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Abstract

The present paper shows that the alternations found in Korean case markers are not motivated by optimization of phonological surface forms, contrary to previous studies. Also, using the framework of Distributed Morphology, I propose that nominative $-i \sim -ka$ is suppletive allomorphy, but other alternations are morphophonological alternations, whose distributions are mostly explained by a general phonological rule in Korean, the \dot{i} deletion rule.

The *i* Deletion Rule and Phonologically Conditioned Allomorphy in Korean Case Markers

Sunghye Cho*

1 Introduction

It is not easy to draw a solid boundary between suppletive allomorphy and morphophonological alternation. In some cases, the phonological forms of two alternants are clearly unrelated, or are hard to explain by a phonological rule. However, in other cases, although two alternants' phonological forms look similar, the alternation may not be a part of phonology of the language. This paper revisits the alternations found in Korean case markers, addressing this issue. Let me start with a clear example:¹

- (1) Nominative: *-i* ~ *-ka*
- a. *pap-i* 'rice-NOM' (cf. **pap-ka*)
 - san-i* 'mountain-NOM' (cf. **san-ka*)
 - b. *se-ka* 'bird-NOM' (cf. **se-i*)
 - pi-ka* 'rain-NOM' (cf. **pi-i*)

To a first approximation, the affixal alternation seems to be motivated to optimize the phonological surface forms. In (1), the alternation between *-i* and *-ka* is phonologically conditioned: when the preceding syllable ends in a consonant (1a), *-i* is selected, and when the preceding syllable ends in a vowel (1b), *-ka* is selected. Because their distribution is phonologically determined, previous studies have assumed that the alternation is motivated to optimize syllable structures. That is, as languages universally disfavor coda consonants, *-i* is selected when there is a coda consonant to resyllabify the coda consonant of the preceding syllable to the onset of the next syllable as in *pap-i* → *pa.bi*.² Similarly, since onset consonants are preferred, *-ka* is selected when a preceding syllable ends in a vowel.

This kind of alternation, where the selection depends on whether a preceding syllable ends in a consonant or a vowel, is frequently found in the Korean case marking system and it is often considered to be phonologically conditioned suppletive allomorphy (PCSA). In this study, I investigate the distributions of the five Korean case markers in Table 1, and propose that while the nominative *-i* ~ *-ka* is suppletive allomorphy, the others are not allomorphic, but morphophonological alternations, whose distributions are mostly explained by a general phonological rule in Korean, the *i* deletion rule. Also, I show that the allomorph selection of Korean case markers does not optimize phonological surface forms, contrary to the assumptions of previous studies.

	Consonant-final <i>pap</i> 'rice'	Vowel-final <i>se</i> 'bird'
Nominative: <i>-i</i> ~ <i>-ka</i>	<i>pap-i</i>	<i>se-ka</i>
Accusative: <i>-il</i> ~ <i>-lil</i> (~ <i>-l</i>)	<i>pap-il</i>	<i>se-lil</i> (~ <i>se-l</i>)
Topic: <i>-in</i> ~ <i>-nin</i> (~ <i>-n</i>)	<i>pap-in</i>	<i>se-nin</i> (~ <i>se-n</i>)
Instrumental: <i>-ilo</i> ~ <i>-lo</i>	<i>pap-ilo</i>	<i>se-lo</i>
Comitative: <i>-kwa</i> ~ <i>-wa</i>	<i>pap-kwa</i>	<i>se-wa</i>

Table 1: Five Korean case markers.³

*I would like to thank David Embick and Eugene Buckley for their helpful comments on the paper. I also thank audiences of the F-MART meeting at Penn and PLC 39. All errors remain my own.

¹Throughout this paper, morphological boundaries are marked with a hyphen, and syllable boundaries are marked with a period. Also, IPA is used to transcribe Korean words.

²A voiceless consonant becomes voiced between voiced segments.

³The topic marker is considered an informational marker rather than a case marker in Korean linguistics.

