

INFORMATION TO USERS

This manuscript has been reproduced from the microfilm master. UMI films the text directly from the original or copy submitted. Thus, some thesis and dissertation copies are in typewriter face, while others may be from any type of computer printer.

The quality of this reproduction is dependent upon the quality of the copy submitted. Broken or indistinct print, colored or poor quality illustrations and photographs, print bleedthrough, substandard margins, and improper alignment can adversely affect reproduction.

In the unlikely event that the author did not send UMI a complete manuscript and there are missing pages, these will be noted. Also, if unauthorized copyright material had to be removed, a note will indicate the deletion.

Oversize materials (e.g., maps, drawings, charts) are reproduced by sectioning the original, beginning at the upper left-hand corner and continuing from left to right in equal sections with small overlaps. Each original is also photographed in one exposure and is included in reduced form at the back of the book.

Photographs included in the original manuscript have been reproduced xerographically in this copy. Higher quality 6" x 9" black and white photographic prints are available for any photographs or illustrations appearing in this copy for an additional charge. Contact UMI directly to order.

U·M·I

University Microfilms International
A Bell & Howell Information Company
300 North Zeeb Road, Ann Arbor, MI 48106-1346 USA
313/761-4700 800/521-0600



Order Number 9230491

Word formation and interface phenomena in the Korean lexicon

Jeong, Weon Don, Ph.D.

University of Hawaii, 1992

U·M·I
300 N. Zeeb Rd.
Ann Arbor, MI 48106



WORD FORMATION
AND
INTERFACE PHENOMENA IN THE KOREAN LEXICON

A DISSERTATION SUBMITTED TO THE GRADUATE DIVISION OF THE
UNIVERSITY OF HAWAII IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF

DOCTOR OF PHILOSOPHY

IN

LINGUISTICS

MAY 1992

By

Weon Don Jeong

Dissertation Committee:

Gregory Lee, Chairperson
Byron W. Bender
Ken Rehg
Ho-min Sohn
Timothy Vance
Marshall R. Pihl

ACKNOWLEDGEMENTS

There are many people to express my gratitude to while I finish my thesis. First of all, my thanks go to the members of my thesis committee, especially Professor Gregory Lee, my advisor. He gave me insightful ideas whenever I had a problem. Without his kind comments and guidance, this thesis would not have been completed. Special thanks are due to Professor Ho-min Sohn. His deep knowledge of Korean and command of rich data helped me write this thesis and understand linguistic phenomena in Korean. At the same time, I thank Professors Byron W. Bender, Ken Rehg, Timothy Vance, and Marshall R. Pihl for their comments and suggestions.

It has been a great pleasure to meet Professors Jeanne Gibson and William O'Grady. Their clear thinking and presentation made me first interested in syntax and helped me to develop my ideas, especially about interface phenomena between word formation and syntax. I am very sorry that Professor Jeanne Gibson left Hawaii.

I am very thankful to Professor Dong Jae Lee. While I was studying in UH, he encouraged me with his warm-heartedness and kindness, and his helpful advice was very valuable.

I thank Philip Bralich for correcting English, and also thank Joel Bradshaw for his careful proofreading and editing.

I feel grateful to my fellow students at the department of linguistics in UHM: Sungdai Cho, Young-Seok Choi, Miho Choo, Gyung-Ran Kim, Hae Yeon Kim, Jay Kim, Keon Soo Lee, Duk-Soo Park, Sayhyon Park, Sung-Ock Shin, Seok Hoon You, Sung Kyu Yun, Gregory Carter, Hsun-huei Claire Chang, Laura Chang, the late Marilyn Hadley-Voth, Matazo and Masako Izutani, Kazue Kanno, Michael Larish, Jung-ying Lu, Deborah Masterson, Siew-Ai Ng, Noriko Sakuragi, Yutaka Sato, Ken Tsai, and Takako Unetani. In addition, my friends helped me reduce stress by playing tennis at Palolo court every Friday night: Byung Yool Ban, Jin Kyung Kim, Seung-Hwan Lee, Jin-Kun Lim, and Byung-Do Moon.

Finally, I express my sincere gratitude to my parents for their financial and moral support; to my son, Yoon-Hwan; and to my wife, Hy-Sook, for her constant encouragement and patience.

ABSTRACT

This dissertation discusses two topics in Korean morphology: (i) word formation in Korean and constraints on word formation, and (ii) interface phenomena between word formation and syntax, and between word formation and phonology.

Chapter 1 presents the goal and scope of this dissertation.

Chapter 2 discusses word formation in various lexical categories of Korean. As in other languages, words in Korean are formed by derivation and compounding. We demonstrate that nouns and adverbs can be formed by derivation and compounding, that verbs can be formed by derivation and compounding, but involve inflection, and that postpositions can be formed by compounding.

Chapter 3 discusses blocking phenomena in Korean. Blocking is a kind of output filter on word formation. We demonstrate that blocking functions to avoid synonymy or homonymy.

Chapter 4 discusses interface phenomena between word formation and syntax. Certain constituents in Korean have the same shape in both the lexicon and the syntax. For example, derived nouns resemble verbal nominalizations, noun compounds resemble phrasal nominalizations, and the verb + noun constructions appear identically as either noun compounds or noun phrases. Although these constructions

resemble each other, they differ in certain ways. We explore different properties of these formally identical structures. The verb + verb constructions and the noun + verb constructions are ambiguous in structural category. We explore whether these constructions are words or phrases, and examine what properties they have.

Chapter 5 discusses other interface phenomena between word formation and phonology. We explore what environments contraction is formed in and how contraction is formed. In addition, we note several inadequacies of lexical phonology.

Chapter 6 summarizes and concludes this dissertation.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS.....	iii
ABSTRACT.....	v
LIST OF ABBREVIATIONS.....	ix
CHAPTER 1 INTRODUCTION.....	1
CHAPTER 2 WORD FORMATION IN KOREAN	
2.1 Noun Formation.....	4
2.1.1 Derivation.....	4
2.1.2 Compounding.....	9
2.1.3 Interaction of Derivation and Compounding..	12
2.2 Verb Formation.....	14
2.2.1 Derivation.....	15
2.2.2 Compounding.....	17
2.2.3 Inflection.....	19
2.3 Postposition Formation.....	31
2.4 Adverb Formation	35
2.5 Summary.....	38
Notes to Chapter 2.....	39
CHAPTER 3 CONSTRAINT ON WORD FORMATION.....	40
CHAPTER 4 WORD FORMATION AND SYNTAX	
4.1 Nominalization Constructions.....	53
4.1.1 Derived Word Versus Verbal Nominalization..	53
4.1.2 Compound Versus Phrasal Nominalization.....	55
4.1.3 Thematic Relations of Compounds and Phrasal Nominalizations.....	58
4.2 Verb + Noun Constructions.....	64
4.3 Verb + Verb Constructions.....	74
4.3.1 Lexical Compounds.....	75
4.3.2 Conjunction Constructions.....	78
4.3.3 Auxiliary Constructions.....	81
4.4 Noun + Verb Constructions.....	99
4.5 Summary.....	108
Notes to Chapter 4.....	110

CHAPTER 5 WORD FORMATION AND PHONOLOGY	
5.1	Contraction.....111
5.1.1	Environment.....111
5.1.2	Formation.....119
5.1.2.1	Partial Deletion.....119
5.1.2.2	Fusion.....122
5.1.2.3	Complete Deletion.....130
5.2	Inadequacies of Lexical Phonology.....132
5.3	Summary.....141
Notes to Chapter 5.....142	
CHAPTER 6 CONCLUSION.....143	
REFERENCES.....148	

LIST OF ABBREVIATIONS

Acc	Accusative
Caus	Causative
Conj	Conjunction
DEL	Delimiter
Gen	Genitive
ICM	Inherent Case Marker
Nom	Nominative
Pass	Passive
Pres	Present
Q	Question
SCM	Structural Case Marker
VAS	Verbal Adjectival Suffix
VAdvS	Verbal Adverbial Suffix

CHAPTER 1
INTRODUCTION

Studies of word formation have been neglected within transformational generative grammar because linguists have paid attention mainly to phrases or sentences rather than words. Since Lees's (1960) claim that compounds are generated by transformations, it has often been assumed that transformational rules are sufficient to deal with word formation. Word formation was either ignored or handled by transformations in early transformational generative grammar.

But Chomsky (1970) argues against the powerful transformational approach to word formation, and proposes the lexicalist hypothesis that word formation takes place in the lexicon. While Chomsky's claim turned linguists' attention to word formation, Halle (1973), Siegel (1974), Aronoff (1976), and Allen (1978) have demonstrated that word formation consists of structures which are governed by rules or constraints.

Since Chomsky (1970), word formation has been treated within the lexicon. But certain identical structures are found in both the lexicon and the syntax. In other words, the same form appears as a word or a phrase. Since a line cannot clearly be drawn between the lexicon and the syntax, interface phenomena take place between word formation and syntax.

Moreover, certain phonological phenomena are closely related to word formation. Although a phonological rule might apply in the same phonological environment, its application depends on word formation. This demonstrates that there is also an interface between word formation and phonology.

This dissertation discusses two kinds of topics in Korean morphology: (i) word formation in Korean and constraints on word formation, and (ii) interface phenomena between word formation and syntax, and between word formation and phonology.

The dissertation is organized as follows:

Chapter 1 presents the goal and scope of this dissertation.

Chapter 2 discusses how lexical categories are formed in Korean. As in other languages, words in Korean can be formed by derivation and compounding. We demonstrate that nouns and adverbs can be formed by derivation and compounding, that verbs can be formed by derivation and compounding, but involve inflection, and that postpositions can be formed by compounding.

Chapter 3 discusses blocking phenomena in Korean. Unlike other constraints, blocking, which is a kind of output filter, is useful in constraining word formation because there are no phrase structure rules or movement transformations in word formation. Since word formation

tends to maximize semantic or phonological transparency, the function of blocking is to avoid synonymy or homonymy.

Chapter 4 discusses interface phenomena between word formation and syntax. Certain constituents in Korean are formed identically in both the lexicon and the syntax. For example, derived nouns have the same structure as verbal nominalizations, noun compounds have the same structure as phrasal nominalizations, and the verb + noun constructions appear identically either noun compound or noun phrase. Although these constructions resemble each other in structure, they differ in behavior. We explore different properties of these formally identical structures. Moreover, since the verb + verb construction and the noun + verb construction are ambiguous as in status, we explore whether the constructions are words or phrases, and examine what properties they have.

Chapter 5 discusses other interface phenomena between word formation and phonology. We explore what environments contraction is formed in and how contraction is formed. In addition, we note several inadequacies of lexical phonology.

Chapter 6 summarizes and concludes this dissertation.

CHAPTER 2
WORD FORMATION IN KOREAN

In this chapter, we discuss the formation of words in Korean. As in other languages, word formation in Korean includes derivation and compounding. We explore these word formation phenomena with regard to lexical categories such as noun, verb, postposition, and adverb.¹

2.1 Noun Formation

Nouns are usually formed by derivation and compounding, and the same word formation processes apply to nouns in Korean. In this section, we discuss word formation of nouns. The first part discusses derivational processes and the second part compounding processes. Finally, we discuss the interaction of derivation and compounding in Korean.

2.1.1 Derivation

Derivation is word formation primarily by means of affixes. Consider the following examples:

- (1) a. tol (P)-pay (N) 'wild pear'
 b. pich (N)-kkal (S) 'color'
 c. teph (V)-kay (S) 'cover'
 d. kay (P)-cwuk (V)-um (S) 'useless death'
 e. keyulu (V)-m (S)-payngi (S) 'idle person'
 (P: Prefix, S: Suffix, N: Noun, V: Verb)

The examples in (1) conform to the following structure:

- (2) (Y) X (Z)
 (X: Noun or Verb Root, Y: Prefix, Z: Suffix)

A root is defined as the smallest unit. For example, *pay* 'pear' in (1a) is a noun root and *teph-* 'to cover' in (1c) is a verb root.

There are a few prefixes in English which change lexical category. Consider the following examples:

- (3) a-: a-kin (N -> Adj), a-sleep (V -> Adj)
 en-: en-slave (N -> V), en-noble (Adj -> V)
 be-: be-cloud (N -> V), be-calm (Adj -> V)
 de-: de-bug (N -> V)

However, prefixes in Korean do not cause a change of lexical category. Consider the following examples:

- (4) phwus-: phwus-kochwu 'unripe pepper' (N -> N)
 unripe-pepper
 mey-: mey-pye 'unsticky rice' (N -> N)
 unsticky-rice
 nal-: nal-koki 'raw meat' (N -> N)
 raw-meat
 mayn-: mayn-pal 'bare foot' (N -> N)
 bare-foot
 oy-: oy-atul 'only son' (N -> N)
 only-son
 has-: has-paci 'cotten-padded trousers' (N -> N)
 cotten-padded-trousers
 swus-: swus-chenye 'immaculate virgin' (N -> N)
 pure-virgin
 twul-: twul-amso 'sterile cow' (N -> N)
 barren-cow
 chal-: chal-pap 'cooked glutinous rice' (N -> N)
 sticky-rice
 kwun-: kwun-soli 'extra word' (N -> N)
 extra-sound
 han-: han-kil 'main road' (N -> N)
 main-road
 mwus-: mwus-salam 'every man' (N -> N)
 many-man

The examples in (6b) cannot be used independently. Rather, they are always put together with other nouns, as in the following:

- (7) os kel-i 'clothes-hanger'
 son cap-i 'knob, handle'
 kkoch kkoc-i 'flower arrangement'

Second, *-i* is more productive than the suffixes in (5a).² Since the latter have been lexicalized, we cannot find many forms. At the same time, a change in spelling takes place in (5a). Consider the following examples:

- (8) ssel-ey -> sse\$ley 'harrow'
 ppalkah-ang -> ppal\$ kang 'red'
 (\$: Syllable Boundary)

On the other hand, forms with *-i* are mostly found without showing a spelling change:

- (9) kel-i -> *ke\$li 'walk'
 alh-i -> *a\$li 'sickness'

Finally, the suffixes in (5a) are never affixed to a phrase or a sentence. However, *-i* can very rarely be connected with a phrase. Consider the following examples:

- (10) makwu cap-i
 randomly catch-ing
 'random behavior'

Since *makwu* in (10) is an adverb, it cannot modify the noun *cap-i*. Thus, the structure is illustrated as follows:

- (11) [makwu cap]yp-i

In (11), the adverb *makwu* can modify the verb *capta*. The example in (11) illustrates that *-i* can attach to a phrase.

Next, we turn to the suffixes in (5b) and (5c). While *-i* can never attach to a sentence, the suffixes in (5c) can. Consider the following examples:

- (12) a. *[John-i sinmwun-ul ilk]-i
 [John-Nom newspaper-Acc read]-ing
 '[John reads a newspaper]-ing'
- b. [John-i sinmwun-ul ilk]-um
 [John-Nom newspaper-Acc read]-ing
- c. [John-i sinmwun-ul ilk]-ki
 [John-Nom newspaper-Acc read]-ing

With respect to the examples in (12), *-i* has the properties of derivation, but *-(u)m* and *-ki* have both properties of derivation and inflection.

The structure of word formation outlined in (2) follows the Binary Branching Hypothesis proposed by Aronoff (1976) and Scalise (1984). This implies that it has a hierarchical structure. Consider the examples in (1d) and (1e):

- (13) a. [kay [cwuk um]] 'useless death'
 b. [[keyulu m] payngi] 'idle person'

However, the Binary Branching Hypothesis permits ambiguity.

Consider the following example:

- (14) a. hes (Prefix)-pal (Noun)-cil (Suffix)
 false-foot-doing
 'false kicking'
- b. (i) [[hes pal] cil]
 (ii) [hes [pal cil]]

The examples in (14) illustrate ambiguous binary-branching. With respect to this ambiguity, Scalise (1984:149-50) suggests that in Italian suffixation precedes prefixation. The following example confirms Scalise's suggestion:

(15) [kay [cwuk um]] (*[[kay cwuk] um]) 'useless death'

Since *kay-cwuk in (15) is not a possible form, it appears that suffixation applies before prefixation in Korean as well.³

2.1.2 Compounding

There are two kinds of compounds in Korean: sub-compounds and co-compounds. Consider the following examples:

- (16) a. miyek (N) kwuk (N) 'seaweed soup'
 kwun (V) pam (N) 'roasted chestnut'
- b. pam (N) nac (N) 'day and night'
 son (N) pal (N) 'hand and foot'

Since the examples in (16a) are sub-compounds, they satisfy the *IS A* Condition proposed by Allen (1978). For example, *miyek kwuk* 'seaweed soup' *IS A* kind of soup rather than seaweed and soup. But the condition is not observed in co-compounds because they are usually composed of words with contrastive meanings.

The examples in (16) illustrate the following structure:

- (17) a. {Noun, Verb} Noun
 b. Noun Noun

This is represented by X-bar schema:

- (18) a. $X \rightarrow Y X$
 b. $X \rightarrow X X$

In (18), X is the head because the properties of X determine those of the compound. For example, a non-head *kwun* does not affect the lexical category of a compound. Thus, there is complete agreement of features between the head and the whole.

In the X-bar schema in syntax, the head has to satisfy two conditions:

- (19) The head holds the same category features as X'' , and the level of the head is lower than that of X'' .

Given (19), V is the head of VP because V has the same features and V is lower than V'' in level. But we cannot apply these conditions on the head to compounds, since the head has the same level as the compound. Thus, Williams (1981:248) proposes the following rule:

- (20) Right-hand Head Rule
 In morphology, we define the head of a morphologically complex word to be the right-hand member of that word.

Since the right-hand head rule implies that the head is always on the right-hand side, the properties of the right-hand word determine those of the compound. For example, *sea-bird* has as the right-hand element an animate and

Since the co-compounds in (24) are formed by pairs with opposite or contrastive meanings, they must be compositional. That is, since both members of the pair contribute equally to the meaning of the compound, it is not possible to have a modifier-head relation.

2.1.3 Interaction of Derivation and Compounding

In this section, we discuss the interaction of derivation and compounding. Siegel (1974), Allen (1978), Pesetsky (1979), Kiparsky (1982), and Mohanan (1982, 1986) claim that a word is formed in accordance with level ordering. For example, English illustrates the following order:

- (25) 1. Class I Affixation
 2. Class II Affixation
 3. Compounding

Comparing *non-il-legible* to **in-non-legible*, *non-il-legible* is a possible form because *in-* is a Class I affix and *non-* is a Class II affix. In Korean, however, there is no distinction between Class I and Class II affixes. Moreover, the level ordering hypothesis encounters counterexamples:

- (26) a. mi-tat-i
 push-close-Suf
 'sliding door'
 b. [[mi tat]Comp i]Der

In (26), compounding precedes derivation. This illustrates that level ordering is not observed in Korean.

