ilo 'body (INSTR/LOC)'
 b. pal + lo 'foot (INSTR/LOC)' *pal + ilo
 c. k^ho + lo 'nose (INSTR/LOC)'
 (9) ilə~lə (purposive)
 a. kam + ilə 'in order to wrap'
 b. kal + lə 'in order to change' *kal + ilə
 c. sa + lə 'in order to buy'
 (10) imjən~mjən (conditional)
 a. kam + imjən 'if one wraps'
 b. kal + mjən 'if one changes' *kal + imjən
 c. sa + mjən 'if one buys'

Recall that this pattern differs from the other V-initial/C-initial alternating suffixes shown in (2) above, which did not make any distinction among consonants: the vowel-initial allomorph of nominative, accusative and topic suffixes is selected by stems ending in all consonants.

As Lapointe (1999) points out, the problem regarding these exceptional cases of allomorph alternation is not that there cannot be any OT-phonological accounts, but that it may require stipulating constraints that are not motivated elsewhere in the grammar. In sections 3 and 4 I propose analyses for (7) and (8-10) that use constraints with independent grounds.

3. Conjunctive suffix *kwa~wa* alternation and alignment to subsyllabic units

3.1. Conjunctive suffix *kwa~wa* alternation

The *kwa~wa* alternation pattern, given in (7) above, does not seem to improve the syllable structure of the output in the same way that nominative, accusative or topic suffix does. Consonant-final stems take the *kwa* allomorph, violating of NoCODA.

(11) *mom.kwa* 'body (conjunctive)'

/mom+{-kwa, -wa}/	NoCODA
a. mom.kwa	*i
☞ b. mo.mwa	

Candidate (11b) violates the alignment constraint defined in (12), since the stem-final consonant /m/ is not in syllable-final position.

- (12) ALIGN-R (Stem, σ): The right edge of every stem is aligned with the right edge of a syllable (McCarthy and Prince 1993).

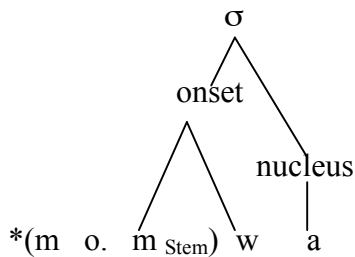
However, ALIGN-R must be ranked lower than NOCODA in Korean, as the stem-final consonants are syllabified with the suffix-initial vowels in other suffixes like nominative, accusative and topic.

- (13) *mo.mɪn* 'body (topic)'

/mom + {-nɪn, -ɪn}/	NOCODA	ALIGN-R (σ)
a. mom.nɪn	*!	
b. mo.mɪn		*
c. mom.ɪn	*!	

I argue that the combination of a consonant-final stem plus the *wa* allomorph of the conjunctive morpheme is disfavored due to the lack of alignment between the edges of a morphological category (stem) and a prosodic domain. Prosodic domains here include sub-syllabic units such as nucleus, onset and coda. As the structure in (14) illustrates, stem-final /m/ is the first member of the complex onset *mw*.

- (14) *mom + {kwa/wa}* 'body (conjunctive)'



Thus, stem-final /m/ in **mo.mwa* does not fall at the edge of any sub-syllabic units. I adapt a special type of alignment constraints, ALIGN (Sub- σ), that was originally proposed by Bonet and Lloret (2005) in their account of vowel epenthesis in clitics and resyllabification patterns in Catalan. ALIGN (Sub- σ) requires the edge of a morphological constituent to be aligned with the edge of a sub-syllabic constituent, such as the nucleus or margin (onset or coda).

- (15) ALIGN (Stem, R; Sub- σ , R) The right edge of a stem has to coincide with the right edge of a subsyllabic unit, M(argin) or N(ucleus).

(15) must be ranked as high as NOCODA. In tableau (16), candidate (b) violates (15) since stem final /m/, which forms a complex onset in the second syllable with the following glide /w/, is not aligned with the right edge of a syllable margin or nucleus. Candidate (a), though it violates NOCODA, obeys ALIGN-R (Sub-σ), with the stem final /m/ aligned with the edge of M(argin), the coda of the first syllable.