2 Previous Approaches

2.1 Bonet et al. 2007

Bonet et al. (2007) take the topic marker *-in* ~ *-nin* as an example where the emergence of unmarked (TETU; McCarthy and Prince 1994) is observed. (See also Kager 1996, Lapointe 2001, Mascaró 1996, Perlmutter 1998, and Tranel 1996 for similar proposals.) They assume DEP and MAX dominate ONSET and NOCODA, as deletion or insertion is not allowed as a repair strategy. They further argue that *-in* and *-nin* are listed in the lexicon without any ordering, so that a candidate which minimally violates ONSET and NOCODA (a candidate with a less marked form), is selected:

(2) Bonet et al. (2007:905)

a. Vowel-final noun: *c^ho.nin* ‘Cho-TOPIC’

<i>c^ho</i> {-in, -nin}	DEP	MAX	ONSET	NOCODA
⊗ a. <i>c^ho.in</i>			*	*!
☞ b. <i>c^ho.nin</i>				*

b. Consonant-final noun: *ki.min* ‘Kim-TOPIC’

<i>kim</i> {-in, -nin}	DEP	MAX	ONSET	NOCODA
☞ a. <i>ki.min</i>				*
b. <i>kim.nin</i>				**!

However, this analysis fails to explain /ŋ/-final nouns, which behave like other consonant-final nouns. The problem is that /ŋ/ is not a permissible onset in Korean, so it cannot be resyllabified as the onset of the following syllable. Yet, the analysis selects an ill-formed candidate over the actual form for a /ŋ/-final noun as shown in (3).⁴

(3) /ŋ/-final noun: *saŋ.in* ‘prize-TOP’

<i>saŋ</i> {-in, -nin}	DEP	MAX	ONSET	NOCODA
⊗ a. <i>saŋ.in</i>			*	**!
☞ b. <i>saŋ.nin</i>				**

Furthermore, to explain phonologically unnatural allomorph selections in Haitian Creole, Bonet et al. argue that some allomorphs are listed in the lexicon with a certain ordering, proposing a constraint called PRIORITY. This constraint states that the allomorph ordering is respected whenever possible. However, even if the proposal regarding ordered allomorphs is considered for the Korean topic marker, e.g., PRIORITY: *-in* > *-nin*, this approach would be still problematic. That is, /ŋ/-final nouns select *-in*, but now vowel-final nouns never select *-nin* as shown in (4). In (4b), PRIORITY eliminates *-nin*, selecting the wrong candidate, *c^ho.in*. Also, rearranging of the constraint ranking does not help in this case. If PRIORITY were ranked lower than ONSET, /ŋ/-final nouns would not be able to select *-in* as it is onset-less.

(4) Ordered allomorphy (TOPIC): {-in > -nin}

a. /ŋ/-final noun: *saŋ.in* ‘prize-TOPIC’

This is because it can be added to other case markers as in *pap-ilo-nin* ‘rice-INSTR-TOP’, while other case markers cannot do so (e.g., **pap-ilo-lil* ‘rice-INSTR-ACC’). This fact is not directly related to the main points of this paper, so I refer to all of the markers as case markers for convenience.

⁴In this paper, actual surface forms that are not selected are marked with a frowning face (⊗), and incorrect winners are represented with a left-pointing hand (☞).

saŋ {-in > -nin}	DEP	MAX	PRIOR	ONSET	NoCODA
☞ a. saŋ.in				*	**
b. saŋ.nin			*!		**

b. Vowel-final noun: *c^ho.nin* ‘Cho-TOPIC’

c ^h o {-in > -nin}	DEP	MAX	PRIOR	ONSET	NoCODA
⊗ a. c ^h o.nin			*!		*
☞ b. c ^h o.in				*	*

Another problem is found with /l/-final nouns with the instrumental *-lo* ~ *-ilo*. Bonet et al.’s analysis would select *-ilo* after /l/-final nouns so that the final /l/ could be resyllabified as the onset of *-i*. However, /l/-final nouns select *-lo*, contrary to expectation:

- (5) *pal-lo* ‘foot-INSTR’ (cf. **pal-ilo*)
k^hal-lo ‘knife-INSTR’ (cf. **k^hal-ilo*)

Again, the proposal of ordered allomorphs does not solve the problem in the instrumental marker. The tableau in (6) shows what would happen if ordered allomorphy (e.g., *-lo* > *-ilo*) were applied for the Korean instrumental marker. Because the priority is given to *-lo*, consonant-final nouns cannot select *-ilo*, but select a wrong winner (**kim.lo* ‘Kim-INSTR’).

(6) Ordered allomorphy (INSTRUMENTAL): {-lo > -ilo}

a. /l/-final noun: *pal.lo* ‘foot-INSTR’

pal {-lo > -ilo}	DEP	MAX	PRIOR	ONSET	NoCODA
☞ a. pal.lo					*
b. pa.li.lo			*!		

b. Consonant-final noun: *ki.mi.lo* ‘Kim-INSTR’

san {-lo > -ilo}	DEP	MAX	PRIOR	ONSET	NoCODA
⊗ a. ki.mi.lo			*!		
☞ b. kim.lo					*

These examples clearly show that the important factor in allomorph selection in the Korean case markers is not the optimization of syllable structure, but the phonological environment.