For Malayalam, which observes no distinction between Class I and Class II affixes, Mohanan (1982, 1986) suggests the following level ordering:

- (27) 1. Derivation
 2. Sub-compounding
 3. Co-compounding
 4. Inflection

Although S.-C. Ahn (1985) follows Mohanan, he accommodates level ordering to Korean:

- (28) 1. Sub-compounding
 2. Co-compounding
 3. Derivation
 4. Inflection

However, Ahn's level ordering cannot correctly describe word formation in Korean because we find many counterexamples.

Consider the following:

- (29) a. alay-wi cip
 bottom-top house
 'lower and upper house'
 a'. [[alay wi]Co-comp cip]Sub-comp
 b. ton pel-i
 money earn-Suf
 'money earning'
 b'. [ton [pel i]Der]Sub-comp

The examples in (29) illustrate that level ordering is problematic for Korean. In (29a), co-compounding precedes sub-compounding; in (29b), derivation precedes sub-

compounding. Thus, the level ordering hypothesis is not adequate for Korean.

2.2 Verb Formation

In this section, the formation of verbs is discussed. Like nouns, verbs are formed by derivation and compounding. Verbs involve inflection, however, because the verb in Korean cannot be an independent word without inflectional suffixes.

Bloomfield (1933:224) points out the two types of formation: word formation (word derivation, word compounding, and word inflection) and stem formation (stem derivation, stem compounding, and stem inflection). The former produces free forms and the latter produces bound forms. In *plays*, *player*, and *playground*, for example, there is a free form *play*. Thus, English illustrates the *word formation* type. In contrast, German has *stem formation*. Consider the following examples:

- (30) lachen 'to laugh'
 lach-e 'I laugh', lach-t 'he laughs'
 lach-te 'he laughed', ge-lach-t 'laughed (participle)'
 Lach-er 'laughter', Lach-krampf 'laughing-spasm'

In (30), we find a bound form *lach*. Since Korean is similar to German, the bound form *mek* appears in the following examples:

- (31) mek-ta 'to eat'
 mek-uni, mek-ese, mek-ko 'eat-Inf Suffix'
 mek-i 'food'
 mek-ki 'eating'

2.2.1 Derivation

As with nouns, derivation in verbs involves affixes and has the same structure:

- (32) (Y) X (Z)
 (X: Noun or Verb Root, Y: Prefix, Z: Suffix)

Like nominal prefixes, verbal prefixes in Korean do not change lexical category. Consider the following examples:

- (33) cis-: cis-nwuluta 'to press down strongly'
 strongly-press down
 si-/say-: si-phelehta 'to be deeply blue'
 deeply-be blue
 say-ppalkahta 'to be deeply red'
 deeply-be red
 toy-: toy-kalta 'to plow again'
 again-plow
 tey-: tey-salmta 'to boil half'
 half-boil
 taka-: taka-ancta 'to sit toward'
 toward-sit
 yes-: yes-tutta 'to overhear'
 secretly-hear

In (32), suffixes include causative (-i, -hi, -ki, -li, -wu, -kwu, -chwu) and passive (-i, -hi, -ki, -li). Since these suffixes cannot occur simultaneously in the verbal structure, verb roots can necessarily choose only one suffix. As an exception to this, a few verbs take double causative suffixes. For example, *caywuta* 'to cause to sleep' is formed from *ca-i-wu-ta*. Suffixes besides the causative and passive are:

- (34) -tal^h(ta): noph-tal^h(ta) 'to be high'
 be high-Verb Suf
 -kap(ta): cha-kap(ta) 'to be cold'
 be cold-Verb Suf
 -(u)p(ta): kuli-p(ta) 'to miss'
 miss-Verb Suf

These verbal suffixes are added to verb roots. In *ttele-ttuli(ta)* 'to fall down' and *neme-ttuli(ta)* 'to knock down,' however, the emphatic suffix *-ttuli* can be added to a form with *-a/e*, which is a so-called verbal adverbial ending. As H.-P. Choi (1955/1983:362) points out, this means that *-ttulita* was historically used as an independent word. But the form has now become a derivational suffix which lacks independence.

Certain verbal suffixes change nouns into verbs. This means that like nominal suffixes, verbal suffixes can also determine the lexical category. Consider the following examples:

- (35) -lop(ta): sulki-lop(ta) 'to be wise' (N -> V)
 wisdom-Verb Suf
 -sulep(ta): kekceng-sulep(ta) 'to be worried' (N -> V)
 worry-Verb Suf
 -tap(ta): salam-tap(ta) 'to be humane' (N -> V)
 man-Verb Suf
 -ap/ep(ta): potul-ap(ta) 'to be soft' (N -> V)
 soft-Verb Suf
 kancil-ep(ta) 'to feel a tickle' (N -> V)
 tickling-Verb Suf

2.2.2 Compounding

As with nouns, there are two kinds of compounds for verbs: sub-compounds and co-compounds. They are composed of two verb roots. Consider the following examples:

- (36) a. *ttwi-nolta* 'to romp'
 run-play
may-talta 'to hang'
 hang-hang
kwut-seyta 'to be strong'
 be hard-be strong
- b. *o-kata* 'to come and go'
 come-go
ye-tatta 'to open and close'
 open-close
olu-naylita 'to rise and fall'
 rise-fall

Compared to noun compounds, it is difficult to tell whether the examples in (36a) are sub-compounds or co-compounds. We assume that they are sub-compounds because the right-hand forms determine the meaning of the compounds. For example, *cith-phwuluta* means 'to be deep blue,' not 'to be deep and blue.'

In contrast, the examples in (36b) are co-compounds. Since the examples consist of contrastive or opposite forms, they exhibit semantic compositionality and lack a single head. Thus, the right-hand forms cannot determine the meaning of compounds.

Y. Kang (1990:235) assumes that the examples in (36) have the following derivations:

- (37) a. *ttwita nolta* -> *ttwi-ese nolta* -> *ttwi-e nolta* ->
 ttwi-nolta
 b. *ota kata* -> *o-ko kata* -> *o-kata*

Kang claims that in (37), adverbial suffixes *-e* and *-ko* are deleted and then compounds result. Thus, verb compounds are developed from verb root-{*a/e, key, ci, ko*} + verb root.

But his analysis is problematic. According to J.-K. Shim (1982/1983:410-11), the derivation of verb compounds is just the opposite. In Middle Korean, verb compounds are often made by verb root + verb root. In contrast, most verb compounds in Modern Korean tend to be made by inserting an adverbial suffix *-a/e* between verb roots. Thus, Kang's analysis is not adequate in terms of the historical evidence.

Second, we cannot predict adverbial suffixes in verb compounds. Consider the following examples:

- (38) *mip-poita* 'to appear hatefully'
 cith-phwuluta 'to be dark blue'

In (38), *mip-poita* can be analyzed in two ways: *mip-key poita* or *mi-we poita*. Similarly, *cith-phwuluta* can be derived from *cith-key phwuluta* or *cith-ko phwuluta*.

Moreover, the following examples are ungrammatical when adverbial suffixes are inserted:

put together into a verbal structure; they have a regular fixed order. Consider the following example:

(41) *mek-(i)-(si)-(ess)-(keyss)-(sup)-(ni)-ta*
 Root-Causative-Subject Honorific-Tense-Modal
 -Hearer Honorific-Mood-Final

The example in (41) is affixed by one derivational (*mek-i* 'to cause to eat') and a series of inflectional suffixes. Since inflectional suffixes must always follow the serial order in (41), other orders are not permissible. For example, **-ess-si-keyss-sup-ni-ta* is ungrammatical. At the same time, the example above illustrates that the only obligatory elements are the verb root and the final inflectional suffix. In other words, the verb root must always occur with the final inflectional suffix. Thus, no verb roots are complete words because they are all bound forms.

The verb stem consists of a verb root and one or more optional derivational affixes. In (41), *mek-i* is composed of a verb root *mek-* 'to eat' and a causative suffix *-i*. As in the above example, a number of inflectional suffixes may occur between a verb stem and a final suffix: subject honorific, tense, modal, hearer honorific, and mood in that order. According to Y.-K. Ko (1989), inflectional suffixes such as subject honorific, tense, modal, hearer honorific, and mood are called the pre-final ending, whereas the final suffix is called the final ending.

We now briefly introduce inflectional suffixes. The honorific suffix *-si* depends on the speaker's relationship to the referent. The suffix is used to express the speaker's deference toward the subject referent.

The tense suffix is *-ass/ess*. The suffixes *-ass/ess* and *-ass-ess/ess-ess* are usually the past and the past-past, respectively. The nonoccurrence of *-ass/ess* indicates the nonpast.

The modal suffix *-keyss* expresses the intention (or volition) and circumstantial presumption, conjecture, or supposition on the part of the speaker in declaratives and of the hearer in interrogatives. The modal suffixes *-(u)li* and *-(u)l* indicate probability or predictability. The former occurs in the finite constructions, whereas the latter occurs in adjectival constructions.

The honorific suffix *-(su)p* indicates the speaker-addressee relationship. This suffix occurs only in deferential speech.

The suffix *-ni* indicates indicative mood. Other mood suffixes are: retrospective *-ti*, prospective *-(u)li*, subjunctive or requestive *-si*, and suspective or suppositive *-ci*.

The final suffix determines finite (performative), nominal, adjectival, adverbial, or conjunctive structures. In the major finite constructions, the clause suffix shows various speech levels, as in the following table:

(42) SPEECH LEVEL	DECLARATIVE	INTERROGATIVE
Deferential	-(su)p-ni-ta	-(su)p-ni-kka
Polite	-ayo/eyo	-ayo/eyo
Blunt	-(s)o	-(s)o
Familiar	-ney	-na/nunka
Intimate	-a/e	-a/e
Plain	-(n)-ta	-ni/nunya
SPEECH LEVEL	IMPERATIVE	PROPOSITIVE
Deferential	-(u)p-si-o	-(u)p-si-ta
Polite	-ayo/eyo	-ayo/eyo
Blunt	-(u)o	xxx
Familiar	-key	--sey
Intimate	-a/e	-a/e
Plain	-ala/ela	-ca

In (42), only the deference level includes all hearer (addressee) honorific, mood, and final suffixes, while the other speech levels do not include all of them.

It has been said that derivation and inflection have the following differences:

- (43) a. Derivation may change the lexical category, and inflection never changes it.
 b. Derivation precedes inflection.
 c. While derivation is unproductive and irregular, inflection is productive and regular.

Derivational and inflectional processes in Korean verbal constructions exhibit different properties as well.

First, derivational suffixes such as causative or passive have lexical exceptions. For example, *mekta* 'to eat' has a causative form *mek-i-ta*, whereas *tutta* 'to hear' does not have a causative form. Derivational suffixes do not necessarily exhibit lexical regularity. In contrast, although they are optional, inflectional suffixes appear regular and fixed.

Second, while derivational suffixes can change a word's subcategory, inflectional ones cannot. For example, the causative suffix *-i* changes an intransitive verb *cwukta* 'to die' into a transitive verb *cwuk-i-ta* and the passive suffix *-li* changes the transitive verb *tutta* 'to hear' into the intransitive verb *tul-li-ta*.

Selkirk (1982) suggests that only derivational suffixes can be heads. The suffix *-i* in (41) is a head because it changes a simple verb into a causative verb. In contrast, since inflectional suffixes do not change lexical categories, they are not heads.

Finally, derivation and inflection differ with respect to phonological phenomena such as tensification and umlaut. While tensification takes place in inflection, it does not appear in derivation. Consider the following examples:

- (44) a. an-ta [t']
embrace-Final
- b. an-ci [c']
embrace-Final
- c. an-keyss [k']
embrace-Modal
- d. an-sup [s']
embrace-Hearer Hon

The initial obstruents of inflectional suffixes become tense after final nasal sounds of verb stems. This tensification can be formulated as follows:

- (45) [-son] → [+tense] / [+nas]vs + ____
(VS: Verb Stem)

In contrast, tensification is not found in the following example with the same phonological environment:

- (46) an-ki [g]
embrace-Caus/Pass

Since the derivational causative or passive suffix *-ki* is attached to the verb stem, tensification does not take place in the above example. Thus, the occurrence and nonoccurrence of tensification illustrates a difference between inflection and derivation.

Umlaut also distinguishes derivation from inflection.

Consider the following examples:

- (47) a. an-ki-ta [æŋ]
embrace-Caus/Pass-Final
b. an-ki *[æŋ], [aŋ]
embrace-ing

In (47a), /a/ casually or dialectally becomes [æ] before front vowels. In this case, however, the difference between derivation and inflection plays an important role in determining whether umlaut applies. Umlaut occurs only before the causative or passive suffix. Thus, umlaut takes place in derivation, but it does not in inflection.

So far, we have seen that derivation and inflection in Korean verbal structure show differences in terms of lexical exceptions, subcategorization, and phonological facts. Now, we consider differences in the inflectional suffixes *-si-ass/ess-keyss-sup-ni-ta*. First of all, boundaries are clear

in *-si-ass/ess-keyss*, whereas they are difficult to distinguish in *-sup-ni-ta*. Although the latter contains hearer honorific and mood suffixes, they are often considered one constituent together with *-ta*.

Second, while *-si-ass/ess-keyss* is optional, *-sup-ni-ta* contains the obligatory element *-ta*. Moreover, the former portion always retains *-si*, *-ass/ess*, and *-keyss*, and is not changed by speech levels. As shown in (42), however, the latter portion has various inflectional variants depending on speech levels.

Third, the nominal inflectional suffixes *-(u)m* and *-ki* can occur with *-si-ass/ess-keyss*. However, they cannot appear with *-sup-ni-ta*. Consider the following examples:

- (48) a. *po-ass-keyss-um, ki*
 b. *po-ass-um, ki*
 c. *po-keyss-um, ki*
 d. **po-p-ni-ta-m, ki*
 e. **po-p-ni-m, ki*
 f. **po-p-um, ki*

Finally, although Korean has no clear stress, stress in normal speech is placed on the first part. Consider the following examples:

- (49) a. *mek-!ess-eyo*
 b. *mek-!keyss-sup-ni-ta*
 (!: Stress)

The examples in (49) show that *-si-ass/ess-keyss* and *-sup-ni-ta* differ with regard to stress placement.

So far, we have seen that there are differences between *-si-ass/ess-keyss* and *-sup-ni-ta*. An interesting phenomenon is found in *-ass/ess-keyss* and *-sup-ni-ta*. Cooccurrence restrictions affect these inflectional suffixes. Korean has two kinds of verbs: action verbs and non-action (description) verbs. Different kinds of inflectional suffixes are determined by the verb type. Consider the following examples:

- (50) a. *ilk-nunta* 'read (present)'
 ka-nta 'go (present)'
 b. *coh-ta* 'be good (present)'

In (50), action verbs choose *-nunta/nta*, and non-action verbs *-ta*. However, after *-ass/ess* or *-keyss*, only *-ta* is possible. Consider the following examples:

- (51) a. *ilk-ess-ta* (**ilk-ess-nunta*)
 ilk-keyss-ta (**ilk-keyss-nunta*)
 b. *coh-ass-ta*
 coh-keyss-ta

The examples in (51) indicate that the verb roots do not play a role in choosing *-nunta* and *-ta*. If the verb root in (51a) determined the inflectional suffix, then *-nunta* would have to appear in (51a). So it is claimed that *-ass/ess* or *-keyss* only cooccurs with *-ta*.

This cooccurrence restriction is found in the inflectional suffixes in question. Consider the following examples:

- (52) a. ilk-nunya
 b. coh-unya

The examples in (52) show that an action verb takes *-nunya* and a non-action *-unya*. However, this distinction is not present in the following examples:

- (53) a. ilk-ess-nunya
 ilk-keyss-nunya
 b. coh-ass-nunya (*coh-ass-unya)
 coh-keyss-nunya (*coh-keyss-unya)

The examples in (53) demonstrate no distinction between action and non-action verb roots. After the roots are affixed with *-ass/ess* or *-keyss*, only *-nunya* is possible. Comparison of the examples in (51) and (53) reveals that the non-action verb is no longer marked distinctively after suffixation with *-ass/ess* or *-keyss*. Thus, we can say that *-ass/ess* or *-keyss* always cooccurs with the inflectional suffix *-nunya*.

Cooccurrence restrictions also appear in the inflectional suffix of exclamation, as in the following:

- (54) a. ilk-nunkwuna
 b. coh-kwuna

While action verbs choose *-nunkwuna*, non-action verbs choose *-kwuna*. However, the difference disappears after *-ass/ess* or *-keyss*, as in the following:

- (55) a. *ilk-ess-kwuna* (**ilk-ess-nunkwuna*)
 ilk-keyss-kwuna (**ilk-keyss-nunkwuna*)
- b. *coh-ass-kwuna*
 coh-keyss-kwuna

The examples in (55) also show that there is a cooccurrence restriction between *-ass/ess* or *-keyss* and *-kwuna*.

The honorific *-si* appears to be a kind of inflectional suffix because it is very productive. For example, *-si* is always included in honorific forms. Moreover, *-si* does not change subcategorization. However, *-si* is different from normal inflectional suffixes. First, *-si* does not show the same kinds of cooccurrence restrictions. Consider the following examples:

- (56) a. *ilk-usi-nta*, *coh-usi-ta*
 b. *ilk-usi-nunya*, *coh-usi-nya*⁵
 c. *ilk-usi-nunkwuna*, *coh-usi-kwuna*

Unlike *-ass/ess* or *-keyss*, *-si* does not affect the choice of inflectional suffixes. Although *-si* is put together with a verb root, inflectional suffixes are still governed by verb types. So *-si* differs from *-ass/ess* or *-keyss*.

Second, other inflectional suffixes are omissible in coordinate sentences, whereas *-si* may not be omitted in coordinate structures. Consider the following sentences:

- (57) a. Salam-i po-i-ess-ko
 man-Nom see-Pass-Past-Final
 soli-ka tul-li-ess-ta.
 sound-Nom hear-Pass-Past-Final
 'A man was seen and sound was heard.'
- a'. Salam-i po-i- \emptyset -ko soli-ka tul-li-ess-ta.
- b. Apeci-ka sinmwun-ul po-si-ko
 father-Nom newspaper-Acc see-Hon-Conj
 emeni-ka chayk-ul ilk-usi-p-ni-ta.
 mother-Nom book-Acc read-Hon-Hon-Mood-Final
 'Father sees a newspaper and mother reads
 a book.'
- b'. *Apeci-ka sinmwun-ul po- \emptyset -ko emeni-ka chayk-ul
 ilk-usi-p-ni-ta.