(16) *mom.kwa* ‘body (conjunctive)’

/mom + {wa, kwa}/	ALIGN-R (Sub-σ)	NOCODA	ALIGN-R (σ)
☞ a. mom. M] Stem)kwa		*	
b. mo. m Stem)w M] a	*		*!

A candidate like **mom.wa*, which does not violate either NOCODA or ALIGN-R (Sub-σ), is ruled out on independent grounds. A morpheme final consonant, when followed by a /w/-initial morpheme, is resyllabified with the following glide in Korean. In (17), stem-final /p/ and /l/ of *happəp* and *toŋmul* are in the onset position in the compound forms on the right.

(17) *happəp* + *hwa* *legal* + *conversion* → *happə.p^hwa* ‘legalization’
toŋmul + *wən* *animal* + *garden* → *toŋmu.rwən* ‘zoological garden’

In Korean, aspirated stops are not allowed in coda position, and the liquid is realized as a tap when it is in onset position unless it is preceded by another liquid. Thus, we can confirm that [p^h] and [ɾ] in the compound forms are in the onset position with the glide [w], but not in the coda of the preceding syllables. This tendency toward maximum onset can be attributed to the SYLLABLE CONTACT constraint.

(18) SYLLABLE CONTACT

The onset of a syllable must not be of greater sonority than the last segment in the immediately preceding syllable. (Davis and Shin 1999, 286)

SYLLABLECONTACT must be ranked higher than ALIGN-R (sub-σ), to ensure the resyllabification of /p/ and /l/ in (17). It must also dominate a constraint against tautosyllabic consonant clusters such as *COMPLEX ONSET.

(19) *toŋ.mu.rwən* ‘zoo’

/toŋmul + wən/	SYLLCON	ALIGN-R (Sub-σ)	*COMPLEXONSET	NOCODA	ALIGN-R (σ)
☞ a. toŋ.mu.rwən		*	*		*
b. toŋ.mul.wən	*!			*	

Tableau (20) below shows the final ranking between the constraints discussed above, and how the correct conjunctive allomorph *kwa* is selected when the stem is consonant-final.

(20) *mom.kwa* 'body (conjunctive)'

/mom + {wa, kwa}/	SYLLCON	ALIGN-R (Sub- σ)	*COMPLEX ONSET	NoCODA	ALIGN-R (σ)
☞ a. mom _{M]} . Stem) kwa			*	*	
b. mo. m _{Stem)} w _{M]} a		*!	*		*
c. mom _{M]} . Stem) wa	*!			*	

Positing ALIGN-R (Sub- σ) does not affect the analysis for nominative, accusative and topic suffix alternations; for example, in the combination of a consonant-final stem and nominative allomorph *i*, the stem-final consonant is the sole member of onset (21). Therefore ALIGN-R (Stem, Sub- σ) is not violated, though lower ranked ALIGN-R (Stem, σ) is.

(21) *mo.mi* 'body (NOM)'

/mom + {ka, i}/	ALIGN-R (Sub- σ)	*COMPLEX ONSET	NoCODA	ALIGN-R (σ)
☞ a. mo.m _{M]} Stem) i				*
b. mom _{M]} . Stem) ka			*!	

Let us now turn to the vowel-initial stems, which choose the *wa* allomorph of the conjunctive suffix. The choice of the *wa* allomorph after a vowel-final stem can be viewed as the avoidance of complex onsets.

(22) *k^ho.wa* 'nose (conjunctive)'

/k ^h o+{-kwa, -wa}/	*COMPLEXONSET	NoCODA	ALIGN-R
a. k ^h o.kwa	*!		
☞ b. k ^h o.wa			

ALIGN-R (Sub- σ) successfully accounts for the conjunctive suffix alternation, in particular the choice of the *kwa* allomorph after a consonant-final stem, but one might ask if this constraint is active in other parts of the Korean grammar. In 3.2 I show another case in which ALIGN-R (Sub- σ) seems to play a role, namely with the gliding of high vowels.