2.2 Lee 2009

Lee (2009) notices the problem on /ŋ/-final nouns and tries to solve this problem with a constraint, *ŋ/ONSET. Also, he proposes a constraint called DEFAULT, which states that a phonologically simpler allomorph is preferred. The following tableau shows how his analysis works for /ŋ/-final nouns.⁵

(7) Lee (2009:476)

waŋ {-i, -ka} ‘king-NOM’	*ŋ/ONS	*VV	DEFAULT	NoCODA	ONSET	ALIGN-STEM
☞ a. waŋ.i				*	*	
b. waŋ.ga			*!	*		
c. wa.ŋi	*!					*

⁵Lee (2009) considers /w/ a consonant, while /wa/ is traditionally regarded as a diphthong in Korean linguistics.

Lee's analysis in (7) selects the actual surface form *waŋ.i* over *wa.ŋi*, as he has a markedness constraint $*\eta/\text{ONSET}$. Also, DEFAULT eliminates *waŋ.ga*, since *-i* is the default form (phonologically simpler than *-ka*), so candidate (a) is selected as the optimal candidate.

While Lee's analysis works for the *-i ~ -ka* alternation, his analysis does not extend into the rest of the Korean case system. For example, /l/-final nouns with the instrumental marker would still select the wrong winner in Lee's analysis. DEFAULT successfully eliminates an ill-formed candidate *pa.li.lo* 'foot-INSTR' for the /l/-final noun as in (8a), but it also eliminates the actual surface form *ki.mi.lo* 'Kim-INSTR' for the consonant-final noun as in (8b).

(8) *-lo ~ ilo* in the DEFAULT analysis

a. /l/-final noun: *pal.lo* 'foot-INSTR'

pal {-lo, -ilo}	* η/ONS	*VV	DEFAULT	NoCODA	ONSET	ALIGN-STEM
☞ a. pal.lo				*		
b. pa.li.lo			*!			*

b. Consonant-final noun: *ki.mi.lo* 'Kim-INSTR'

kim {-lo, -ilo}	* η/ONS	*VV	DEFAULT	NoCODA	ONSET	ALIGN-STEM
⊗ a. kim.lo				*		
☞ b. ki.mi.lo			*!			*

Also, the comitative marker *-wa ~ -kwa* poses a problem for all approaches that address the alternation with syllable optimization, because its distribution does not optimize phonological surface forms. An optimizing approach would expect *-kwa* to appear after vowel-final nouns, contrary to the fact:

- (9) *pap-kwa* 'rice-COM' (cf. $*\text{pap-wa}$)
se-wa 'bird-COM' (cf. $*\text{se-kwa}$)

(10) shows what happens if Lee's proposal were extended to the comitative marker. Since a phonologically simpler form is the default in his analysis, *-wa* is the default form in the comitative.

(10) *-wa ~ -kwa* in the DEFAULT analysis

waŋ {-wa, -kwa} 'king-COM'	* η/ONS	*VV	DEFAULT	NoCODA	ONSET	ALIGN-STEM
☞ a. waŋ.wa				*		
⊗ b. waŋ.gwa			*!	*		
c. wa.ŋwa	*!					*

While $*\eta/\text{ONSET}$ successfully eliminates Candidate (c), DEFAULT penalizes the actual surface form (b) and selects an ill-formed candidate, *waŋ.wa*.

2.3 Summary

The two previous studies show that there are general problems in Optimality Theory (OT) based approaches, as Embick (2010) points out. First of all, a set of constraints proposed for one alternation does not work for another alternation in the same language. Considering OT's general assumption that the ranking of a set of constraints represents the grammar of a language, we would expect that the proposed ranking works throughout the entire system, or at least for the case markers. However, this is not the case. We often find that the ranking of constraints that works fine for one alternation does not work for another alternation found in the same language. Secondly, phonological constraints alone are not enough to explain the distributions of the Korean case markers. A constraint such as PRIORITY is basically not a phonological constraint, but a morphological constraint, in that it deals with certain orderings between two morphemes without considering their phonological properties. DEFAULT in Lee 2009 seems to take phonological properties into account

by defining the *default* as a phonologically simpler form than the other allomorph. However, it should be noted that it is another way of making morphological orderings between two allomorphs. This suggests that even allomorph selections with relatively clear phonological distributions, such as the Korean case markers, need a morphological constraint. Lastly, the alternations found in the Korean case markers do not necessarily optimize syllable structures, which means that analyzing these alternations as optimization would lead to a wrong conclusion. To a first approximation, they seem to optimize phonological surface forms, yet a close look at them reveals that this is not the case.