(57a) is a complete and full sentence; (57a') omits the tense suffix *-ess*. This shows that the normal inflectional suffixes can be omitted in Korean verbal structure. In contrast, (57b) contains *-si*. When *-si* is omitted in (57b'), the result is very unnatural and unacceptable. If *-si* is an inflectional suffix, then (57b') should be acceptable, but it is not. This demonstrates that *-si* differs from other inflectional suffixes in terms of omissibility.

Third, *-si* is peculiar with respect to negative and progressive constructions. Consider the following sentences:

- (58) a. John-i chayk-ul ilk-ess-ta.
 John-Nom book-Acc read-Past-Final
 'John read a book.'
- b. John-i chayk-ul ilk-ci aniha-yess-ta.
 John-Nom book-Acc read-not-Past-Final
 'John did not read a book.'
- c. John-i chayk-ul ilk-ko iss-ess-ta.
 John-Nom book-Acc read-ing-Past-Final
 'John was reading a book.'

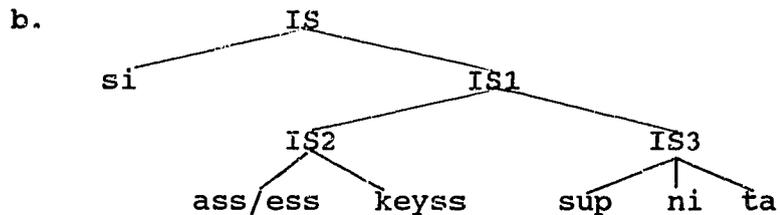
In (58b) and (58c), the negative form *-ci anihata* 'do not' and the progressive form *-ko issta* 'be -ing' are placed before the inflectional suffixes. Consider the following examples with *-si*:

- (59) a. Apenim-i chayk-ul ilk-usi-ess-ta.
 father-Nom book-Acc read-Hon-Past-Final
 'Father read a book.'
- b. Apenim-i chayk-ul ilk-usi-ci ani ha-si-ess-ta.
 read-Hon-not-Hon-Past-Final
 'Father did not read a book.'
- c. Apenim-i chayk-ul ilk-usi-ko kyeysi-ess-ta
 read-Hon-ing-Past-Final
 'Father was reading a book.'

In (58), inflectional suffixes are located after negative or progressive forms. However, *-usi* in (59) can occur before negative or progressive forms. This demonstrates that the honorific suffix *-si* also differs in terms of negative or progressive formation.

So far, we have seen that the honorific suffix *-si* differs from other inflectional suffixes with regard to cooccurrence restrictions, coordinate structures, and negative or progressive structures. These differences between *-si* and other inflectional suffixes, and between *-ass/ess-keyss* and *-sup-ni-ta* can be represented in the following hierarchical structure:

- (60) a. I(nfleotional) S(uffix) → (si) + IS1
 IS1 → IS2 + IS3
 IS2 → (ass/ess) (keyss)
 IS3 → (sup) (ni) ta



2.3 Postposition Formation

Postpositions in Korean are usually placed after nouns. They include inherent case markers (ICMs), delimiters (DELS), and structural case markers (SCMs). ICMs include *-eykey* (Goal), *-pwuthe* (Source), *-eyse* or *-ey* (Location), and so on; DELs include *-(n)un* (Topic), *-man* 'only,' *-to* 'also,' and so on; SCMs include *-ka/i* (Nominative), *-(l)ul* (Accusative), and *-uy* (Genitive).

SCMs differ from ICMs or DELs. The former can be omitted, as in the following:

- (61) a. John-i Mary-man-ul salangha-nta.
 John-Nom Mary-only-Acc love-Pres
 'John loves only Mary.'
- b. John-i Mary-man salangha-nta.
 John-Nom Mary-only love-Pres
 'John loves only Mary.'

(61a) has the same meaning as (61b). When ICMs or DELs are dropped, however, the meaning is different. Consider the following examples:

- (62) a. John-i cip-eyse-man ca-nta.
 John-Nom house-in-only sleep-Pres
 'John sleeps only in a house.'
- b. John-i cip-eyse ca-nta.
 John-Nom house-in sleep-Pres
 'John sleeps in a house.'
- c. *John-i cip-man ca-nta.
 John-Nom house-only sleep-Pres

(62b), which omits a DEL, differs from (62a). While (62a) expresses a contrastive and specific meaning, (62b) expresses a general meaning. In contrast, (62c), which drops an ICM, is ungrammatical. Thus, SCMs are optional, while ICMS and DELs are obligatory.

Phonologically, SCMs show alternations. For instance, *-i* is used after consonants and *-ka* after vowels; *-lul* follows vowels and *-ul* follows consonants. In contrast, ICMS and DELs, except *-(n)un*, do not have alternate forms after consonants and after vowels.

Compared to nouns and verbs, postpositions cannot be easily formed by derivation and inflection because they constitute a closed category. But postpositions in Korean may be generated by compounding. Consider the following examples:

- (63) a. eyse-man 'in (Loc)-only'
 b. man-i 'only-Nom'

While (63a) consists of an ICM and a DEL, (63b) is composed of a DEL and a SCM. Since (63a) and (63b) exhibit compositionality, *eyse-man-i* is possible in the following example:

- (64) ?Ku kapang-ul Waikiki-eyse-man-i sa-l swu issta.
 the bag-Acc Waikiki-in-only-Nom buy-can
 '(We) can buy the bag only in Waikiki.'

The example in (64) is not perfect, but it is acceptable. Thus, postpositional compounds consisting of three postpositions can be represented as follows:

- (65) ICM-DEL-SCM

Compound postpositions always follow the order in (65). If this order is violated, then the compound postposition is ungrammatical. For example, **man-eyse* or **eyse-i-man* is not allowed.

Compound postpositions may be co-compounds because they exhibit composite meaning. For example, meaning in *eyse-man* is a combination of *in (at)* and *only*. Similarly, *man-i* indicates *only-Nominative*, not primarily *only* or primarily *Nominative*. Thus, it is difficult to determine the head in compound postpositions.

Although the serial order is followed, not all postpositions can appear in compound postpositions. As S.-K. Kim (1989) points out, DELs do not freely cooccur with SCMs. Consider the following examples:

- (66) DEL-SCM
 a. man-i, ul, uy
 b. *to-ka, lul, uy

The examples in (66) show that certain DELs connect with SCMs. This is confirmed in the following examples:

- (67) DEL-SCM
 a. *kkaci-ka, lul, uy*
 b. *cocha-ka, lul, ?uy*
 c. *mata-ka, ?lul, uy*

In (66) and (67), only *-man*, *-kkaci*, *-cocha*, or *-mata* can cooccur with the SCM.

At the same time, cooccurrence restrictions exist even within DELs. In other words, one DEL can cooccur with another DEL. Consider the following examples:

- (68) DEL1-DEL2
 {*mace, cocha, kkaci, mata, ssik, man*}-{(n)un, to}

While most DELs occur in the first position, only *-(n)un* or *-to* appears in the second position. The DEL *-man* can also be put in the second position, but it can only combine with *-kkaci* or *-ssik* in the DEL1 position.

An interesting phenomenon turns up in the above cooccurrence restrictions. These restrictions specify the following order:

- (69) DEL1 {DEL2 SCM}

The cooccurrence restrictions in (69) affect the order of DEL1 and SCM, but also DEL1 and DEL2. Since this is a mutually exclusive relation, DEL1 must take either DEL2 or SCM. For example, neither **kkaci-ka-to* nor **cocha-lul-un* exists in Korean.

2.4 Adverb Formation

It is said that adverbs were formed from verb roots by zero derivation in Middle Korean. For example, *tel* 'less' is derived from *telta* 'to subtract.' Similarly, nouns themselves can be used as adverbs in Modern Korean. For example, such words as *cikum* 'now,' *onul* 'today,' and *nayil* 'tomorrow' appear in both forms.

Apart from zero derivation, adverbs are mainly derived by affixation. Consider the following examples:

- | | | |
|---------|--|---|
| (70) a. | <i>kath-i</i>
be identical-ly
'identically' | <i>coyongha-i</i>
be quiet-ly
'quietly' |
| | b. <i>him-kkes</i>
strength-ly
'strongly'
<i>kkuth-nay</i>
final-ly
'finally' | <i>cengseng-kkes</i>
sincerity-ly
'sincerely'
<i>kyewu-nay</i>
winter-ly
'throughout the winter' |

Since adverbial suffixes subcategorize for a lexical category, the suffixes in (70a) take verbs and the suffixes in (70b) take nouns.

Phonological processes affect some of the forms in (70). Vowel deletion takes place in *coyongha-i*: *a* is deleted before *i*. This applies to *hata*-verbs, as in the following:

- (71) a. *coyonghata* 'to be quiet'
coyongha-i -> *coyonghi* 'quietly'
- b. *senmyenghata* 'to be clear'
senmyengha-i -> *senmyenghi* 'clearly'
- c. *hwullyunghata* 'to be great'
hwullyungha-i -> *hwullyunghi* 'greatly'

But there is an exception. Consider the following examples:

- (72) a. *kkaykkushata* 'to be clean'
kkaykkusha-i -> **kkaykkushi*
kkaykkusi 'cleanly'
- b. *ttattushata* 'to be warm'
ttattusha-i -> **ttattushi*
ttattusi 'warmly'
- c. *ttwulyeshata* 'to be evident'
ttwulyesha-i -> **ttwulyeshi*
ttwulyesi 'evidently'

In principle, *-hi* has to appear in (72) because the examples in (72) belong to the category of *hata-verb*. In contrast, adverbial forms are ungrammatical with *-hi*. Thus, *-hi* is reduced to *-i* when a root within the *hata-verb* ends in *s*. Considering that *kkaykkusi* is casually pronounced as *kkaykkuchi*, however, it looks as if the verb with root-final *s* follows the vowel deletion rule.

In (70), we can also observe the deletion of *l* in *kyewu-nay*: the *l* of *kyewul* is deleted before *n*. This phenomenon is also found in nominal or verbal compounding, as in the following:

- (73) a. *mal-so* -> *ma-so* 'horse and cow'
b. *mil-tatta* -> *mi-tatta* 'to push and close'

In (73), *l* is deleted before *s* or *t*. But *l*-deletion does not take place in the following example:

(74) *mal-to* 'horse-Del'

Although *mal-to* contains the phonetic environment for *l*-deletion, *l*-deletion only takes place in lexical word formation.

Adverbs are rarely formed by compounding. Consider the following examples:

(75) *com-te* 'a little more'
 a little-more
 kot-palo 'very straight'
 very-straight
 kot-cal 'pretty well'
 pretty-well

It is not certain whether the examples in (75) are sub-compounds or co-compounds. But since their meaning is determined by the words on the right-side, they may be sub-compounds.

Adverbs can also be formed by reduplication. Consider the following examples:

(76) a. *kkwupwul-kkwupwul* 'in a winding way'
 b. *olak-kalak* 'in a coming and going way'

Since the same form is copied, (76a) is represented as XX. On the other hand, (76b) is represented as XX', because a part of the preceding form is copied. Thus, (76a) is an example of total reduplication and (76b) is an example of partial reduplication.

2.5 Summary

This chapter has outlined word formation in the lexical categories of Korean. Nouns and adverbs are often composed by derivation and compounding; verbs are composed by derivation and compounding, but they also undergo inflection; postpositions are created by compounding. These processes are illustrated as follows:

- (77) a. Derivation: (Y) X (Z)
 b. Compounding: Y X (Sub-compound)
 X X (Co-compound)
 c. Inflection: IS -> si + IS1
 IS1 -> IS2 + IS3
 IS2 -> (ass/ess) (keyss)
 IS3 -> (sup) (ni) ta

Notes to Chapter 2

1. Following Sohn (1992), it is assumed that Korean has five grammatical categories: noun, verb, adverb, postposition (particle), and determiner.

2. The suffix *-i* cannot attach to regular verbs ending in vowels:

- (i) pota 'to see' -> *po-i
 cwuta 'to give' -> *cwu-i
 kata 'to go' -> *ka-i

Compared to *-(u)m* or *-ki*, *-i* seems to be unproductive due to phonological conditions. This phonological restriction causes unproductivity of *-i*.

3. H.-m. Sohn (p.c.) points out the following counterexample in Korean:

- (i) a. aykkwu-nwun-i
 one-eye-person
 'one-eyed person'

b. [[aykkwu nwun] i] vs. *[aykkwu [nwun i]]

4. As far as the left-head is concerned, I could find only *cokha-ttal* 'nephew-daughter,' which means niece, not daughter.

5. The distinction of *-unya* and *-nya* follows phonological conditions:

- (i) a. coh-unya
 be good-Q
 b. nappu-nya
 be bad-Q

CHAPTER 3
CONSTRAINT ON WORD FORMATION

This chapter discusses blocking, which is a kind of output filter on word formation. In the lexicon, certain words can be formed, but others are not possible. For example, the English noun *guide* is found but we cannot find *guider*. At the same time, *suer* does not exist in English because of the occurrence of *sewer*. So we need to explain why possible words do not actually occur in word formation.

In syntax, phrase structure rules are constrained by the X-bar schema, movement is constrained by Subjacency, and the final output is constrained by various filters. As we have seen in chapter 2, the X-bar schema does not constrain word formation, except for the notion head. Moreover, there seems to be no movement transformation in word formation. Thus, output filters would seem to be the most plausible means of explaining the nonoccurrence of certain possible words.

In order to explain possible but non-existent forms, Aronoff (1976:43) suggests blocking, and defines it as "the non-occurrence of one form due to the simple existence of another." Consider the following examples given by Aronoff (1976:44):

(1) Xous	Nominal	-ity	-ness
various	*	variety	variousness
curious	*	curiosity	curiousness
glorious	glory	*gloriosity	gloriousness
furious	fury	*furiosity	furiousness

According to Aronoff, the occurrence of *variety* and *curiosity* is possible because the base nominal form does not occur in the lexicon. On the other hand, since *glory* and *fury* occur in the English lexicon, *gloriosity* and *furiosity* are not found. So the existence of a base noun blocks a new form with *-ity*.

But blocking itself presents some problems. First of all, the existence of base forms does not necessarily block forms with *-ity*. For instance, Lee (p.c.) points out the following counterexample:

(2) pompous-pomp-pomposity-pompousness

Moreover, Di Sciullo & Williams (1987:10-14) claim blocking that is not limited to the lexicon. Rather, blocking can be extended to forms bigger than words. They take comparative formation in English as an example. There are two rules, one adding *-er* and one adding *more*. The former rule applies to monosyllables or disyllables ending in *-y*:

(3) hot -> hotter, happy -> happier

The latter rule adds *more* to an adjective:

(4) more colorful

In comparative construction, the second rule cannot apply to the forms which the first rule applies to:

(5) *more hot

The example in (5) illustrates that the first rule blocks the second one. In this case, since the first rule is morphological and the second rule is syntactic, this means that blocking is not restricted to words, but to any kind of grammatical unit. Furthermore, this implies that blocking can be applied in a global manner.

Finding Aronoff's definition of blocking to be vague and ad hoc, Scalise (1984:158-160) argues that blocking is not a principle proper to the lexicon, but a tendency towards economy. Blocking is a kind of tool to limit the formation of words with similar meaning or pronunciation. As Kiparsky (1982) and Bauer (1988) point out, blocking is regarded as strengthening semantic or phonological transparency in word formation.

In order to avoid synonymy or homonymy, blocking is often found in Korean. Verbal nouns, which are derived from verbs in Korean, are formed by verb stem plus *-i*, *-(u)m*, or *-ki*. Consider the following examples:

(6)	Verb	-i	-(u)m	-ki
a.	mek-ta 'to eat'	mek-i	mek-um	mek-ki
	pel-ta 'to earn'	pel-i	pel-um	pel-ki
b.	wus-ta 'to laugh'	*	wus-um	wus-ki
	ca-ta 'to sleep'	*	ca-m	ca-ki
c.	po-ta 'to see'	*	po-m	po-ki
	khu-ta 'to be big'	*	khu-m	khu-ki

As discussed in 2.1, *-i*, *-(u)m*, or *-ki* can function as derivational suffixes which change verbs into nouns. In (6), the existence of forms with *-i* blocks other forms carrying *-(u)m* or *-ki*. While *mek-i* 'food' and *pel-i* 'earning' appear as nouns, *mek-um* or *mek-ki* 'eating' and *pel-um* or *pel-ki* 'earning' are still verbs.

On the other hand, it is possible that forms with *-(u)m* or *-ki* occur as nouns because of the non-existence of the forms with *-i*. This is confirmed in (6b) and (6c). In (6b), since *wus-um* 'laughing' and *ca-m* 'sleep' appear as nouns, *wus-ki* 'laughing' and *ca-ki* 'sleeping' remain verbs. In (6c), on the other hand, *po-ki* 'example' and *khu-ki* 'size' prevent *po-m* 'seeing' and *khu-m* 'being big' from becoming nouns. The examples in (6) illustrate that when the noun derived from a verb is already stored in the lexicon, it blocks the new noun. Blocking works for each set of examples.

But blocking does not seem to explain the following examples:

(7) Verb	-i	-(u)m	-ki
sal-ta 'to live'	sal-i	sal-m	sal-ki
ket-ta 'to walk'	kel-i	kel-um	ket-ki

We have seen that the existence of a noun form with *-i* blocks noun formation with *-(u)m* or *-ki*. Thus, while *sal-i* and *kel-i* are nouns, other forms have to remain verbs. But *sal-m* 'life' and *kel-um* 'walk' appear as free forms, whereas *sal-i* and *kel-i* are bound forms. In other words, while the former can be used in separate and independent ways, the latter have to be used with other nouns:

- (8) thahyang sal-i 'living in a foreign land'
kel-um kel-i 'one's manner of walking'

In this case, forms with *-(u)m* (*sal-m* and *kel-um*) block other forms. Nevertheless, forms with *-i* remain bound nouns rather than verbs because *-i* tends to be strongly associated with noun forms. Except for *makwu cap-i* mentioned in chapter 2, the suffix does not occur with a phrase.