3.2 ALIGN-R (Sub- σ) effect in gliding

Verb-final high vowels /i/ and /u/ are realized as glides when they are followed by the past suffix $\text{\textcircled{a}s}$.¹

- (23) a. uki + $\text{\textcircled{a}s}$ impose + PAST u.kjət
 b. kətu + $\text{\textcircled{a}s}$ gather + PAST kə.twət

¹ Underlying alveolar fricatives and affricates are realized as [t] in coda positions in Korean.

However, when the verb *i* 'be' is followed by *əs'*, it becomes a glide only when the stem preceding 'be' is vowel-final (24a). When it is consonant-final (24b), the vowel *i* is retained.

- (24) a. sako + i + əs' accident + be + PAST sako.jət
 b. katʃok + i + əs' family + be + PAST katʃoki.ət *katʃo.kjət

Both *u.kjət* 'imposed' (23a) and **katʃo.kjət* in (24b) contain the consonant cluster *kj*, but the difference between them is that in (24b), the stop is stem-final, whereas in (23a) it is not. ALIGN-R (sub-σ) correctly predicts that (23a) and (24b) should behave differently, as shown in (25) and (26), respectively.

(25) *ukjət* 'imposed'

/uki + əs'/	ALIGN-R (sub-σ)	ONSET	*COMPLEX ONSET	ALIGN-R (σ)
☞ a. u.kj _M] _{Stem})ət			*	*
b. u.ki _N] _{Stem})ət		*!		

(26) *katʃokjət* 'was family'

/katʃok + i + əs'/	ALIGN-R (sub-σ)	ONSET	*COMPLEX ONSET	ALIGN-R (σ)
a. ka.tʃo.k _{Stem}) j _M] ət	*!		*	*
☞ b. ka.tʃo.k _M] _{Stem}) i.ət		*		

To summarize this section, in order to account for the conjunctive suffix alternation, which apparently deviates from NOCODA effect found in other suffixes, I proposed that ALIGN-R (Sub-σ) overrides the effect of NOCODA in Korean (3.1). Further, I showed that ALIGN-R (Sub-σ) is active in another part of the Korean grammar (3.2). The suggested rankings between constraints are summarized in (27) below.

- (27) a. SYLLABLECONTACT >> ALIGN-R (Sub-σ), NOCODA >> ALIGN-R (σ)
 b. ALIGN-R (Sub-σ), ONSET >> *COMPLEXONSET

4. *iC~C* alternation in suffix: the emergence of unmarked rhymes

4.1 *iC~C* alternation in suffix-initial positions

In this section, I discuss the nominal and verbal suffixes that exhibit the initial *iC~C* alternation, which raises another question for the TETU account of allomorphic alternation. Examples are repeated in (28-30) below.

- (28) ilo~lo (instrumental/locative)
 a. mom + ilo 'body (INSTR/LOC)'

- b. pal + lo ‘foot (INSTR/LOC)’ *pal + ilo
 c. k^ho + lo ‘nose (INSTR/LOC)’
- (29) ilə~lə (purposive)
 a. kam + ilə ‘in order to wrap’
 b. kal + lə ‘in order to change’ *kal + ilə
 c. sa + lə ‘in order to buy’
- (30) imjən~mjən (conditional)
 a. kam + imjən ‘if one wraps’
 b. kal + mjən ‘if one changes’ *kal + imjən
 c. sa + mjən ‘if one buys’

The fact that vowel-final stems take consonant-initial allomorphs (*lo, lə, mjən*) is a case of the ONSET effect that we observed above. The peculiarity of these suffixes is that /l/-final stems take the consonant initial allomorph, unlike other consonant-final stems. This is not the case for other V-initial/C-initial alternating suffixes (nominative, acusative and topic). There /l/-final stems take the vowel-initial allomorph of the suffix, just as the other consonant-final stems.