3 Analysis

My proposal uses the framework of Distributed Morphology (Halle and Marantz 1993, Harley and Noyer 1999, Embick and Halle 2005), which does not require phonological optimization. In Distributed Morphology (DM), there are two types of basic elements that are used in word formation: roots and abstract morphemes. Abstract morphemes are composed of non-phonetic features, and phonological exponents are added to abstract morphemes via Vocabulary Insertion. In addition to Vocabulary Insertion, DM employs Readjustment Rules, which are phonological rules that change phonological forms of roots or the phonological exponents of abstract morphemes in a specific morphosyntactic environment. DM uses Vocabulary Insertion to explain suppletion and Readjustment Rules to account for morphophonological alternations.

3.1 The Nominative Marker

Let me first start with the nominative marker. Considering that the forms *-i* and *-ka* are not phonologically related to each other, and that their distribution depends on the phonological environment, the alternation is suppletive and there must be two Vocabulary items.

- (11) Nominative: *-i* ~ *-ka*
 [NOM] ↔ *-ka*/V _____
 [NOM] ↔ *-i*

(11) states that there are two phonological forms (exponents) that can be inserted for the nominative marker, which are *-ka* and *-i*; *-ka* is inserted after vowel-final nouns, and *-i* is inserted elsewhere.⁶

The point that their phonological forms are unrelated becomes clear when the history of the language is considered. In Middle Korean (around the 15th century), *-i* was the only nominative marker (Sohn 1999). After a consonant-final noun, an allophone of *-i*, [j], was used instead of *-ka*. In 1572, *-ka* was first observed in the literature and it has been productively used since the 17th century. If *-ka* were somehow derived from the allophone *-j*, we would expect to find evidence of a sound change from *-j* to *-ka* (at least in the nominative context). However, there is no such evidence and *-ka* is attested at a later date in the language. Therefore, *-i* and *-ka* are listed as separate Vocabulary items in the present analysis.

3.2 The Accusative and Topic Markers

To a first approximation, the same analysis using different Vocabulary items seems to work for the accusative and the topic markers as in (12) and (13):

- (12) Accusative: *-il* ~ *-lil*
 [ACC] ↔ *-lil*/V _____
 [ACC] ↔ *-il*

⁶Considering that *-i* was the only nominative marker in Middle Korean, *-i* is listed as a less specific Vocabulary Item than *-ka* in (10). However, they can be listed in the other order, and there is no synchronic evidence that one should be listed above the other because they are in complementary distribution.

- (13) Topic: *-in* ~ *-nin*
 [TOP] ⇔ *-nin*/V ____
 [TOP] ⇔ *-in*

One problem with this approach is that it does not explain that the two forms of each abstract morpheme are phonologically related. Given that suppletion is rare in natural languages (Embick and Halle 2005), it is preferred to treat these alternations as morphophonological than as suppletive ones. Therefore, in this paper, one Vocabulary item and one Readjustment Rule for each abstract morpheme are proposed to capture their phonological similarities.

As for the Readjustment Rule, we have two options to choose from: one is to assume the onset consonant of these abstract morphemes is deleted after a consonant-final noun (*-CiC* → *-iC*) and the other is to make the onset consonant copied from the coda consonant after a vowel-final noun (*-iC* → *-CiC*).⁷ However, the picture looks even more complicated when the other alternation of these markers is considered.

- (14) Topic: *-n* ~ *-nin* (optional)
 a. *pap-in* **pap-n* ‘rice-TOP’
 b. *se-nin* *se-n* ‘bird-TOP’
- (15) Accusative: *-l* ~ *-lil* (optional)
 a. *pap-il* **pap-l* ‘rice-ACC’
 b. *se-lil* *se-l* ‘bird-ACC’

The problem here is that *-CiC* can be reduced to *-C* after vowel-final nouns, but *-iC* cannot be reduced to *-C* after consonant-final nouns.⁸ If *-CiC* were the Vocabulary item, we would need two deletion rules to explain the distributions. One is that *-C₁* (onset) is deleted after consonant-final nouns (*-CiC* → *-iC*), and the other is that *-C₁i* is also deleted after vowel-final nouns (*-CiC* → *-C*). In these rules, the onset is deleted in two different phonological environments, which suggests that the rules are redundant. Thus, in this paper I propose *-iC* is the Vocabulary item and the onset consonants are copied from the coda consonants after vowel-final nouns.