As J.-K. Shim (1982/1983) points out, *-(u)m* has more of the nominal property than *-ki*. This is illustrated in the following examples:

- (9) a. John-uy [ttokttokha-m] ttaymwney
 John-Gen be smart-ing because of
 ku-uy atul-i kongpwu-lul cal ha-nta.
 he-Gen son-Nom study-Acc well do-Pres
 'Because of John's being smart, his son studies
 well.'
- b. *John-uy [ttokttokha-ki] ttaymwney
 John-Gen be smart-ing because of
 ku-uy atul-i kongpwu-lul cal ha-nta.
 he-Gen son-Nom study-Acc well do-Pres
 'Because of John's being smart, his son studies
 well.'

When we add the genitive case to the examples, (9a) is grammatical and (9b) is ungrammatical. This implies that $-(u)m$ is more nominal than $-ki$. The nominal character of these suffixes can be ranked as follows:

(10) $-i > -(u)m > -ki$

Given (10), we can say that when there exists a form with $-i$, forms with $-(u)m$ or $-ki$ cannot be nouns, and that when there is no form with $-i$, a form with $-(u)m$ can be a noun.

In summary, we can observe blocking with respect to Korean verbal nouns. When $-i$ forms occur, they become verbal nouns because $-i$ is a derivational suffix. For example, *mek-i* 'food' is the sole verbal noun of *mekta* 'to eat.' Thus, forms with $-(u)m$ or $-ki$ cannot be verbal nouns due to the occurrence of $-i$ verbal nouns. If $-i$ forms are lacking, however, $-(u)m$ or $-ki$ forms can be verbal nouns. For example, **wus-i* is nonexistent and so *wus-um* is a verbal noun of *wusta* 'to laugh.' This demonstrates that the occurrence of $-i$ forms blocks other nominal forms. But we can see the opposite sort of case in (7). Since $-(u)m$ forms

block *-i* forms, the former become verbal nouns.

Nevertheless, *-i* forms still remain bound nouns, because *-i* forms have the strongest nominal quality.

Blocking is also found in forms with *-kelita* and *-hata*. Both suffixes can attach to onomatopoeic or mimetic words. But the following examples present an interesting phenomenon:

(11) Mimetic	<i>-kelita</i>	<i>-hata</i>	
pintwung	pintwung-kelita	*pintwung-hata	'to be idle'
hetwung	hetwung-kelita	*hetwung-hata	'to be hasty'
wungseng	wungseng-kelita	*wungseng-hata	'to be noisy'
tetum	tetum-kelita	*tetum-hata	'to grope'
esulleng	esulleng-kelita	*esulleng-hata	'to hang around'

Using the symbol *X* for an onomatopoeic or mimetic word, the examples in (11) are of the form:

(12) <i>X</i>	<i>X-kelita</i>	* <i>X-hata</i>
---------------	-----------------	-----------------

We can say that when *X-kelita* occurs in the lexicon, *X-hata* cannot be found. This fact can be described by blocking. Since *X-kelita* is already filled in the lexicon, there is no *X-hata*.

Now, we consider blocking with respect to causative forms. As S.-Y. Bak (1982) points out, avoidance of meaning confusion is a factor in the formation of the double causative *-i-wu*. Since Korean is an agglutinating language, various kinds of inflectional suffixes can attach to the

verb root. In contrast, only one derivational suffix can be added to the verb root. Consider the following examples:

- (13) a. Verb Root-Causative
b. Verb Root-Passive

Unlike Japanese, Korean does not even allow verb root-causative-passive form:

- (14) a. tabe-sase-rare
eat-Causative-Passive
b. *mek-i-hi
eat-Causative-Passive

The following forms are not accepted in Korean, either:

- (15) a. *Verb Root-Passive-Causative
b. *Verb Root-Causative-Causative
c. *Verb Root-Passive-Passive

But the so-called double causative *-i-wu* is an exceptional and peculiar case. Consider the following examples:

- (16) a. ca-ta 'to sleep' -> ca-i-wu-ta -> cay-wu-ta
b. se-ta 'to stand' -> se-i-wu-ta -> sey-wu-ta
c. ttu-ta 'to float' -> ttu-i-wu-ta -> ttuy-wu-ta
d. cha-ta 'to be full' -> cha-i-wu-ta -> chay-wu-ta

Single causative forms without *-wu* may have sufficiently causative meaning. Nevertheless, these forms take double causatives by adding *-wu*, which deviates from the examples of word formation in (15). This phenomenon apparently results from an attempt to strengthen transparency of meaning. Single causative forms are identical with other verbs which already exist in the lexicon:

- (17) a. cayta 'to measure'
 b. seyta 'to count'
 c. ttuyta 'to appear'
 d. chayta 'to snatch'

Since this coincidence causes confusion in meaning, blocking takes place in this case. In order to avoid semantic opacity, therefore, another causative suffix *-wu* is added to single causative forms.

At this juncture, however, we have to ask why, of all of the causative suffixes, *-wu* is chosen. Semantic transparency also affects the choice of another causative suffix. While *-i*, *-hi*, *-ki*, and *-li* are causative and passive suffixes, *-wu*, *-kwu*, and *-chwu* are used only as causative suffixes. For the purpose of eliminating semantic opacity, single causative forms already formed seem to select one among *-wu*, *-kwu*, and *-chwu* rather than suffixes with both properties of causative and passive. Moreover, the addition of *-wu* is governed by a phonological condition, where *-wu* occurs with vowel-final stems, and *-kwu* and *-chwu* appear with consonant-final stems:

- (18) a. pi-ta 'to be empty' -> pi-wu-ta
 kkay-ta 'to awake' -> kkay-wu-ta
 say-ta 'to dawn' -> say-wu-ta
 b. sos-ta 'to rise' -> sos-kwu-ta
 tot-ta 'to rise' -> tot-kwu-ta
 c. nuc-ta 'to be late' -> nuc-chwu-ta
 nac-ta 'to be low' -> nac-chwu-ta

This choice of *-wu* also exemplifies the movement of word formation towards increasing semantic transparency.

This phenomenon occurs in other lexical causative verbs. As discussed before, causative forms in Korean are formed from verb root plus causative suffix. Some verbs have two kinds of causative, as in the following:

- (19) a. *mac-ta* 'to be correct' (Intransitive)
 S_{ym}-i mac-nunta.
 accounts-Nom be correct-Pres
 'The accounts are correct.'
 a'. *mac-chwu-ta* (Causative)
 S_{em}-ul mac-chwu-nta.
 accounts-Acc be correct-Caus-Pres
 '(Someone) makes the accounts be correct.'
- b. *mac-ta* 'to be exposed' (Transitive)
 Namwu-ka pi-lul mac-nunta.
 tree-Nom rain-Acc be exposed-Pres
 'A tree is exposed to rain.'
 b'. *mac-hi-ta* (Causative)
 Ku-ka namwu-ey pi-lul mac-hi-nta.
 he-Nom tree-at rain-Acc be exposed-Caus-Pres
 'He makes a tree be exposed to rain.' (Lit)

Comparing (18c) with (19), a causative of an intransitive verb *macta* may be *mac-chwu-ta*, because *-chwu* occurs after stem-final *c*. But we also find another causative form *mac-hi-ta*. This represents an attempt to avoid meaning confusion. Unlike (18c), *macta* appears as both an intransitive and a transitive verb. When *macta* occurs as the intransitive verb, the causative verb is *macchwuta*; when it occurs as the transitive verb, the causative verb is *machita*. It is in order to avoid meaning confusion that two kinds of causative exist in Korean.

Now, we turn to the avoidance of confusion in pronunciation. Consider the following examples with optional *wu*-deletion:

- (20) a. kip-ta 'to patch' -> kiw-um -> *kim
 (ki-ta 'to crawl' -> ki-m)
 cwup-ta 'to pick up' -> cwuw-um -> *cwum
 (cwu-ta 'to give' -> cwu-m)
 nwup-ta 'to lie down' -> nwuw-um -> *nwum
 (nwu-ta 'to urinate' -> nwu-m)
 mip-ta 'to be hateful' -> miw-um -> *mim
 (mi-ta 'to get bald' -> mi-m)
 swip-ta 'to be easy' -> swiw-um -> *swim
 (swi-ta 'to rest' -> swi-m)
 chwup-ta 'to be cold' -> chwuw-um -> *chwum
 (chwu-ta 'to dance' -> chwu-m)
 kop-ta 'to be pretty' -> kow-um -> *kom
 (ko-ta 'to boil down' -> ko-m)
 mayp-ta 'to be spicy' -> mayw-um -> *maym
 (may-ta 'to tie' -> may-m)
- b. top-ta 'to help' -> tow-um -> *tom (*tota)
 tep-ta 'to be hot' -> tew-um -> *tem (*teta)

The examples in (20) are nominal forms derived from *p*-irregular verbs. Moreover, the verbs commonly have two syllables. Here, *wu* is never optionally deleted in casual pronunciation. On the other hand, optional *wu*-deletion is possible in those cases where *p*-irregular verbs have three or more syllables:

- (21) a. 3 syllable verb
 kwi-yep-ta 'to be cute' -> kwi-yew-um -> kwi-yem
- b. 4 syllable verb
 pwutul-ep-ta 'to be soft' -> pwutul-ew-um
 -> pwutul-em
- c. 5 syllable verb
 salang-sulep-ta 'to be lovable' -> salang-sulew-um
 -> salang-sulem

Put simply, we can say that optional *wu*-deletion cannot take place in *p*-irregular verbs with two syllables. Apart from the phonological condition, the non-occurrence of optional *wu*-deletion seems to be explained by blocking as well. The optionally reduced forms in (20a) have the same form as nouns derived from the parenthesized verbs, and the two items are formed in an identical way. In order to avoid confusion in meaning and pronunciation, blocking applies in this case.

However, blocking would not explain the examples in (20b). Since such verbs as *tota* and *teta* do not exist in Korean, there are no derived nouns, either. Nevertheless, blocking is maintained in the examples because the non-derived nouns *tom*, which is a short form of *tomi* 'a sea bream,' and *tem* 'an extra' already exist in the lexicon. This means that preexisting nouns block newly derived nouns to prevent homonymy.

Finally, we consider another optional deletion:

- (22) a. *mwues-ul* 'what-Acc' -> *mwue-lul* -> *mwe-lul*, *mwuel*
 -> *mwel*
- b. *mwues-un* 'what-Top' -> *mwue-nun* -> ?*mwe-nun*, **mwuen*
 -> **mwen*

The *s* of *mwues* is usually deleted in casual speech, and the resulting form is fused, as in (22a). But **mwen* in (22b) is not found even in casual speech. It seems that blocking affects this case. The form *mwusun* 'what kind of,' which is a determiner, can undergo optional deletion:

(23) *mwusun* (il) 'what kind of (business)' -> *mwen* (il)

The reduced form in (23) is exactly the same as **mwen* in (22b). In order to avoid confusion in pronunciation, the reduced form **mwen*, which consists of *mwues* and *-nun*, is not found in casual speech.

In summary, blocking functions as an output filter for the sake of avoiding meaning or pronunciation confusion in word formation. Thus, word formation moves towards strengthening semantic or phonological transparency.

CHAPTER 4

WORD FORMATION AND SYNTAX

In this chapter, we discuss interface phenomena between word formation and syntax. There are various overlapping types of word formation in Korean. For example, lexical and syntactic forms often have identical constructions. However, they exhibit differences with regard to certain facts. Thus, we explore different properties of the same forms in Korean: Nominalization is dealt with in 4.1, the verb + noun construction in 4.2, the verb + verb construction in 4.3, and finally the noun + verb construction in 4.4.

4.1 Nominalization Constructions

In this section, we discuss differences between derived words and verbal nominalization constructions, and between compounds and phrasal nominalization constructions. These have the same forms, but they illustrate different properties in terms of certain facts involving meaning regularity, modification, lexical integrity, and argument relations.

4.1.1 Derived Word Versus Verbal Nominalization

The following examples illustrate that *-ki* is used in making both derived words and verbal nominalizations:¹

- (1) a. po-ki
 see-Suf
 'example'
 a'. [[po]V-ki]_N
- b. po-ki
 see-ing
 'seeing'
 b'. [[po]V-ki]_V

In (1a), *-ki* attaches to a verb root to form a noun derived from a verb; in (1b), it attaches to a verb root to form a nominalization of verb. The forms in (1) superficially have no distinction. However, they exhibit different properties because (1a) is a derived word which changes lexical category (V → N) and (1b) is a verbal nominalization.

First, the derived word in (1a) is far removed from the meaning of the original verb *pota* 'to see.' But the verbal nominalization in (1b) exhibits a transparent meaning derived from the verb *pota* 'to see.'

Second, there is a difference in modification.

Consider the following examples:

- (2) a. *macwu po-ki
 face-to-face see-Suf
 'face-to-face example' (Lit)
- b. macwu po-ki
 face-to-face see-ing
 'face-to-face seeing' (Lit)

The examples in (2) are parsed as follows:

- (3) a. *[macwu] [po-ki]
 b. [macwu po]-ki

Since an adverb *macwu* cannot modify a noun, the example in (3a) is ungrammatical. On the other hand, the example in (3b) is grammatical, because the adverb modifies a verb.

Third, a derived word does not allow the affixation of inflectional elements, whereas a verbal nominalization allows it. Consider the following examples:

- (4) a. *po-ass-ki
 see-Past-Suf
 *po-si-ki
 see-Hon-Suf
- b. po-ass-ki
 see-Past-ing
 'having seen'
 po-si-ki
 see-Hon-ing
 'seeing' (Hon)

The examples in (4) include the tense suffix and the honorific suffix, respectively. Since grammatical elements cannot be simply inserted in a word, the examples in (4a) are ungrammatical. In contrast, the examples in (4b) are possible because they are verbal nominalizations. Thus, inflectional elements cannot be affixed to a word, but they can be inserted within a verbal nominalization.

4.1.2 Compound Versus Phrasal Nominalization

We now discuss differences between compound and phrasal nominalization. Since the former occurs in the lexical component and the latter occurs in the syntactic component, compound and phrasal nominalization exhibit different properties. First, we discuss properties other than

argument relations with respect to compounds and phrasal nominalization constructions.

First of all, compounds exhibit irregular meanings, while phrasal nominalizations exhibit regular meanings. For ease of exposition, we use the examples with *-i* and *-ki*, because they exhibit most clearly the comparison between word and nominalization. Consider the following examples:

- (5) a. kay mek-i
 dog eat-Suf
 'dog food'
 a'. [kay] [mek-i]
- b. kay mek-ki
 dog eat-ing
 '[eat a dog]-ing'
 b'. [kay(-lul) mek]-ki

While the example in (5a) is composed of two nouns, that in (5b) is made by adding *-ki* to the verb phrase. The meaning of (5a) differs from that of the corresponding verb phrase *kay-lul mekta* 'to eat a dog,' while (5b) has an identical meaning.

Second, a difference is found with regard to the modifier. Consider the following examples:

- (6) a. *manhi ton pel-i
 much money earn-Suf
- b. manhi ton pel-ki
 much money earn-ing

The examples in (6) have different structures:

- (7) a. *[manhi] [ton pel-i]
 b. [manhi ton pel]-ki

The example in (7a) is ungrammatical because an adverb cannot modify a noun compound. On the other hand, since the adverb modifies the verb phrase *ton pelta*, the example in (7b) is grammatical.

Third, when we put case markings onto the compound and the phrasal nominalization, only the latter is grammatical and acceptable. Consider the following examples:

- (8) a. *kay-lul mek-i
 dog-Acc eat-Suf
- b. kay-lul mek-ki
 dog-Acc eat-ing

In (8), we find a verb *mekta* 'to eat,' which assigns Theme to the internal argument. The internal Theme role in Korean, which usually corresponds to an object, is realized as the case marking *-(l)ul*. Case markings cannot be inserted into the compound, but they can be inserted into the phrasal nominalization--a word (or compound) has a tighter relation than a phrase. Thus, grammatical elements cannot be inserted into compounds, but they can be inserted into phrasal nominalization constructions.

Fourth, the compound can make another word by affixation:

- (9) ton pel-i hata
 money earn-Suf do
 'to do money-earning' (Lit)

If we assume that *-hata* is a kind of suffix, we can consider the example in (9) to be formed by adding the suffix *-hata* to the compound *ton peli*. A phrasal nominalization, on the other hand, cannot be found in this way:

- (10) *ton pel-ki hata
 money earn-ing do
 'to do [money earn]-ing'

This implies that the suffix subcategorizes for a lexical category. Therefore, affixation is permitted only for the compound.

4.1.3 Thematic Relations of Compounds and Phrasal Nominalizations

We now turn to differences between compound and phrasal nominalization in terms of thematic relations such as the argument relationship between head and nonhead, the occurrence of the SUBJ argument, and the preservation of internal thematic roles. These differences are due to the different structures of compound and phrasal nominalization:

- (11) a. [[N] [V-Suffix]_N]Comp
 b. [[N-V]_{vp}-Suffix]_{Nom}

The structure in (11a) is composed of a noun and a noun derived from a verb, whereas that in (11b) has a suffix attaching to a verb phrase.

Linguists have recently been paying much attention to the argument structure of compounds. Allen (1978), Roeper &

Siegel (1978), Williams (1981), Selkirk (1982), Lieber (1983), Botha (1984), and Di Sciullo & Williams (1987) present various approaches to this issue. They usually point out the following properties of compound argument structures: the vagueness or optionality of argument relationships between heads and nonheads, the non-existence of an external argument, and the nonoccurrence of all internal arguments. With respect to these properties, Selkirk (1982:34-39) suggests two conditions:

- (12) a. The SUBJ argument of a lexical item may not be satisfied in compound structure.
- b. The First Order Projection Condition
All non-SUBJ arguments of a lexical category X_i must be satisfied within the first order projection of X_i .

Moreover, Di Sciullo & Williams (1987:30) develop Selkirk's conditions:

- (13) a. A nonhead may but need not satisfy one of the arguments of the head.
- b. It cannot satisfy the external argument.
- c. The arguments of the nonhead are not part of the argument structure of the compound.
- d. Only the external argument of the head is part of the argument structure of the compound.

Except for a difference in terminology, (13b) and (13d) correspond to Selkirk's (12a) and (12b), respectively.