- (31) a. pal + i 'foot (NOM)' b. pal + in 'foot (TOP)' c. pal + il 'foot (ACC)'

In order to solve this puzzle, we need to consider the universal preference on syllable shape, in particular in syllable-final position. The fact that /l/ behaves like vowels but not like other consonants is not surprising if we take into account the sonority scale of consonants and the universally preferred syllable structure. Languages favor sharp rising in sonority toward the peak of a syllable and a minimal fall toward the end (Clements 1990), which means that coda consonants, if any, are preferably higher sonority consonants. This is interpreted as fixed ranking of markedness constraints on the syllable margin in OT (Prince and Smolensky 1993), as shown in (32).

- (32) *T_σ] : No obstruents at syllable final.
 *N_σ] : No nasals at syllable final.
 *L_σ] : No liquids at syllable final.

*T_σ] >> *N_σ] >> *L_σ]

Now if we go back to the suffixes of the *iC~C* alternation, we can see that the allomorph is selected in such a way that only vowels or liquids are allowed in syllable-final position, and not the less sonorous consonants such as nasals. Why then do /l/-final stems take the vowel initial allomorph when other suffixes, *e.g.*, nominative (*i~ka*) are attached?

The answer to this question lies in the sonority-based universal ranking of markedness constraints on syllable peaks. It has been proposed that among high vowels, the central vowel /i/ is less sonorous than peripheral vowels (de Lacy 2002, Parker 2002).

(33) Vowel sonority (de Lacy 2002, 48)

High central vowels → Mid central vowels → High peripheral vowels → Mid peripheral vowels → Low peripheral vowels

Based on this sonority hierarchy I propose that the markedness constraint against the high central vowel /i/ at the syllable peak, namely *P(eak)/i, (Prince and Smolensky 1993) is crucially ranked higher than constraints banning other vowels in Korean. This ranking allows the margin constraints *L_σ] to be ranked lower than *P/i but higher than *P/i.

(34) *N_σ] >> *P/i >> *L_σ] >> *P/i, *P/a, ...

(35-38) provide the tableaux for the *iC~C* alternation in liquid-final and nasal-final stems. Nasal-final stems choose the *ilo* (35) or *imjən* (37) allomorph to avoid the violation of higher ranked *N_σ]. Liquid-final stems, on the other hand, take the *lo* allomorph for instrumental (36) and *mjən* for conditional (38), since *P/i is ranked higher than *L_σ]. Note that liquids are realized as [l] only when they are in coda positions, or preceded by another liquid. In other positions they surface as a tap [ɾ].

(35) *mo.mi.ro* ‘body (INSTR)’

/mom + {ilo, lo}/	*N _σ]	*P/i	*L _σ]
☞ a. mo.mi.ro		*	
b. mom.ro ²	*!		
c. mom.no	*!		

(36) *pal.lo* ‘foot (INSTR)’

/pal + {ilo, lo}/	*N _σ]	*P/i	*L _σ]
a. pa.ri.ro		*!	
☞ b. pal.lo			*

(37) *ka.mi.mjən* ‘wrap (CONDITIONAL)’

/kam + {imjən, mjən}/	*N _σ]	*P/i	*L _σ]
☞ a. ka.mi.mjən		*	
b. kam.mjən	*!		

(38) *kal.mjən* ‘change (CONDITIONAL)’

/kal + {imjən, mjən}/	*N _σ]	*P/i	*L _σ]
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² This candidate also violates SYLLABLECONTACT as discussed in section 3. I did not include it in this tableau since it is not crucial to the analysis.

	a. ka.ri.mjən		*!	
☞	b. kal.mjən			*

With suffixes that do not involve the *iC~C* alternation, nominative *i~ka* for example, liquid-final stems behave like other consonant-final stems. This is expected if the markedness constraints against vowels other than /i/ are ranked lower than *L_σ] as in (34b).

(39) *pa.ri* ‘foot (NOM)’

/pal + {i, ka}/	*N _σ]	*P/i	*L _σ]	*P/i
☞ a. pa.ri				*
b. pal.ka			*!	