- (16) [ACC] ⇔ *-il*
 [TOP] ⇔ *-in*
- (17) Coda Copy: *-iC₁* → *-C₁iC₁* / V ____ [TOP, ACC]

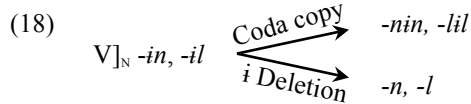
The phonological exponents of the topic and the accusative markers can undergo either the coda copy rule or the *i* deletion rule, as illustrated in (18).⁹ (The *i* deletion rule is discussed in the next section in detail.) The formation in (18) explains why the *i* deletion rule is obligatory after a vow-

⁷The topic and the accusative markers are given in a schematic form for convenience: *-CiC* stands for *-nin* and *-lil* and *-iC* represents both *-in* and *-il*.

⁸Note that the reduction of *-CiC* to *-C* is not an obligatory alternation but free variation, mostly found in a colloquial style.

⁹As for the *-CiC* ~ *-C* alternation, a few people suggested that it might be possible to have *-CiC* as the Vocabulary item, and delete *i* in *-CiC* with the *i* deletion rule and make *-CC* to *-C* with a consonant reduction rule (*-CiC* → *-CC* → *-C*). Although this was worth a try, it did not work well. If *-CiC* is inserted via Vocabulary Insertion, *i* is no longer adjacent to the final vowel of nouns, which means they are non-local due to *-C₁*. It was not clear to me how to delete only *i* that is attached to vowel-final nouns while not deleting *i* after consonant-final nouns. After resyllabification, vowel-final nouns and consonant-final nouns would look the same (vowel-final: *CV-CiC* → *CV.CiC*, consonant-final: *CVC-iC* → *CV.CiC*), so it seemed impossible to delete *i* only after vowel-final nouns. Another way might be to say *i* deletes whenever possible (not only after vowel-final nouns but also after consonant-final nouns if possible) and *i* in *-iC* cannot be deleted because it results in a consonant cluster in the coda position (e.g., *pap-in* ‘rice-TOP’ → **pap-n*). However, this raises a problem in the instrumental marker (Section 3.3), as it deletes *i* in *-ilo* after consonant-final nouns, making *pap-ilo* ‘rice-INSTR’ to **pap-lo*. While **pap-lo* has permissible syllable structures in Korean, this is not the actual surface form of ‘rice-INSTR’, so the idea of *-CiC* → *-CC* → *-C* is not adopted in this paper.

el-final noun in the instrumental context, but the alternation of -CiC ~ -C in the topic and the accusative markers is optional. Since there are two (morpho-)phonological rules that can apply after a vowel-final noun in the topic and the accusative contexts, the *i* deletion rule does not apply when the coda consonant is copied from the onset; therefore, it looks optional.



3.3 The Instrumental Marker

The distribution of the instrumental marker is interesting since /l/-final nouns behave like vowel-final nouns in the instrumental context. That is, *-lo* is selected after /l/-final nouns. The distribution of the instrumental marker again shows that the allomorph selection does not optimize phonological surface forms.

- (19) a. *pap-ilo* ‘rice-INSTR’
 b. *se-lo* ‘bird-INSTR’
 c. *pal-lo* ‘foot-INSTR’ (cf. **pal-ilo*)

A challenge here is how to explain the phonological relationship of *-ilo* and *-lo* with making /l/-final nouns as an exception. There are three options to choose: One is to have three Vocabulary items (VI) for each distribution as in (20a), another is to assume two Vocabulary items and one phonological rule as in (20b), and the other is to assume one Vocabulary item and one phonological rule in disjunctive environments as in (20c).