First, as Selkirk (1982) and Di Sciullo & Williams (1987) point out, compounds may or may not have argument relationships between heads and nonheads. Consider the following examples:

- (14) a. ton pel-i
 money earn-Suf
 'money earning'
- b. son cap-i
 hand catch-Suf
 'handle'

The derived nouns in (14) are made from *pelta* 'to earn' and *capta* 'to catch.' The example in (14a) demonstrates the argument relationship between head and nonhead, because (14a) is closely related to the verb phrase *ton-ul pelta* 'to earn money.' Since the verb *pelta* assigns Theme to an internal argument, *ton* is its Theme. The example in (14a) maintains the argument relationship between head and nonhead. On the other hand, the example in (14b) does not clearly exhibit an argument relationship between head and nonhead. In relation to the verb *capta* 'to catch,' *son* should be regarded as Theme, because the verb assigns Agent and Theme to the external argument and the internal argument, as illustrated in the following verb phrase:

- (15) son-ul capta
 hand-Acc catch
 'to catch a hand' (Lit)

In (15), *son* has a Theme role. But *son* in *son cap-i* is interpreted as Instrument rather than Theme. Thus, we may compare the following verb phrase:

- (16) son-ulo (mwues-ul) capta
 hand-with (something-Acc) catch
 'to catch (something) with a hand' (Lit)

Compared to the Theme analysis, the Instrument analysis is more appropriate to the meaning of *son cap-i* 'handle.' We conclude that head and nonhead in a compound do not exhibit a clear argument relationship.

Second, Selkirk (1982) claims that the SUBJ argument cannot occur in a compound. To the contrary, however, the SUBJ argument may appear in a Korean compound. Consider the following examples:

- (17) a. *talk wul-um*
 chicken cry-Suf
 'chicken crying'
- b. *phi tol-ki*
 blood circulate-Suf
 'blood circulating'

The examples in (17) correspond to the following sentences:

- (18) a. *talk-i wulta*
 chicken-Nom cry
 'A chicken cries.'
- b. *phi-ka toлта*
 blood-Nom circulate
 'Blood circulates.'

In (18), the nonheads *talk* and *phi* are SUBJ arguments. We see that the SUBJ argument is, after all, found in compounds.

Third, as Roeper & Siegel (1978), Selkirk (1982), and Di Sciullo & Williams (1987) point out, not all internal arguments are to be found in compound structures. Consider the following example:

(19) *namwu wusan kkoc-i*
 tree umbrella put in-Suf
 'wooden umbrella-stand'

In (19), *kkoc-i* is derived from the verb *kkoc-ta* 'to put in,' which assigns Theme and Location to the internal arguments. Thus, we have the following verb phrase:

(20) *namwu-ey wusan-ul kkoc-ta*
 tree-Loc umbrella-Acc put in
 'to put an umbrella in tree' (Lit)

However, the example in (19) does not reflect the meaning of the phrase in (20). Instead of *tree placement of umbrella*, it actually refers to a *wooden umbrella-stand*. Although Location is an obligatory element in the phrase (20), it cannot appear in the compound in (19). Therefore, this demonstrates that not all internal arguments of a verb are permitted in a compound formation.

The above restriction is in part from the Binary Branching Hypothesis. As proposed earlier, word formation in the lexical component is governed by the Binary Branching Hypothesis. The example in (19) has the structure:

(21) [*namwu* [*wusan kkoc-i*]]

Considering that internal argument relationships are found only between sisters, *namwu* cannot be an argument of *kkoc-i* in (21), although *wusan* can be.

So far, we have examined the properties of argument relations within compounds. Next, we discuss argument relations in phrasal nominalization constructions.

First, phrasal nominalization exhibits transparent argument relationships. Consider the following examples:

- (22) a. *son cap-ki*
 hand grab-ing
 'grabbing a hand'
- b. *ton pel-ki*
 money earn-ing
 'earning money'

The forms in (22a) and (22b) are derived from *capta* 'to grab' and *pelta* 'to earn.' Moreover, the examples in (22) exactly correspond to the following verb phrases:

- (23) a. *son-ul capta*
 hand-Acc grab
 'to grab a hand'
- b. *ton-ul pelta*
 money-Acc earn
 'to earn money'

The argument relationship between head and nonhead is clearly illustrated in (23). For example, *ton* and *son* correspond to Theme because *capta* and *pelta* assign Theme to their internal arguments. Thus, phrasal nominalization satisfies the argument relationship between head and nonhead.

Second, the SUBJ argument cannot occur in phrases. Suppose that the compound *son cap-i* can correspond to *son-i capta*. The nonhead *son* in *son cap-i* would be the SUBJ argument, which is realized as the case marking *-i*. However, the nonhead *son* in (22a) should be the internal

argument Theme. Thus, the SUBJ argument is not found within the phrasal nominalization.

Third, all internal arguments in the verb phrase can be found in the phrasal nominalization:

(24) *hangali(-ey) wusan(-ul) kkoc-ki*
jar(-in) umbrella(-Acc) put in-ing
 'putting an umbrella in a jar'

In (24), *kkoc-ki* 'putting' is originally derived from a verb *kkoc-ta* 'to put in,' which assigns Theme and Location to internal arguments. Thus, *hangali* and *wusan* correspond to Location and Theme. All internal arguments appear in phrasal nominalizations, but they do not in compounds.

In summary, compounds exhibit vague argument relationships between head and nonhead, the occurrence of the SUBJ argument, and the nonoccurrence of all internal arguments. In contrast, phrasal nominalizations present the opposite phenomenon: explicit argument relationships between head and nonhead, the nonoccurrence of the SUBJ argument, and the occurrence of all internal arguments.

4.2 Verb + Noun Constructions

In this section, we discuss verb + noun (V + N) constructions in Korean. These constructions exhibit characteristics of both noun compounds and noun phrases:

- (25) a. Compound
 John-i [khu-n cip]-ey sa-nta.
 John-Nom be big-VAS house-in live-Pres
 'John lives in the oldest brother's house.'
- b. Phrase
 John-i [khu-n cip]-ey sa-nta.
 John-Nom be big-VAS house-in live-Pres
 'John lives in a big house.'

Considering only a single construction at a time, it is difficult to distinguish between noun compounds and noun phrases. However, they exhibit differences with regard to phonological and lexical phenomena.

Korean has no lexical category that corresponds to that of adjective in English. Instead, adjectival forms use the inflectional suffixes of the verb. Consider the following examples:

- (26) a. Action Verb
 (i) mek-ta 'to eat'
 mek-un 'eating (past)'
 mek-nun 'eating (present)'
 mek-ul 'eating (future)'
 (ii) ca-ta 'to sleep'
 ca-n 'sleeping (past)'
 ca-nun 'sleeping (present)'
 ca-l 'sleeping (future)'
- b. Non-action Verb
 (i) coh-ta 'to be good'
 coh-un 'good (present)'
 xxx
 coh-ul 'good (future)'
 (ii) nappu-ta 'to be bad'
 nappu-n 'bad (present)'
 xxx
 nappu-l 'bad (future)'

The adjectival forms in (26) exhibit several properties. First, -(u)n and -(u)l are governed by a phonological condition: -un or -ul follows consonant-final verbs, whereas

-n or *-l* follows vowel-final verbs. Second, non-action verbs lack the suffix *-nun*. H.-m. Sohn (1992) presents the following diagram of verbal adjectival-suffixes:

(27) Verbal Adjectival Suffix (VAS)

		Indicative	Retrospective	Prospective
+action	-past	-nun	-te-n	-(u)l
	+past	-(u)n	-ess-te-n	-ess-ul
-action	-past	-(u)n	-te-n	-(u)l
	+past	xxx	-ess-te-n	-ess-ul

However, not all forms in (27) are found in noun compounds. Consider the following examples:

(28) a. Action Verb

- (i) anc-un khi
 sit-VAS height
 'one's height when seated'
- (ii) ye-l soy
 open-VAS iron
 'key'

b. Non-action Verb

- khu-n ttal
 big-VAS daughter
 'oldest daughter'

The examples in (28) illustrate that while *-(u)n* and *-(u)l* appear in action verbs, *-(u)n* occurs in non-action verbs. Thus, the types of V + N compounds can be diagrammed as follows:

- (29) a. N → Verb Stem_[+action] - {(u)n, (u)l} + N
 b. N → Verb Stem_[-action] - (u)n + N

On the other hand, all suffixes in (27) may appear in noun phrases. Consider the following examples with Indicative and Prospective:

- (30) a. Action Verb
- (i) Indicative
 - (nay-ka) mek-un banana
 - (I-Nom) eat-VAS banana
 - 'banana which (I) ate'
 - (nay-ka) mek-nun banana
 - 'banana which (I) eat'
 - (ii) Prospective
 - (nay-ka) mek-ul banana
 - 'banana which (I) will eat'
 - (nay-ka) mek-ess-ul banana
 - 'banana which (I) would eat'
- b. Non-action Verb
- (i) Indicative
 - khu-n banana
 - big-VAS banana
 - 'banana which is big'
 - (ii) Prospective
 - khu-l banana
 - 'banana which will be big'
 - khu-ess-ul banana
 - 'banana which would be big'

Unlike the situation with compounds, all adjectival suffixes can be found in phrases. This means that while the distribution of VASs is restricted in the noun compound as noted above, there is no corresponding restriction of VASs in the noun phrase.

Now, we consider differences between noun compounds and noun phrases in terms of phonological facts: vowel length, juncture (pause), and vowel deletion.

First, P.-K. Lee (1979/1988) points out that a vowel in an adjectival form of noun compound becomes short, whereas a vowel in an adjectival form of noun phrase becomes long. Consider the following examples:

- (31) a. Compound
 [[cak-un]Adj [cip]N]N 'younger brother's house'
 b. Phrase
 [[ca:k-un]Adj [cip]N]NP 'small house'

In Korean, forms with lexical categories such as verbs usually have a long vowel in the first syllable. The long vowels of verbs are shortened when inflectional suffixes begin with a vowel. In contrast, the long vowel is maintained in these cases where inflectional suffixes have a consonant. This is found in the following examples:

- (32) a. ca:k-un -> cak-un
 b. ca:k-ko -> ca:k-ko

Normally, the adjectival form in (31) has to be shortened, but the noun phrase in (31b) does not follow the shortening rule. This fact demonstrates that noun compounds and noun phrases have a difference in vowel length.

Second, it has been traditionally stated that while juncture (or pause) appears in the phrase, it does not appear in the compound. If we assume that the occurrence of tensification and liaison are closely related to juncture, then these phonological phenomena can be used to distinguish noun compounds from noun phrases. Consider the following examples:

- (33) a. Compound: ttay-l kam [k'] 'fuel'
 Phrase: (nay-ka) mek-ul^koki [k]
 'meat which (I) will eat'
 b. Compound: khu-n atul [na] 'eldest son'
 Phrase: khu-n atul [n^a] 'big son'
 (^: Juncture)

In (33a), tensification indicates the non-occurrence of juncture in a compound; while the lack of tensification indicates the existence of juncture in a phrase. The examples in (33b) relate to liaison: Liaison is found in compounds, but not in phrases.

- (34) a. Compound: CVC VCVC → CV\$CV\$CVC
 b. Phrase: CVC^VCVC → CVC\$V\$CVC
 (^: Juncture)

As (34) illustrates, liaison is allowed in a compound where there is no juncture, whereas juncture appears to block liaison in a phrase. Thus, tensification and liaison are two characteristics of compounds that help distinguish them from phrases.

Third, noun compounds and noun phrases exhibit differences with respect to vowel deletion. Consider the following examples:

- (35) a. Compound: kwuwun pam → kwun pam 'roasted chestnut'
 b. Phrase: (nay-ka) cwuwun cikap
 → *(nay-ka) cwun cikap
 'purse which (I) picked up'

The adjectival forms in (35) are derived from *p*-irregular verbs *kwupta* and *cwupta*, respectively. The forms have the following phonological derivations:

- (36) a. Compound: kwup-un → kwuw-un → kwun
 b. Phrase: cwup-un → cwuw-un → *cwun

In *p*-irregular verbs, *p* changes to *w* before vowels. While resulting *wu* can be deleted in a compound, *wu*-deletion may not take place in a phrase.

So far, we have seen that noun compound and noun phrase exhibit differences with regard to certain phonological facts. Now, we turn to differences of semantic idiosyncrasy and lexical integrity.

First, the semantics of noun compounds and noun phrases differ in regularity. While the former show semantic idiosyncrasy, the latter show semantic compositionality. Consider the following examples:

- (37) a. Compound: *khu-n cip* 'the eldest brother's house'
 b. Phrase: *khu-n cip* 'big house'

In (37), the meaning of the compound is opaque, while the meaning of the phrase is transparent.

Second, words in the compound are more tightly bound than those in the phrase. Like words themselves, compounds do not allow insertion of grammatical elements, whereas phrases allow it. In other words, compounds preserve lexical integrity; phrases do not. For example, inflectional suffixes cannot be inserted into a compound:

- (38) a. khu-n apeci
 big-VAS father
 'older brother'
 a'. *khu-si-n apeci
 big-Hon-VAS father
- b. mi-l mwul
 push-VAS water
 'tide'
 b'. *mil-ess-ul mwul
 push-Past-VAS water

However, grammatical elements can be inserted into a phrase.

Consider the following examples:

- (39) a. (nay-ka) mek-ul banana
 I-Nom eat-VAS banana
 'banana which (I) will eat'
 a'. (nay-ka) mek-ess-ul banana
 I-Nom eat-Past-VAS banana
 'banana which (I) would eat'
- b. (khi-ka) khu-n apeci
 height-Nom tall-VAS father
 'tall father' (Non-Hon)
 b'. (khi-ka) khu-si-n apeci
 height-Nom tall-Hon-VAS father
 'tall father' (Hon)

The following examples also illustrate lexical integrity:

- (40) a. Compound
 *khu-n chakha-n atul
 be big-VAS be good-VAS son
 'eldest and good son' (Lit)
- b. Phrase
 khu-n chakha-n atul
 be big-VAS be good-VAS son
 'big and good son'

Inserting the adjectival form *chakha-n* into the compound in (40a) produces an ungrammatical result. However, inserting the same adjectival form into the phrase in (40b) produces a

grammatical result. Thus, compounds do not permit the insertion of lexical items.

Scrambling is another syntactic phenomenon that cannot be involved in word formation. Scrambling is not possible in a compound, but it is possible in a phrase. Consider the following examples:

- (41) a. Compound
 (i) John-i caki-uy [khu-n atul]-kwa sa-nta.
 John-Nom self-Gen [eldest son]-with live-Pres
 'John lives with self's eldest son.'
 (ii) *John-i [khu-n caki-uy atul]-kwa santa.
- b. Phrase
 (i) John-i caki-uy [(khi) khu-n atul]-kwa
 John-Nom self-Gen [(height) tall son]-with
 sa-nta.
 live-Pres
 'John lives with self's tall son.'
 (ii) John-i [(khi) khu-n caki-uy atul]-kwa santa.

Although each reflexive pronoun *caki* in (41) can intervene between the adjectival form and the noun, the same is not true of (41a) and (41b). Thus, this fact means that when we assume that Scrambling is a kind of movement, no movement can be involved in the compound.

So far, we have seen that noun compounds and noun phrases exhibit differences with regard to semantic idiosyncrasy and lexical integrity. We next consider differences with regard to modification and quantification.

First, noun compounds do not allow the same modifiers as noun phrases. Consider the following examples:

- (42) a. Compound
 *acwu [khu-n cip]
 very be big-VAS house
 'very [one's eldest house]' (Lit)
- b. Phrase
 [acwu khu-n cip]
 very be big-VAS house
 'very big house'

The adverb in (42a) is ungrammatical because it must modify the compound as a whole, not just the verbal portion of it. On the other hand, the phrase in (42b) allows the modifier *acwu* because it modifies the verbal form *khun* separate from its head noun.

Second, the noun compound and the noun phrase show differences with regard to quantification. The noun compounds in (43a) refer to unique entities:

- (43) a. Compound
 *John-un [khu-n atul]-kwa [cak-un atul]-i
 John-Top [eldest son]-and [youngest son]-Nom
 yeles-i issta.
 many-Nom have
 'John has many eldest and youngest sons.'
- b. Phrase
 John-un [khi-ka khu-n] atul-kwa
 John-Top [tall] son-and
 [khi-ka cak-un] atul-i yeles-i issta.
 [short] son-Nom many-Nom have
 'John has many tall and short sons.'

Since the compounds refer to two unique entities, they cannot be quantified with *yelesi* 'many.' However, the phrase in (43b) does not show such restrictions.

In summary, although the V + N compounds and phrases show the same superficial structure, they exhibit different behavior with regard to phonological facts such as vowel

length, juncture (pause), and vowel deletion, and lexical facts such as semantic idiosyncrasy, lexical integrity, modification, and quantification.

4.3 Verb + Verb Constructions

In this section, we discuss verb + verb (V + V) constructions. There are many V + V constructions in Korean. Consider the following examples:

- (44) a. ttwi-nolta 'to romp'
 run-play
 o-kata 'to come and go'
 come-go
- b. ssip-e mekta 'to chew and eat'
 chew-VAdvS eat
 nal-a tanita 'to fly and go'
 fly-VAdvS go
 cwu-ko patta 'to give and take'
 give-VAdvS receive
 mek-ko masita 'to eat and drink'
 eat-VAdvS drink
- c. mek-e pota 'to try eating'
 eat-VAdvS try
 mek-key hata 'to cause to eat'
 eat-VAdvS Caus
 mek-ci anihata 'not to eat'
 eat-VAdvS do not
 mek-ko siphta 'to want to eat'
 eat-VAdvS want

(44a) consists of verb root and verb root; (44b) and (44c) include *-a/e*, *-key*, *-ci*, and *-ko*, which are called verbal adverbial suffixes. The examples in (44b) and (44c) exhibit the same form, but there are differences between these two types. The former can be considered to be a combination of verbs, whereas the latter are auxiliary verbs. We explore

whether the V + V constructions in (44) are words or phrases, and what properties they have.

4.3.1 Lexical Compounds

As we have seen in chapter 2, the examples in (44a) are compounds which are formed in the lexical component. One is a sub-compound and the other a co-compound. For ease of exposition, we repeat the examples in chapter 2:

- (45) a. Sub-compound
 ttwi-nolta 'to romp'
 run-play
 may-talta 'to hang'
 hang-hang
 kwut-seyta 'to be strong'
 be hard-be strong
- b. Co-compound
 o-kata 'to come and go'
 come-go
 ye-tatta 'to open and close'
 open-close
 olu-naylita 'to rise and fall'
 rise-fall

Since we have already discussed compounds in chapter 2, we demonstrate only that they are lexical words in terms of phonological and morphological criteria.