At this point we should reconsider the status of input representation for suffixes of the *iC~C* alternation. Although we assumed above that both allomorphs should be in the input, it seems that /i/ behaves uniformly in all suffix-initial positions: it deletes after a vowel or a liquid. Therefore, it may be the case that the *iC~C* alternation is a more general process, at least in suffixes, and can be attributed to the ranking *P/i >> MAX (i). If this assumption is correct, the input form can be /ilo/ for 'instrumental' or /imjən/ for 'conditional', rather than the multiple representation /{ilo, lo}/ and /{imjən, mjən}/, respectively. Tableau (38) is revised as (40) below:

(40) *kal.mjən* ‘change (CONDITIONAL)’

/kal + imjən/	*N _σ]	*P/i	*L _σ]	MAX (i)
a. ka.ri.mjən		*!		
☞ b. kal.mjən			*	*

The ranking in (40) predicts a general deletion of /i/ after a liquid, but this is not the case when /i/ is in stems:

(41) a. tʃ^hiri + ko → tʃ^hi.ri.ko *tʃ^hil.ko 'pay + and'
b. karima 'hair parting'

To prevent vowel deletion in stems, we need positional faithfulness constraint MAX_{stem} that only rules out the deletion of stem vowels, but not the vowels in suffixes (McCarthy and Prince 1995, Beckman 1998). *P/i should be ranked lower than MAX_{stem}.

To summarize: In order to account for the peculiarity of the /i/ initial suffix – that the vowel /i/ deletes after /l/-final stems -- I proposed that syllable peak markedness constraints are interleaved with the coda condition constraints as in (42) below.

(42) *T_σ], *M_σ] >> *P/i >> *L_σ] >> *P/i, *P/a

The ranking *M_σ] >> *L_σ] is well-motivated as the universal preference for sonorous coda. The high ranking of *P/i over markedness constraints of other vowels is also attributed to the preference for a high sonority syllable peak. I also suggested that /i/-initial suffixes need not have multiple input representations, and the alternation pattern may be analyzed as a more general /i/ deletion in suffixes, driven by the following constraint ranking:

(43) b. MAX_{stem} >> *P/i >> MAX (i)

4.2 t~l alternation in verbs

In this subsection, I discuss a potential problem for the TETU analysis of the *iC~C* alternation suffix given in 4.1. Some verbs in Korean have the allomorphic alternation shown in (44). This group of verbs are referred to as 't-irregular verbs' in traditional Korean grammar.

(44) t-irregular verb paradigm

a. mut + ta	ask + DECL	tit + ta	listen + DECL
b. mu.rət	ask (PAST)	t̥i.rət	listen (PAST)
c. mu.r̥i.rə	in order to ask	t̥i.r̥i.rə	in order to listen
d. mu.r̥i.mjən	if one asks	t̥i.r̥i.mjən	if one listens

This raises a problem for a TETU analysis of the *iC~C* alternation, if we analyze the verb allomorph used in (44b-d) to be *l*-final (Sung 2000). The ranking in (42) incorrectly chooses (45b) *mul.mjən to be the output form.

(45) mu.r̥i.mjən 'ask (CONDITIONAL)'

/mul + ɨmjən/	*N _σ]	*P/i	*L _σ]	MAX (i)
a. mu.r̥i.mjən		* i		
⇒ b. mul.mjən			*	*

However, given the paradigm in (44) above, the allomorphs of the verb 'ask' may well be *mut* and *mur̥i*, rather than *mut* and *mul*. This is because regular conjugation verbs ending in /i/ behave in the same way as (44b-d) above. In particular, stem-final /i/ is deleted before the past tense suffix *ət* (46b).

(46) Regular conjugation verb with stem ending in /i/

a. tʃ ^h iri + ta	'pay + DECL'	tamki + ta	'soak + DECL'
b. tʃ ^h i.rət	'pay + PAST'	tam.kət	'soak + PAST'

- c. tʰi.ri.rə 'in order to pay' tam.ki.rə 'in order to soak'
 d. tʰi.ri.mjən 'if one pays' tam.ki.mjən 'if one soaks'

Turning back to the *t*-irregular verbs, once we posit the input for *t*-irregular verb 'ask' as /{*mut*, *muɾi*}/, candidate (47c) is ruled out since it violates the high-ranking MAX_{stem}.