- (20) a. Three VIs: [INSTR] ↔ *-lo*/l ____
 [INSTR] ↔ *-lo*/V ____
 [INSTR] ↔ *-ilo*
- b. Two VIs: [INSTR] ↔ *-lo*/l ____
 [INSTR] ↔ *-ilo*
i deletion rule: *i* → Ø / V ____
- c. One VI: [INSTR] ↔ *-ilo*
i deletion rule: *i* → Ø / V ____
i → Ø / l ____

Among these three options, I suggest that (20c) is better than the others, because *-lo* after /l/-final nouns and *-lo* after vowel-final nouns are not treated as an accident, unlike (20a, b). (20a) treats the phonological similarity between *-lo* and *-ilo* as a total accident, stating there are three different Vocabulary items for the instrumental marker, which happen to have similar phonological forms from one another. So, this option is excluded. The difference between (20b) and (20c) may look minor, but the analysis in (20b) states that *-lo* after /l/-final nouns and *-lo* after vowel-final nouns happen to be the same, unlike the one in (20c). The *-lo* form in *pal-lo* ‘foot-INSTR’ is a result of Vocabulary Insertion, while *-lo* in *se-lo* ‘bird-INSTR’ is the result of the *i* deletion rule. However, the *-lo* form after vowel-final and /l/-final nouns is the result of the same *i* deletion rule in (20c), so (20c) seems to be a better analysis than (20b). Also, the analysis in (20c) is further supported when we take a look at Korean verb conjugations. The *i* deletion rule in the Korean verb conjugations shows exactly the same distribution with the one in (20c).¹⁰ Examples are given in (21), (22), and (23).

¹⁰The *i* deletion rule in the Korean verb conjugations has been well-studied by several linguists. See Kim-Renaud 1982, Sohn 1999, among others.

where (Sohn 1999), which is the same distribution of the *-lo* ~ *-ilo* alternation of the instrumental marker in Contemporary Korean. So, for the time being, I suggest one Vocabulary item and a deletion rule as in (27) and (28).

(27) [COM] ↔ *-kwa*

(28) *k* deletion: $k \rightarrow \emptyset / V ___ [COM]$

4 Conclusion

The present paper showed that the alternations in the Korean case markers are not motivated by optimization of phonological surface forms. For example, /ŋ/-final nouns take a vowel-initial alternant (*-i*, *-in*, *-il*, and *-ilo*), even though /ŋ/ is not a permissible onset consonant in Korean. Also, as for the *-lo* ~ *-ilo* alternation, /l/-final nouns unexpectedly select *-lo*, which again suggests that the alternation is not for optimization. Lastly, the *-wa* ~ *-kwa* alternation cannot be explained by the optimization, as the distribution of the comitative marker rather worsens the syllabic structures of surface forms.

Also, I used the framework of Distributed Morphology in explaining the alternations. First, I argued that there are two different Vocabulary items for the *-i* ~ *-ka* alternation, as their phonological forms are not related to each other. However, I showed that there should be only one Vocabulary item for the other alternations. First, I proposed that *-in* and *-il* are the phonological exponents of the topic and the accusative markers, respectively, and either the coda copy rule or the *i* deletion rule is applied. As for the *-lo* ~ *-ilo* alternation, I demonstrated the phonological exponent of the instrumental marker is *-ilo*, and the *i* deletion rule is applied after a vowel-final noun to derive *-lo*. Lastly, the present paper suggested that the phonological exponent of the comitative marker is *-kwa*, and *k* is deleted after a vowel-final noun only in the comitative context. The summary of my proposal is given in Table 2.

	Vocabulary Items	Examples
Nominative	[NOM] ↔ <i>-ka</i> /V ____	<i>se-ka</i> ‘bird-NOM’
	[NOM] ↔ <i>-i</i>	<i>pap-i</i> ‘rice-NOM’
Topic	[TOP] ↔ <i>-in</i>	<i>se-nin</i> (~ <i>se-n</i>) ‘bird-TOP’ <i>pap-in</i> ‘rice-TOP’
Accusative	[ACC] ↔ <i>-il</i>	<i>se-lil</i> (~ <i>se-l</i>) ‘bird-ACC’ <i>pap-il</i> ‘rice-ACC’
Instrumental	[INSTR] ↔ <i>-ilo</i>	<i>se-lo</i> ‘bird-INSTR’ <i>pap-ilo</i> ‘rice-INSTR’ <i>pal-lo</i> ‘foot-INSTR’
Comitative	[COM] ↔ <i>-kwa</i>	<i>se-wa</i> ‘bird-COM’ <i>pap-kwa</i> ‘rice-COM’

Table 2: Summary of Korean case markers.

The main idea of my analysis was not to depend on phonological optimization. By pursuing this approach, the current analysis handles the free alternations found in the topic and the accusative markers, *-n* ~ *-nin* and *-l* ~ *-lil*, which have not been addressed in previous studies in detail. The relationship between the *i* deletion rule and /l/-final verbs was also partly discussed, but not addressed in detail. A future study will be needed to fully explore how the *i* deletion rule affects the irregular stem changes in /l/-final verbs.

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