The forms in (45) illustrate phonological processes found in lexical word formation. Consider the following examples:

- (46) a. mal-so -> ma-so 'horse and cow'
 b. kyewul-nay -> kyewu-nay 'throughout the winter'
 c. yel-tatta -> ye-tatta 'to open and close'
 mil-tatta -> mi-tatta 'to push and close'

As in nominal compounding and adverbial derivation, l-deletion also takes place in (45). This phonological criterion indicates that the examples in (45) are shown to be lexical compounds.

Now, we consider Gapping and the Do-So Rule for wordhood. Kageyama (1989:76-77) considers Gapping in Japanese to be a property of words. Gapping in Korean is also governed by wordhood. Consider the following examples:

- (47) a. John-i [hankwuke sacen]-ul sa-ko
 John-Nom [Korean dictionary]-Acc buy-Conj
 Mary-ka [yenge sacen]-ul sa-ssta.
 Mary-Nom [English dictionary]-Acc buy-Past
 'John bought a Korean dictionary,
 and Mary bought an English dictionary.'
- b. *John-i [hankwuke (sacn)]-ul sa-ko
 Mary-ka [yenge sacen]-ul sa-ss-ta.
 'John bought a Korean (dictionary),
 and Mary bought an English dictionary.'

In (47b), a part of the word has been deleted, and this is not permitted. The ungrammaticality of (47b) illustrates that Gapping in Korean is conditioned by wordhood.²

The same kind of Gapping condition is found in V + V constructions. Consider the following examples:

- (48) a. John-i Seoul-kwa Pusan-ul oka-ko
 John-Nom Seoul-and Pusan-to come and go-Conj
 Mary-ka Seoul-kwa Osan-ul oka-ssta.
 Mary-Nom Seoul-and Osan-to come and go-Past
 'John came and went to Seoul and Pusan,
 and Mary came and went to Seoul and Osan.'
- b. John-i Seoul-kwa Pusan-ul (oka-ko)
 Mary-ka Seoul-kwa Osan-ul oka-ssta.
 'John (came and went) to Seoul and Pusan,
 and Mary came and went to Seoul and Osan.'
- c. *John-i Seoul-kwa Pusan-ul o(ka)-ko
 Mary-ka Seoul-kwa Osan-ul oka-ssta.
 'John came and (went) to Seoul and Pusan,
 and Mary came and went to Seoul and Osan.'

In (48b), a whole word can be deleted; in (48c), a part of a word cannot be deleted. Since partial deletion causes ungrammaticality, we may conclude that *oka-ko* is a word. This is additional evidence that the V + V constructions of (45) are lexical compounds.

Moreover, the examples in (45) exhibit properties of words with regard to the Do-So Rule. Consider the following examples:

- (49) a. John-i Seoul-kwa Pusan-ul oka-ko
 John-Nom Seoul-and Pusan-to come and go-Conj
 Mary-to Seoul-kwa Pusan-ul oka-ssta.
 Mary-also Seoul-and Pusan-to come and go-Past
 'John came and went to Seoul and Pusan,
 and Mary also came and went to Seoul and Pusan.'
- b. *John-i Seoul-kwa Pusan-ul oka-ko
 Mary-to Seoul-kwa Pusan-ul [kulehkey ha] ka-ssta.
 'John came and went to Seoul and Pusan, and
 Mary also did and went to Seoul and Pusan.'
- c. John-i Seoul-kwa Pusan-ul oka-ko
 Mary-to Seoul-kwa Pusan-ul [kulehkey ha]-yessta.
 'John came and went to Seoul and Pusan,
 Mary also did to Seoul and Pusan.'

In (49b), *kulehkey ha* cannot indicate only the part o of the verb *oka-*; in (49c), it can refer to the whole word *oka-*. This is related to lexical integrity, which states that syntactic phenomena do not intrude in words. The V + V constructions in (45) are thus words by the criteria of Gapping and the Do-So Rule.

4.3.2 Conjunction Constructions

We now turn to the examples in (44b). Since they consist of a verbal adverbial form and a verb, they are represented schematically as follows:

- (50) a. Verb Stem-a/e + Verb
 b. Verb Stem-ko + Verb

The constructions in (50a) and (50b) are different.

First, as I.-H. Jo (1990) points out, *Verb Stem-a/e* forms cannot have a separate subject or object and *Verb Stem-ko* forms can. Consider the following examples:

- (51) a. *John-i koki-lul ssip-e
 John-Nom meat-Acc chew-VAdvS
 Mary-ka koki-lul mek-essta.
 Mary-Nom meat-Acc eat-Past
 'John chewed meat and Mary ate meat.'
- b. John-i pap-ul mek-ko
 John-Nom meal-Acc eat-VAdvS
 Mary-ka mwul-ul masi-essta.
 Mary-Nom water-Acc drink-Past
 'John ate a meal and Mary drank water.'

Although the examples in (51a) and (51b) both have different subjects *John* and *Mary*, the former is ungrammatical, but the

latter is grammatical. This demonstrates that *Verb Stem-a/e* form cannot have different subjects, whereas *Verb Stem-ko* form can.

In addition, while different objects cannot occur in structures of the form (50a), they can occur in those of the form (50b). Consider the following examples:

- (52) a. *John-i koki-lul ssip-e pap-ul mek-essta.
 John-Nom meat-Acc chew-VAdvS meal-Acc eat-Past
 'John chewed meat and ate meal'
- b. John-i pap-ul mek-ko mwul-ul masi-essta.
 John-Nom meal-Acc eat-VAdvS water-Acc drink-Past
 'John ate meal and drank water.'

Since *ssipta* and *mekta* are transitive verbs, they can both take an object noun phrase, and the construction *ssip-e mekta* requires that they share the same object. Although *mekta* and *masita* are also transitive verbs, *mek-ko masita* can take different objects. Thus, the *Verb Stem-a/e* construction has to share the object noun phrase, whereas the *Verb Stem-ko* construction does not require object sharing.

Second, the tense suffix cannot be inserted into *Verb Stem-a/e* form, but it can be inserted into *Verb Stem-ko* form. Consider the following examples:

- (53) a. *John-i koki-lul ssip-ess-e mek-essta.
 John-Nom meat-Acc chew-Past-VAdvS eat-Past
 'John chewed and ate meat.'
- b. ??John-i swul-ul (kyeysok)
 John-Nom wine-Acc (continually)
 mek-ess-ko masi-essta.
 eat-Past-VAdvS drink-Past
 'John continually ate and drank wine.'

The tense suffix is usually attached to V2 in (50), as in *ssip-e mek-essta* and *mek-ko masi-ess-ta*. When *-ass/ess* is inserted after V1, however, (53a) is ungrammatical and (53b) is acceptable. Thus, *Verb Stem-a/e* form and *Verb Stem-ko* form exhibit different properties in terms of insertion of the tense suffix *-ass/ess*.

Now, we explore whether the V + V constructions in (50) are words or phrases in terms of semantic compositionality and lexical integrity.

First, semantic compositionality is illustrated in (50). Consider the following examples:

- (54) a. *ssip-e mekta* 'to chew and eat'
 b. *mek-ko masita* 'to eat and drink'

Since the examples in (54) have not become lexicalized, they have the composite meaning of the two verbs in isolation. This demonstrates that the examples in (54) are phrases.

Second, the following examples illustrate that V + V constructions can be phrases:

- (55) a. *ssip-e-nun mekta*
 chew-VAdvS-Top eat
- b. *cwu-ko-lul patta*
 give-VAdvS-Acc receive

The topic marker in (55a) and the accusative case marker in (55b) are inserted after a verbal adverbial suffix. This demonstrates that the examples in (55) are not words because this insertion violates lexical integrity. On the other hand, since morphological elements can be inserted into phrases, the V + V constructions in (55) are phrases.

Moreover, grammatical elements can be inserted into (50). Consider the following examples:

- (56) a. *ssip-e ppalli mekta*
 chew-VAdvS quickly eat
 'to chew and quickly eat'
- b. (ton-ul) *cwu-ko yengswucung-ul patta*
 (money-Acc) give-VAdvS receipt-Acc take
 'to give (money) and take a receipt'

In (56a), the adverb *ppalli* is inserted to modify the verb *mekta*; in (56b), the object noun phrase can be put before the verb *patta*. If the examples in (56) are kinds of words, then the insertion of an adverb would violate lexical integrity. The above facts illustrate that the V + V constructions in (50) are phrases.

4.3.3 Auxiliary Constructions

In this section, we discuss the so-called auxiliary (AUX) construction in Korean, which consists of a main verb and an auxiliary verb. We call the main verb and the auxiliary verb V1 and V2. By comparison with the AUX in English, this AUX construction in Korean cannot be a real

AUX construction, because it exhibits subcategorization. For ease of exposition, however, we continue to use the traditional terminology.

H.-P. Choi (1955/1983) presents the following AUX constructions:

- (57) a. Negative: -ci anihata, -ci malta, -ci moshata
 b. Causative: -key hata
 c. Passive: -a/e cita, -key toyta
 d. Progressive: -a/e ota, -a/e kata
 e. Ending: -a/e pelita
 f. Serving: -a/e cwuta (tulita), -a/e pachita
 g. Attempting: -a/e pota
 h. Strengthening: -a/e ssahta, -a/e tayta
 i. Desiderative: -ko siphta
 j. Stative: -e issta, -ko issta

As in conjunction constructions discussed in 4.3.2, the examples in (57) also consist of a verbal adverbial form and a verb. However, since AUX constructions cooccur with specific adverbial suffixes, the following examples are not possible:

- (58) a. Negative: *mek-e/key/ko anihata
 b. Causative: *mek-e/ci/ko hata
 c. Passive: *mek-key/ci/ko cita

At the same time, V2 takes a different kind of verb.

Consider the following examples:

- (59) a. mek 'to eat'-e pota, *cak 'to be small'-a pota
 b. mek-key hata, cak-key hata
 c. mek-ci anihata, cak-ci anihata
 d. mek-ko siphta, cak-ko siphta
 e. mek-e cita, cak-a cita

Unlike other examples in (59), *-a/e pota* in (59a) is connected only with an action verb. The following examples also take the action verb:

- (60) a. mek 'to eat'-e ota (kata)
 *coh 'to be good'-a ota (kata)
 b. mek-ko issta, *coh-ko issta
 c. mek-e pelita, *coh-a pelita
 d. mek-e cwuta, *coh-a cwuta
 e. mek-e ssahta, *coh-a ssahta

In contrast, certain AUX constructions take non-action (description) verbs. Consider the following examples:

- (61) a. *-a/e poita* 'to seem': *mek-e poita, coh-a poita
 b. *-key poita* 'to seem': *mek-key poita, coh-key poita

AUX constructions such as passive, causative, negative, and desiderative can take both action and non-action verbs; most AUX constructions take action verbs; and *-a/e poita* and *-key poita* take non-action verbs.

The AUX construction has a structure similar to that of the conjunction construction. However, there are differences between these two constructions. While the conjunction construction can be considered a combination of verbs, the AUX construction consists of a main verb and an auxiliary verb.

First, conjunction constructions exhibit compositional meaning, whereas we cannot find this in AUX constructions.

Consider the following examples:

- (62) a. ssip-e mekta 'to chew and eat'
 b. mek-e pota 'to try to eat', '*to eat and see'

The meaning in (62a) is a composition of *to chew* and *to eat*; that in (62b) does not have the compositional meaning of *to eat* and *to see*. They exhibit a difference in meaning compositionality.

Second, a syntactic element can be inserted into conjunction constructions, whereas it cannot be inserted into AUX constructions. Consider the following examples:

- (63) a. *ssip-e* *manhi mekta*
 chew-VAdvS *much eat*
- b. **mek-e* *manhi pota*
 eat-VAdvS *much try*

When an adverb *manhi* is placed between V1 and V2, (63a) is grammatical, but (63b) is ungrammatical. Thus, the conjunction construction and the AUX construction exhibit a difference in the insertability of syntactic elements.

Now, we explore whether the AUX construction is a word or a phrase. The AUX construction exhibits properties of both word and phrase in regard to lexical integrity. For example, an inflectional suffix cannot be put into the AUX construction:

- (64) **mek-ess-e* *pota*
 eat-Past-VAdvS *try*

The unacceptability of the example in (64) suggests that the AUX construction is a word, since lexical integrity is a distinctive property of the word. However, postpositions can be inserted into the AUX construction:

- (65) a. mek-e-lul pota
 eat-VAdvS-Acc try
- b. mek-e-nun pota
 eat-VAdvS-Top try

The accusative case marker *-lul* in (65a) and the topic marker *-nun* in (65b) are placed between V1 and V2. Since insertion of morphological elements is permitted in (65), this suggests that the AUX construction is a phrase. Thus, the AUX construction ambiguously exhibits properties of both word and phrase.

Furthermore, as discussed in 4.3.1, Gapping in Korean is governed by wordhood. Gapping is also found in AUX constructions. Consider the following examples:

- (66) a. John-i banana-lul mek-e po-ko
 John-Nom banana-Acc eat-VAdvS try-Conj
 Mary-ka orange-lul mek-e po-assta.
 Mary-Nom orange-Acc eat-VAdvS try-Past
 'John tried eating banana,
 and Mary tried eating orange.'
- b. John-i banana-lul mek(-e po)ko
 Mary-ka orange-lul mek-e po-assta.
 'John ate banana, and Mary tried eating orange.'
- c. John-i banana-lul (mek-e poko)
 Mary-ka orange-lul mek-e po-assta.
 'John (tried eating) banana,
 and Mary tried eating orange.'

When part of the AUX construction is deleted, the example in (66b) has a different meaning. But deletion of the whole AUX construction in (66c) is possible. This demonstrates that the AUX construction exhibits properties of wordhood with regard to Gapping.

As I.-H. Jo (1990) points out, however, the AUX construction also has properties of phrases. Consider the following examples:

- (67) a. John-i kimchi-lul mek-e po-ko
 John-Nom kimchi-Acc eat-VAdvS try-Conj
 Mary-to kimchi-lul mek-e po-assta.
 Mary-also kimchi-Acc eat-VAdvS try-Past
 'John tried eating Kimchi,
 and Mary also tried eating Kimchi.'
- b. John-i kimchi-lul mek-e po-ko
 Mary-to kimchi-lul [kulehkey ha]-ye po-assta.
 'John tried eating Kimchi,
 and Mary also tried doing Kimchi.'

Since the example in (67b) is derived by the Do-So Rule, *kulehkey ha* refers to V1. If the AUX construction were a kind of word, then (67b) would be ungrammatical because the lexical compounds discussed in 4.3.1 do not exhibit partial reference with respect to the Do-So Rule. This exhibits the properties of a phrase. With regard to Gapping and the Do-So Rule, then, the AUX construction is neither clearly a word nor clearly a phrase.

So far, we have seen that AUX constructions have properties of both words and phrases. The AUX construction with *-a/e cwuta* presents an interesting phenomenon. Consider the following examples:

- (68) a. mek-e cwuta 'to give to eat' (Lit)
 eat-VAdvS give
 tow-a cwuta 'to give to help' (Lit)
 help-VAdvS give
 sal-a cwuta 'to give to live' (Lit)
 live-VAdvS give
- b. pilli-e cwuta 'to lend'
 borrow-VAdvS give
 tullie-e cwuta 'to listen to'
 be heard-VAdvS give
- c. thul-e cwuta 'to give to turn on' (Lit)
 turn on-VAdvS give
 noh-a cwuta 'to give to put' (Lit)
 put-VAdvS give
 ttut-e cwuta 'to give to pick out' (Lit)
 pick out-VAdvS give
 ilk-e cwuta 'to give to read' (Lit)
 read-VAdvS give

Like other AUX constructions, the examples (68a) demonstrate that the main verb V1 determines the meaning and function of the AUX construction. Consider the following examples:

- (69) a. John-i mango-lul mek-e cwu-essta.
 John-Nom mango-Acc eat-VAdvS give-Past
 'John ate mango (for someone).'
- a'. *John-i Mary-eykey mango-lul mek-e cwu-essta.
 John-Nom Mary-to mango-Acc eat-VAdvS give-Past
- b. John-i Mary-lul tow-a cwu-essta.
 John-Nom Mary-Acc help-VAdvS give-Past
 'John helped Mary.'
- b'. *John-i Tom-eykey Mary-lul tow-a cwu-essta.
 John-Nom Tom-to Mary-Acc help-VAdvS give-Past

In (69), the examples with Goal are ungrammatical because verbs such as *mekta* and *topta* assign only Agent and Theme to the noun phrases. This implies that theta-role assignment depends on V1, not V2. The fact that V1 is responsible for theta-marking is confirmed by the following example:

(70) John-i nalk-un cip-eyse sal-a cwu-essta.
 John-Nom be old-VAS house-in live-VAdvS give-Past
 'John lived in an old house (for someone).'

Since V1 *to live* determines the theta-roles of the construction, Location can occur in (70). In contrast, the following examples with Theme or Goal are ungrammatical:

- (71) a. *John-i Mary-lul nalk-un cip-eyse sal-a
 John-Nom Mary-Acc old-VAS house-in live-VAdvS
 cwu-essta.
 give-Past
- b. *John-i Mary-eykey nalk-un cip-eyse sal-a
 John-Nom Mary-to old-VAS house-in live-VAdvS
 cwu-essta.
 give-Past

The ungrammaticality in (71) confirms that V2 cannot be involved in assigning theta-roles. We conclude that the examples in (68a) are ordinary AUX constructions.

However, the examples in (68b) have certain peculiarities. Although *pilli-e cwuta* consists of *pillita* and *cwuta*, it exhibits some lexical idiosyncrasy. If *pilli-e cwuta* were a real AUX construction, then V1 *pillita* would determine the function and meaning of the construction, and *pilli-e cwuta* should simply mean *to borrow*. On the contrary, however, its meaning is *to lend*. Consider the following examples:

- (72) a. John-i Mary-eykey ton-ul
 John-Nom Mary-to money-Acc
 pilli-e cwu-essta.
 borrow-VAdvS give-Past
 'John lent money to Mary.'
- b. John-i Mary-eykeyse ton-ul pilli-essta.
 John-Nom Mary-from money-Acc borrow-Past
 'John borrowed money from Mary.'

The verb in (72a) assigns Theme and Goal to the internal arguments; that in (72b) assigns Theme and Source to the internal arguments. So the meaning and function in *pilli-e cwuta* is not determined by the main verb V1.