(47) *mu.ri.mjən* 'ask (CONDITIONAL)'

/ { <i>muɾi</i> , <i>mut</i> } + <i>imjən</i> /	ONSET	MAX _{stem}	*P/ <i>i</i>	ALIGN-R	MAX (<i>i</i>)
☞ a. <i>mu.ri.mjən</i>			*		*
b. <i>mu.ri.i.mjən</i>	*!		**		
c. <i>mul.mjən</i>		*!			*
d. <i>mu.ti.mjən</i>			*	*!	

A full discussion of irregular conjugation verbs including *t*-irregular verbs, however, is beyond the scope of this paper.

5. Conclusion

This paper proposed a strictly phonological analysis of allomorphic alternation in Korean nominal and verbal suffixes, using multiple input representations (Mester 1994, Mascaro 1996, 2005). It showed that alternation patterns that have previously been considered arbitrary or phonologically non-optimizing can be explained within the phonological grammar. The analysis employed a well-motivated ranking of sonority constraints on syllable peak and margin (Prince and Smolensky 1993, de Lacy 2002, among others) to account for the peculiarity of the *iC*~*C* alternation. The plausibility of the current analysis on the *wa*~*kwa* alternation depends partly on the motivation for Align-R (sub-σ) (Bonet and Lloret 2005) in the grammar of languages other than Catalan and Korean.

References

- Beckman, J. 1998. Positional faithfulness. Doctoral dissertation, University of Massachusetts, Amherst.
- Bonet, E. and M. Lloret. 2005. More on alignment as an alternative to domains: the syllabification of Catalan clitics. *Probus* 17: 37-78.
- Clements 1990. The role of the sonority cycle in core syllabification. In *Papers in Laboratory Phonology I: Between the Grammar and Physics of Speech*, John C. Kingston and Mary E. Beckman (eds.), 283–333. Cambridge: Cambridge University Press.
- Davis, S. and S.-H. Shin. 1999. The Syllable Contact constraints in Korean: An Optimality-Theoretic Analysis. *Journal of East Asian Linguistics* 8: 285-312.

- de Lacy, P. 2002. The formal expression of markedness. Doctoral dissertation, University of Massachusetts, Amherst.
- Kang, H. and S.-K. Kang. 2000. A conjoined constraints in Korean. *Korean Journal of Language* 25.2:331-345.
- Lapointe, S. 1999. Stem selection and OT. In *Yearbook of Morphology 1999*, G. Booij and J. van Marle eds., Dordrecht: Kluwer, 263-297.
- Mascaro, J. 1996. External allomorphy as emergence of the unmarked. In *Current Trends in Phonology: Models and Methods*, volume 2, J. Durand and B. Laks eds., Salford, Manchester: European Studies Research Institute, University of Salford, 473-483.
- Mascaro, J. 2005. External allomorphy and lexical representation. Ms., Universitat Autònoma de Barcelona.
- McCarthy, J. and A. Prince. 1994. The emergence of unmarked: Optimality in Prosodic Morphology. In *Proceedings of the NELS 24*. Amherst, MA: GLSA.
- McCarthy, J. and A. Prince. 1995. Faithfulness and reduplicative identity. In *Papers in Optimality Theory, University of Massachusetts Occasional Papers* 18, J. Beckman et al. eds., Amherst, MA: Graduate Linguistics Student Association, pp. 249-384.
- Mester, A. 1994. The quantitative trochee in Latin. *NLLT* 12:1-61.
- Oh, J.-R. 1997. A Correspondence approach to the phonological constraints. *Studies in Phonetics, Phonology and Morphology* 3, 141-166.
- Parker, S. 2002. Quantifying the sonority hierarchy. Doctoral dissertation, University of Massachusetts, Amherst.
- Prince, A. and P. Smolensky. 1993. Optimality Theory: constraint interaction in generative grammar. Ms., Rutgers University and University of Colorado, Boulder.
- Sung, E.-K. 2005. Allomorph selection in Korean. *Studies in Phonetics, Phonology and Morphology* 11.1: 45-60.