Since *pilli-e cwuta* is different from ordinary AUX constructions, it can be considered a conjunction construction of the sort discussed in 4.3.2. However, *pilli-e cwuta* is not a conjunction construction because the idiosyncratic meaning *to lend* does not appear in the conjunction construction. When the form *pilli-e cwuta* is a conjunction construction, its meaning is *to borrow and give*. This is illustrated in the following example:

- (73) John-i ton-ul pilli-e Mary-eykey cwu-essta.
 John-Nom money-Acc borrow-VAdvS Mary-to give-Past
 'John borrowed money and gave (it) to Mary.'

The example in (73) has the compositional meaning *to borrow and give*. In contrast, the meaning of *pilli-e cwuta* is not compositional and it is not a conjunction construction.

Moreover, *pilli-e cwuta* is peculiar with regard to its subject argument. The subject in (72a) can have either the Agent role or the Source role; that is, it is ambiguous as to theta-role. However, this ambiguity disappears in the

conjunction construction. The subject in (73) bears only the Agent role.

Lexical idiosyncrasy is also found in the following example:

- (74) John-i Mary-eykey umak-ul tulli-e
 John-Nom Mary-to music-Acc listen to-VAdvS
 cwu-essta.
 give-Past
 'John listened to music to Mary.' (Lit)

The example in (74) is composed of *tullita* and *cwuta*. V1 *tullita*, which consists of *tutta* and *-li*, can be a causative or passive verb, because the suffix *-li* is used for both causative and passive. Since V1 determines the meaning and function, theta-role assignment depends on *tullita*. In order to assign Theme and Goal to internal noun phrases, *tullita* should be a causative verb. However, the causative form *tullita* does not exist in the Korean lexicon. On the other hand, we can find the passive form *tullita*, as in the following:

- (75) Soli-ka tulli-essta.
 sound-Nom be heard-Past
 'A sound was heard.'

Since *tullita* in (75) is the passive verb, it can assign only the Theme role to the noun phrase. If *tulli-e cwuta* is really the AUX construction, then the example with object noun phrase or Goal could not appear in (75). This demonstrates that *tulli-e cwuta* exhibits lexical idiosyncrasy.

Finally, we discuss the verbs in (68c). We have seen that the V1 in (68a) assigns theta-roles to noun phrases. For ease of exposition, we repeat the examples in (69):

- (76) a. John-i mango-lul mek-e cwu-essta.
 John-Nom mango-Acc eat-VAdvS give-Past
 'John ate mango (for someone).'
- a'. *John-i Mary-eykey mango-lul mek-e cwu-essta.
 John-Nom Mary-to mango-Acc eat-VAdvS give-Past
- b. John-i Mary-lul tow-a cwu-essta.
 John-Nom Mary-Acc help-VAdvS give-Past
 'John helped Mary.'
- b'. *John-i Tom-eykey Mary-lul tow-a cwu-essta.
 John-Nom Tom-to Mary-Acc help-VAdvS give-Past

The examples in (76) cannot have a Goal role, because V1, which determines the theta-role assignment, cannot assign Goal to the noun phrase.

However, the verbs in (68c) can have a Goal role.

Consider the following examples:

- (77) a. John-i Mary-eykey TV-lul thul-e cwu-essta.
 John-Nom Mary-to TV-Acc turn on-VAdvS give-Past
 'John turned on a TV to Mary.' (Lit)
 'John turned on a TV for Mary.'
- b. John-i Mary-eykey sikthak-wiey kwuk-ul noh-a
 John-Nom Mary-to table-on soup-Acc put-VAdvS
 cwu-essta.
 give-Past
 'John put soup on the table to Mary.' (Lit)
 'John put soup on the table for Mary.'

The V1's in (77) have the following theta-roles:

- (78) a. thulta (Agent Theme)
 b. nohta (Agent Theme Location)

The Goal role cannot be assigned by the V1's in (78), but it appears in (77). This implies that the V2 in (77) is involved in theta-role assignment. Although *cwuta* is a kind of auxiliary verb, it has to assign a theta-role to the noun phrase. Thus, these phenomena demonstrate that both V1 and V2 can participate in theta-role assignment.

Now, we explore whether the constructions in (68c) are lexically restructured words as in (68b) or conjunction constructions. First, let us think of them as lexically restructured words. Lexical idiosyncrasy is a distinctive property of the lexical word. Compared to *pilli-e cwuta* and *tulli-e cwuta*, however, *thul-e cwuta* does not exhibit lexical idiosyncrasy. The V1's *thulta* and *nohta* determine the meaning of *thul-e cwuta* and *noh-a cwuta*, and also exist in the Korean lexicon. In addition, if a construction such as *thul-e cwuta* is a sub-compound, then the right-hand word would determine the meaning of *thul-e cwuta*. But this is not the case. Rather, the meaning depends on the left-hand word *thulta*. With regard to lexical idiosyncrasy, the examples in (68c) are not lexically restructured words.

Second, we can consider the possibility that such an example as *thul-e cwuta* is a conjunction construction. This possibility raises a problem for case marking. It has been generally accepted that *cwuta* exceptionally assigns double Acc case to the noun phrases. Consider the following examples:

- (79) a. John-i Mary-eykey ton-ul cwu-essta.
 John-Nom Mary-to money-Acc give-Past
 'John gave money to Mary.'
- b. John-i Mary-lul ton-ul cwu-essta.
 John-Nom Mary-Acc money-Acc give-Past
 'John gave Mary money.'

In (79b), *-eykey* can be changed to *-lul*. But this is not possible in *-a/e cwuta* construction:

- (80) a. John-i Mary-eykey TV-lul thul-e cwu-essta.
 b. *John-i Mary-lul TV-lul thul-e cwu-essta.

The impossibility of double Acc case marking demonstrates that *cwuta* in *thul-e cwuta* is not the main verb. Moreover, when it is a conjunction construction, *thul-e cwuta* means *to turn on and give*. But here it has the meaning of *to turn on*. So *thul-e cwuta* is not a conjunction construction, either.

So far, we have seen that the examples in (68c) are neither lexical words nor conjunction constructions. Now, we might regard such a verb as *thul-e cwuta* as a serial verb construction, where a sequence of verbs appear in a single clause. The difference is that while the serial verb construction is a syntactic word (V-V), the conjunction construction is a combination of syntactic phrases (VP-VP). In diagnostics for serial verb constructions, Baker (1989:548-549) suggests extraction by Wh Movement and predicate clefting. In terms of those tests, the examples in (68c) give positive results. Consider the following examples:

- (81) a. John-i Mary-eykey kkoch-ul
 John-Nom Mary-to flower-Acc
 ttut-e cwu-essta.
 pick out-VAdvS give-Past
 'John picked out a flower to Mary.' (Lit)
 'John picked out a flower for Mary.'
- b. (i) Extraction by Wh Movement
 Mwues-ul John-i Mary-eykey
 what-Acc John-Nom Mary-to
 ttut-e cwu-ess-nunya?
 pick out-VAdvS give-Past-Q
 'What did John pick out for Mary?'
- (ii) Predicate Clefting
 John-i ha-n kes-un Mary-eykey kkoch-ul
 John-Nom do-VAS thing-Top Mary-to flower-Acc
 ttut-e cwu-n kes-ita.
 pick out-VAdvS give-VAS thing-be
 'What John did is to pick out a flower
 for Mary.'

However, Baker's tests are not really useful because we get the same result even in the conjunction construction.

Consider the following examples:

- (82) a. John-i kkoch-ul ttut-e
 John-Nom flower-Acc pick out-VAdvS
 Mary-eykey cwu-essta.
 Mary-to give-Past
 'John picked out a flower and gave (it) to Mary.'
- b. (i) Extraction by Wh Movement
 Mwues-ul John-i ttut-e Mary-eykey
 what-Acc John-Nom pick out-VAdvS Mary-to
 cwu-ess-nunya?
 give-Past-Q
 'What did John pick out and give (it) to Mary?'
- (ii) Predicate Clefting
 John-i ha-n kes-un kkoch-ul
 John-Nom do-VAS thing-Top flower-Acc
 ttut-e Mary-eykey cwu-n kes-ita.
 pick out-VAdvS Mary-to give-VAS thing-be
 'What John did is to pick out a flower and give
 (it) to Mary.'

At the same time, Sebba (1987:174) points out that serial verb constructions with *to give* are ambiguous between Goal and Benefactive. It is the same for Korean. The Goal role is realized as *-eykey*, but the meaning is Benefactive. Thus, the following sentence is possible:

- (83) a. John-i Mary-eykey TV-lul thul-e cwu-essta.
 John-Nom Mary-to TV-Acc turn on-VAdvS give-Past
 'John turned on a TV to Mary.' (Lit)
- b. John-i Mary-lul wihay TV-lul
 John-Nom Mary-for TV-Acc
 thul-e cwu-essta.
 turn on-VAdvS give-Past
 'John turned on a TV for Mary.'

Although the claim that constructions including *thul-e cwuta* are serial verb constructions may turn out to be adequate, there are problems. Compared to other languages, serial verb constructions are found only in specific verbs in Korean. In addition, Baker (1989:525-527) mentions that serial verb constructions in SOV languages are represented by NP-V1-NP-V2. On the other hand, Korean exhibits NP-NP-V1-V2. With respect to word order in serial verb constructions, Korean can have NP-V1-NP-V2, as in the following:

- (84) John-i sikthak-wiey kwuk-ul noh-a
 John-Nom table-on soup-Acc put-VAdvS
 Mary-eykey cwu-essta.
 Mary-to give-Past
 'John put soup on the table and gave (it) to Mary.'

The example in (84) is NP-V1-NP-V2, but it does not conform to Sebba's observation that serial verb constructions are

ambiguous between Goal and Benefactive. Furthermore, the verbal meaning in (84) illustrates a transparent conjunction of *to put* and *to give*. Thus, whether the constructions in (68c) are real serial verb constructions or not remains an open question.

So far, we have explored what the constructions in (68c) are. They exhibit the behavior neither of lexical words nor of conjunction constructions. At the same time, they do not have the explicit properties of serial verb constructions. So we propose that the constructions in (68c) are also AUX constructions, but with unusual theta-marking properties.

Now, we consider whether the noun phrase with *-eykey* is a complement or an adjunct. If the noun phrase with *-eykey* is a complement, then it should be an obligatory element in verb phrase. If we assume that *thul-e cwuta* is a serial verb construction, we can apply Baker's (1989) analysis to *thul-e cwuta*. Baker argues that in order to maintain the Projection Principle, argument sharing takes place in serial verb constructions. When *thulta* (Agent Theme) and *cwuta* (Agent Theme Goal) are put together, the verbs cannot separately assign theta-roles to the noun phrases. This would lead to a violation of the Projection Principle. The same arguments are shared and the Goal argument remains in *thul-e cwuta*. Baker's sharing hypothesis is confirmed in the following example:

- (85) John-i Mary-eykey sikthak-wiey kwuk-ul
 John-Nom Mary-to table-on soup-Acc
 noh-a cwu-essta.
 put-VAdvS give-Past
 'John put soup on the table to Mary.' (Lit)

In (85), *nohta* and *cwuta* share Agent and Theme, whereas Goal and Location, which are non-sharing arguments, can appear in *noh-a cwuta*. As we have already seen, however, it is difficult to regard *thul-e cwuta* as a serial verb construction. Thus, Baker's explanation would be adequate only if the examples in (68c) are shown to be serial verb constructions.

On the other hand, if the noun phrase with *-eykey* is an adjunct, then it would be an optional element in verb phrase. For example, *mek-e cwuta* has two arguments because *mekta*, which determines function and meaning in *mek-e cwuta*, assigns Agent and Theme to the noun phrases. In addition to two obligatory arguments, an adjunct can appear in *mek-e cwuta*, as in the following:

- (86) John-i Mary-lul wihay pap-ul mek-e cwu-essta.
 John-Nom Mary-for meal-Acc eat-VAdvS give-Past
 'John ate meal for Mary.'

Since *Mary-lul wihay* is the adjunct, the example in (86) is perfectly grammatical and acceptable without it. Except for *pilli-e cwuta* and *tulli-e cwuta*, all examples with *-a/e cwuta* can have the adjunct which appears as *-lul wihay*:

- (87) a. John-i Mary-lul wihay nalk-un cip-eyse
 John-Nom Mary-for be old-VAS house-in
 sal-a cwu-essta.
 live-VAdvS give-Past
 'John lived in an old house for Mary.'
- b. John-i Mary-lul wihay TV-lul
 John-Nom Mary-for TV-Acc
 thul-e cwu-essta.
 turn on-VAdvS give-Past
 'John turned on a TV for Mary.'

Just as in (86), since *thulta* assigns Agent and Theme to the noun phrases, two arguments have to appear in *thul-e cwuta* and an optional adjunct is found in (87). Unlike the adjunct in (68a), however, the adjunct *-lul wihay* in (68c) may be changed to *-eykey*. Consider the following examples:

- (88) a. John-i Mary-lul wihay TV-lul
 John-Nom Mary-for TV-Acc
 thul-e cwu-essta.
 turn on-VAdvS give-Past
 'John turned on a TV for Mary.'
- b. John-i Mary-eykey TV-lul
 John-Nom Mary-to TV-Acc
 thul-e cwu-essta.
 turn on-VAdvS give-Past
 'John turned on a TV to Mary.' (Lit)
 'John turned on a TV for Mary.'

Since the example in (88) is grammatical even without the noun phrase with *-eykey*, the noun phrase with *-eykey* can be considered the adjunct.³

If *Mary-eykey* in (88) is the argument assigned by *cwuta*, then double Acc case marking would be possible. Consider the following example:

- (89) *John-i Mary-lul TV-lul thul-e cwu-essta.
 John-Nom Mary-Acc TV-Acc turn on-VAdvS give-Past

Since *cwuta* allows double Acc case marking, *Mary-eykey* can be switched to *Mary-lul*. But the example with double Acc case marking is ungrammatical. Thus, the noun phrase with *-eykey* in (88) is not a complement but an adjunct.

In summary, AUX constructions with *-a/e cwuta* are diagrammed as follows:

(90)	Meaning	Function	
a.	V1	V1	AUX without <i>-eykey</i> (= (68a))
b.	x	x	Lexical Word (= (68b))
c.	V1	V1	AUX with <i>-eykey</i> (= (68c))

The schema in (90a), where V1 determines meaning and function, describes most examples such as *mek-e cwuta*, *tow-a cwuta*, *sal-a cwuta*, and so on. The schema in (90b), which represents lexical idiosyncrasy, includes *pilli-e cwuta* and *tulli-e cwuta*. Finally, the schema in (90c), where V1 determines meaning and function, includes *thul-e cwuta*, *noh-a cwuta*, *kkek-e cwuta*, and so on. In contrast to (90a), a noun phrase with *-eykey* can appear in the (90c) pattern. This noun phrase could be considered an complement of a serial verb construction, but an adjunct analysis is more plausible in light of the optionality and double Acc case marking.

4.4 Noun + Verb Constructions

In this section, we discuss noun + verb (N + V) constructions. They also show a duality between compounds

and phrases. We explore the behavior of N + V constructions in terms of phonology and syntax.

The N + V construction is a kind of contraction, where case markings can be optionally deleted in verb phrases. However, regularities are found in this optional deletion. Consider the following examples:

- (91) a. John-i Mary-eykey ton-ul cwu-essta.
 John-Nom Mary-to money-Acc give-Past
 'John gave money to Mary.'
 *John Mary-eykey ton-ul cwu-essta. (Nom Deletion)
 *John-i Mary ton-ul cwu-essta. (Goal Deletion)
 John-i Mary-eykey ton cwu-essta. (Acc Deletion)
- b. John-i meli-ka aphu-ta.
 John-Nom head-Nom ache-Pres
 'John has a headache.'
 *John meli-ka aphu-ta. (External Nom Deletion)
 John-i meli aphu-ta. (Internal Nom Deletion)
- c. John-i cip-ey ka-nta.
 John-Nom house-to go-Pres
 'John goes to a house'
 *John-i cip ka-nta. (Goal Deletion)⁴
- d. John-i cip-eyse o-nta.
 John-Nom house-from come-Pres
 'John comes from a house.'
 *John-i cip o-nta. (Source Deletion)
- e. John-i chimtay-eyse ca-nta.
 John-Nom bed-in sleep-Pres
 'John sleeps in a bed.'
 *John-i chimtay ca-nta. (Location Deletion)

In (91), we can see that structural case markings such as *-(l)ul* and *-i/ka* are deleted within the verb phrase. Despite deleting the same nominative case marking, the example in (91b) is ungrammatical because *John-i* is outside the verb phrase. In addition, the inherent case markings, including Goal, Source, and Location, cannot be deleted even

internal to a verb phrase. This means that although case marking deletion is optional, it is dependent on syntactic constituency.

Now, we explore whether N + V constructions are compounds or phrases. N + V constructions are also ambiguous in terms of the phonological facts. In Korean, *s*-neutralization takes place in derivation and compounding. Consider the following examples:

- (92) a. Derivation: hes-wusum [t] 'feigned smile'
 b. Compounding: os-an [t] 'an inside of clothes'

The same phenomenon appears in N + V constructions:

- (93) mas alta -> ma[t] alta 'to know a taste'
 os etta -> o[t] etta 'to get a wear'

As with lexical compounding, /s/ becomes [t] in N + V constructions. This fact is evidence that the N + V construction is a kind of compounding.

However, the following example indicates that the N + V construction is not compounding:

- (94) mas-i issta -> mas issta [mat]~[mas] 'to be tasty'

Two pronunciations are possible in (94). While *s*-neutralization is found in the first pronunciation, it is not found in the second. The fact that *s*-neutralization does not take place in the latter means that the N + V construction is still a phrase, because a pronunciation with *s*-neutralization is found solely in compounding.

In addition, N + V constructions also illustrate the properties of phrases with regard to juncture. For example, juncture (pause) occurs in the N + V construction:

- (95) a. ton peli [p'] 'money earning'
 b. ton pelta [p] (-> [b]) 'to earn money'

While tensification occurs in (95a), it does not appear in (95b). As mentioned already, juncture is closely related to tensification in Korean. Since the compound does not have juncture, tensification takes place in the compound. Thus, juncture occurs in (95b). So the N + V construction in (95b) is a phrase.

So far, we have examined the properties of N + V constructions in terms of phonological phenomena. Now, we explore whether they are compounds or phrases with regard to phenomena such as semantic idiosyncrasy, lexical integrity, and the Anaphoric Island Constraint.

First, phrases exhibit semantic regularity, while compounds show semantic idiosyncrasy. Almost all N + V constructions retain meanings identical with their original verb phrases:⁵

- (96) chayk-ul pota -> chayk pota 'to see a book'

Since a change in meaning does not take place in (96), the N + V construction has the same meaning as the verb phrase *chayk-ul pota*. This fact indicates that the N + V construction is a phrase.

Second, syntactic elements can be inserted into phrases but not in compounds. Only the latter preserve lexical integrity. Consider the following example:

(97) pap manhi mekta
 food much eat

In (97), an adverb *manhi* can be placed between noun and verb, and it modifies the verb *mekta*. This indicates that the N + V construction is a phrase.

Third, N + V constructions allow violation of the Anaphoric Island Constraint suggested by Postal (1969). Consider the following examples.

(98) John-i [sakwa_i sa-ss-nuntey]
 John-Nom [apple buy-Past-Conj]
 ku kesi-uy saykkkal-i phalah-ta.
 it thing-Gen color-Nom be green-Pres
 'Since John [bought an apple], its color is green.'

If the N + V construction in (98) were a compound, then the pronoun could not refer to a part of the whole word. So N + V constructions are phrases.

So far, we have seen that N + V constructions have properties of phrases with regard to certain phenomena such as *s*-neutralization, juncture, semantic idiosyncrasy, lexical integrity, and the Anaphoric Island Constraint. We next explore whether the N + V construction is incorporation or not. In order to answer this question, we consider arguments by Rosen (1989) and Baker (1988). While Rosen

argues for lexical incorporation, Baker argues for syntactic incorporation.

Rosen (1989) presents an interesting proposal about N + V constructions. Unlike Baker's syntactic analysis based on head movement, Rosen treats lexical incorporation as a word formation rule in the lexicon. According to Rosen, noun incorporation consists of classifier noun incorporation and compound noun incorporation. Compound noun incorporation is characterized by (i) a decrease in the number of arguments (the incorporated verb has one fewer argument than the unincorporated verb), (ii) no stranding of modifiers or determiners, and (iii) no doubling outside of the verb. The N + V construction such as *sakwa mekta* 'to eat an apple' exhibits the first characteristic of Rosen's compound noun incorporation. Since the incorporated verb *sakwa mekta* cannot take an object noun phrase, the number of arguments is decreased. However, it is difficult to decide whether the N + V construction is compound noun incorporation or not. Rosen (1989:310-311) cites examples from Polynesian languages, which have ergative/absolutive case marking. However, Korean does not have ergative/absolutive case marking to guide us.

Rosen (1989:311-312) presents the following examples of stranding of modifiers or determiners in compound noun incorporation:

- (99) Kusaiean (Lee 1975:271)
- a. El twem-lah mitmit sahfiht sac
he sharpen-Past knife dull the
'He has sharpened the dull knife.'
 - b. El twetwe mitmit-lac
he sharpen knife-Past
'He has knife-sharpened.'
 - c. *Nga twetwe mitmit sac
I sharpen knife the
'I knife-sharpen the \emptyset .'
 - d. *Nga twetwe mitmit sahfiht sac
I sharpen knife dull the
'I knife-sharpen the dull \emptyset .'

The example in (99a) shows no noun incorporation; while the example in (99b) does. The examples in (99c) and (99d) are ungrammatical because noun incorporation has stranded determiners or modifiers. The example in (99b) is noteworthy. In Kusaiean, determiners or modifiers disappear when their head nouns are incorporated. If N + V constructions in Korean were really the result of incorporation, then one would expect neither determiners nor modifiers to be found. Consider the following examples:

- (100) a. John-i ku sakwa-lul mek-essta.
John-Nom the apple-Acc eat-Past
'John ate the apple.'
- b. John-i ku sakwa mek-essta.
'John ate the apple.'
 - c. John-i sakwa mek-essta.
'John ate an apple.'

The example in (100a) has a determiner and a case marking; accusative case marking is omitted in (100b); both determiner and case marking are dropped in (100c). When the

determiner *ku* is omitted, however, the example in (100c) has a different meaning. Thus, the N + V construction in Korean is not a compound noun incorporation.

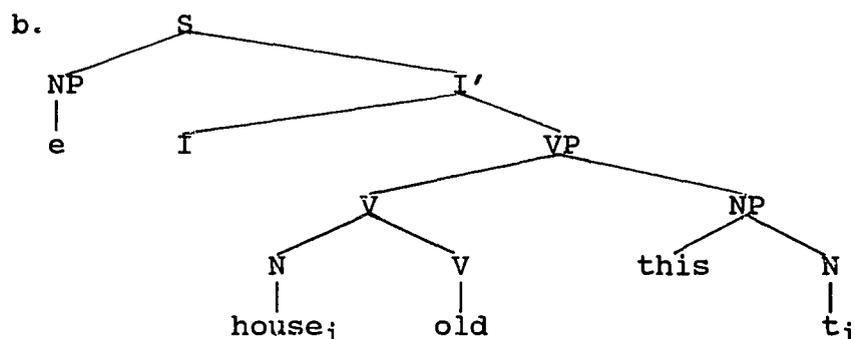
So far, we have seen that the N + V construction does not exhibit properties of lexical incorporation. Now, we explore whether or not the N + V construction is formed by syntactic incorporation. Consider the following examples:

- (101) a. John-i pap-ul mek-essta.
 John-Nom meal-Acc eat-Past
 'John ate meal.'
- b. John-i [pap mek-essta].
 'John [ate meal].'
- c. *John-i steak-lul [pap mek-essta].
 John-Nom steak-Acc meal eat-Past
 'John [ate meal] a steak.'

In (101a), the verb *eat* assigns Agent and Theme to noun phrases. If the N + V construction is true noun incorporation in terms of Baker's incorporation theory, the incorporated verb could assign Theme to an object noun phrase. Assuming that *pap mekta* is an incorporated verb, the example in (101b) has no Theme role and is grammatical. However, the example in (101c) has a Theme role and is ungrammatical. It thus appears that the incorporated verb *pap mekta* cannot assign Theme to the object noun phrase. So the N + V construction is not a noun incorporation structure.

Moreover, Baker (1988:106-107) claims that incorporated nouns do not need case. Consider the following example:

(102) a. [Neke t_i] \emptyset -nohs_i-akayoh
 this 3N-house-old
 'This house is old.' (Onondaga; Chafe (1970))



As Burzio (1986) claims, the unaccusative verb in (102) cannot assign accusative case to the structural object. In order to obtain case, the argument moves to the subject position and then receives nominative case from Infl. However, the noun phrase cannot move to the subject position in a noun incorporation structure. This is because the incorporated noun root would no longer c-command or govern its trace, creating an ECP violation. Therefore, Baker (1988:107) argues that "when the head of the object noun phrase of an unaccusative verb has been incorporated, this noun phrase can get Case neither directly from the verb nor by moving to the subject position. Nevertheless, the structures are grammatical. This suggests that the noun phrase does not need Case at all."

Following Baker's argument, N + V constructions in Korean may not be noun incorporation structures. Consider the following example:

- (103) a. [John-uy meli-ka] aphu-ta.
 John-Gen head-Nom ache-Pres
 'John's head aches.' (Lit)
- b. [John-uy t_i] meli_i aphu-ta.

The example in (103) has the same structure as the example in Onondaga. Given Baker's proposal, the noun phrase *John-uy* cannot move to the subject position. However, the following example illustrates that the noun phrase can move to the subject position:

- (104) John-i [] meli(-ka) aphuta.

If the example in (103) is really an noun incorporation structure, then the noun phrase *John-uy* could not move to the subject position. So the N + V construction is not noun incorporation.

In summary, we have seen that the N + V construction is contraction of phrase, and that it is not a result of lexical incorporation or syntactic incorporation.

4.5 Summary

We have seen interface phenomena between word formation and syntax. Derived nouns and verbal nominalizations have the same form, and compounds and phrasal nominalizations also have the identical forms. However, the distinction is made through certain properties. Although the V + N construction appears in an identical shape, different properties determine the compound and the phrase. The V + V construction is divided into three types: lexical compounds,

conjunction constructions of verb phrases, and the so-called auxiliary constructions. Finally, the N + V construction illustrates the properties of phrases, and it is neither lexical nor syntactic incorporation.

Notes to Chapter 4

1. Y.-S. Kim (1985) suggests that there are two kinds of *-(u)m* and *-ki*: One is lexical and the other is syntactic.

2. H.-m. Sohn (p.c.) presents the following examples:

(i) a. John-i Seoul-ey o-ass-taka ka-ko
 John-Nom Seoul-to come-Past-Conj go-Conj
 Mary-to Seoul-ey o-ass-taka ka-ssta.
 Mary-also Seoul-to come-Past-Conj go-Past
 'John came to Seoul and went,
 and Mary also came to Seoul and went.'

b. *John-i Seoul-ey o-ass-taka (ka-ko)
 Mary-to Seoul-ey o-ass-taka ka-ssta.

The example in (ib) shows that Gapping in Korean is not conditioned by wordhood.

3. H.-m. Sohn (p.c.) points out that the noun phrase with *-eykey* in (68c) can be an complement. According to his judgment, the following sentence, which does not have the noun phrase with *-eykey*, is very odd:

(i) ?*John-i TV-lul thul-e cwu-essta.
 John-Nom TV-Acc turn on-VAdvS give-Past
 'John turned on a TV.'

4. Goal can be deleted in the following example:

(i) John-i hakkyo-ey ka-nta.
 John-Nom school-to go-Pres
 'John goes to school.'
 -> John-i hakkyo ka-nta.

5. Certain constructions illustrate idiomatic meaning:

(i) a. pay(-ka) aphuta
 stomach ache
 'to be green with envy'

b. mwul(-ul) mekta
 water eat
 'to fail'

CHAPTER 5
WORD FORMATION AND PHONOLOGY

In this chapter, we discuss interface phenomena between word formation and phonology. Both lexical and postlexical phenomena are considered. The lexical interface is between lexical word formation and phonology, and the postlexical interface is between syntactic word formation and phonology. The first section deals with both lexical and postlexical interface phenomena. The second section deals with lexical interface phenomena.

5.1 Contraction

This section deals with contraction phenomena in Korean. We explore what environments this construction is found in and how it is formed.

5.1.1 Environment

We consider the environments in which contraction is formed: casual speech, appearance in function forms, and specific forms.

First, contraction is frequently found in casual speech. Consider the following examples:

- (1) a. maum -> mam 'mind'
b. ssawum -> ssam 'fight'
c. telewum -> telem 'being dirty'

The contracted forms in (1) often occur in colloquial and informal speech. In contrast, the non-contracted forms are used in written and formal speech. At the same time, linguistic variation is found in (1). In general, contracted forms are frequently used by young people. But there are dialectal or idiolectal differences even among the young.

Second, contraction is frequently formed from the combination of content words and bound function words or affixes. Consider the following examples:

- (2) a. mek-taka -> mek-ta 'eat-Inf Suf'
 b. na-nun -> nan 'I-Top'
 c. i kes -> i ke 'this thing'

A part of the inflectional suffix is deleted in (2a); a part of the postposition is deleted in (2b); and a part of the bound noun is deleted in (2c). The examples in (2) illustrate the partial contraction of functional forms. However, this is not found in content forms. Consider the following examples:

- (3) a. takaancta -> *taancta 'to sit closer'
 b. i tes -> *i te 'this trap'

The partial deletion does not take place in the verb in (3a) or the noun in (3b).

The fact that the partial deletion occurs in (2) but does not occur in (3) demonstrates that contraction is

governed by a non-phonological condition. Consider the following examples:

- (4) a. ssawum -> ssam 'fight'
 b. paywum -> *paym 'learning'

Although both (4a) and (4b) have a similar sequence of vowels, the results of contraction are different. While the vowel *wu* is deleted in (4a), it cannot be deleted in (4b). Thus, the vowel in (4b) is not subject to the normal Korean phonological process of deleting high vowels after vowels.

Further examples of differences in vowel contraction follow:

- (5) a. caymi-issta -> caymissta 'to be interesting'
 b. hungmi-issta -> *hungmissta 'to be interested'
 temi-issta -> *temissta 'to have a heap'
 maymi-issta --> *maymissta 'to have a locust'

The examples in (5) have a sequence of two identical vowels *i*. Vowel deletion takes place only in (5a). Although (5b) has the same vowel sequence, deletion does not occur. This differential application of vowel deletion cannot be attributed to purely phonological conditions.

Third, some instances of contraction are limited to specific forms. Consider the following examples:

- (6) a. taum -> tam 'next'
 b. noul -> nol 'glow in the sky'

The examples in (6) illustrate optional *u*-deletion, perhaps because a vowel *u* in Korean is the least marked vowel in terms of Archangeli's (1984) underspecification theory.

Y.-K. Kim-Renaud (1982), S.-C. Ahn (1985), and H.-S. Sohn (1987) analyze this optional *u*-deletion phenomena. Consider the following examples given by Y.-K. Kim-Renaud (1982:476-477):

- (7) a. *maul* -> *ma:l* 'village'
 b. *kwa!um* -> *kwa:m* 'overdrinking'
 c. *siCulph-ki* -> *si:lphki* 'poetry reciting'
 d. *ku#ay* -> *kyay:* 'that child'
 e. *ku#oleynci* -> *ko:leynci* 'that orange'
 (!: Sino-Korean Boundary, C: Compound Boundary,
 #: Phrase Boundary)

According to her analysis, casual *u*-deletion is governed by purely phonetic motivations. This is because, irrespective of boundaries, this phenomenon applies to both native and borrowed words. She presents the following rule:

(8) Casual *u*-Deletion (optional and variable)

X	V	u	Y
1	2	3	4
1	2	∅	4

[+long]

(*u* is truncated when meeting another vowel and the remaining vowel is lengthened.)

Similarly, S.-C. Ahn (1985:215-219), treating optional *u*-deletion in the frameworks of syllable phonology and lexical phonology, suggests that since optional vowel deletion is a postlexical phenomenon, it can apply to both non-derived and derived words. However, he points out that

Kim-Renaud's rule cannot deal with (7d) and (7e), so he modifies her rule as follows:

(9) Casual u-Deletion (Mirror Image)

$$\begin{array}{cc} V & V \\ | & | \\ v & u \end{array}$$

The rule in (9) describes the fact that *u* is deleted either before or after vowels. Consider the following examples given by S.-C. Ahn:¹

- (10) a. Non-derived Forms
 noul -> nol 'glow in the sky'
 taum -> tam 'next'
 cheum -> chem 'first'
- b. Derived Forms
 twuum -> *twum 'initial sound'
 i umsik -> *imsik 'this food'
 ku elun -> *kelun 'the man'

According to S.-C. Ahn, *u* is always deletable in (10). However, examples such as those in (10b) seem to be unacceptable to Korean native speakers. For example, *ku elun* 'the man' is not realized as **kelun*. Moreover, *ku emma* is not pronounced as **kemma*.

While the examples in (10a) are non-derived pure-Korean words, those in (10b) are derived or Sino-Korean words. This suggests that optional *u*-deletion takes place only in non-derived pure-Korean words:

- (11) koul -> kol 'village'
 kaul -> kal 'autumn'
 maul -> mal 'village'
 maum -> mam 'mind'
 yocuum -> yocum 'nowadays'

In contrast, derived or Sino-Korean words are resistant to optional *u*-deletion:²

- (12) a. Derived Words
 kuuk-hata -> *kukhata 'to be deeply secluded'
 ku oi -> *koi 'the cucumber'
- b. Sino-Korean Words
 kwa-um -> *kwam 'overdrinking'
 twu-um -> *twum 'initial sound'
 yu-um -> *yum 'liquid'

The examples in (12) illustrate that optional *u*-deletion does not occur in either derived or Sino-Korean words. On the contrary, optional *u*-deletion only takes place in words having specific features [-Derived, +Native]

Similarly, *wu* is optionally deleted in nouns derived from *p*-irregular verbs, where *p* changes to *w* before vowels:

- (13) calangsulep-ta 'to be proud' -> calangsulep-um
 -> calangsulew-um -> calangsule(wu)m 'being proud'

An interesting phenomenon is found in this case; while optional *wu*-deletion occurs in some derived nouns, it does not occur in all derived nouns. Consider the following examples:

- (14) a. *angcungsulew-um* -> *angcungsulem* 'being cute'
tacengsulew-um -> *tacengsulem* 'being affectionate'
calangsulew-um -> *calangsulem* 'being proud'
- b. *saylow-um* -> **saylom* 'being new'
sulki-low-um -> **sulki-lom* 'being wise'
aychel-low-um -> **aychel-lom* 'being pitiful'

The examples in (14) include *-sulewum* and *-lowum*. Unlike the words with *-sulewum*, those having *-lowum* do not allow optional *wu*-deletion. With respect to the examples mentioned above, we can see that some derived nouns are resistant to optional *wu*-deletion and other derived nouns are not. In other words, optional *wu*-deletion is governed by the different types of the verbal suffixes.

Optional *wu*-deletion is also found in other nouns derived from *p*-irregular verbs. Consider the following examples:

- (15) a. *kancilew-um* -> *kancilem* 'tickling'
ecilew-um -> *ecilem* 'being dizzy'
pwutulew-um -> *pwutulem* 'being soft'
- b. *potulaw-um* -> *potulam* 'being soft'
- c. *noyew-um* -> *noyem* 'being offended'
kwiye-w-um -> *kwiye-m* 'being cute'

The examples in (15) commonly have *-ewum*, *-awum*, or *-yewum* derived from *-ep(ta)*, *-ap(ta)*, or *-yep(ta)*, respectively. As Y.-K. Ko (1989) points out, the forms seem to be related to each other. The pair *-ep(ta)* and *-ap(ta)* is a vowel harmony pair, and the glide *y* in *-yep(ta)* has been added to *-ep(ta)*. Thus, we call these suffixes the *-ep(ta)-type* suffixes. The examples in (15) illustrate that optional *wu*-deletion is

possible in words carrying *-epta-type* suffixes. So nouns derived from *-epta-type* suffixes can optionally delete a vowel *wu*.

The apparent fact that optional *wu*-deletion occurs only in specific forms is confirmed in the following examples:

- (16) a. *aluntaw-um* -> **aluntam* 'being beautiful'
 salantaw-um -> **salantam* 'being humane'
 atultaw-um -> **atultam* 'being a worthy son'
- b. *alittaw-um* -> **alittam* 'being beautiful'
- c. *chakaw-um* -> **chakam* 'being cold'
 talkaw-um -> **talkam* 'being satisfying'
- d. *kuliw-um* -> **kulim* 'missing'
 wusuw-um -> **wusum* 'laughing'

The examples in (16) have *-tawum*, *-ttawum*, *-kawum*, and *-wum* derived from the derivational suffixes *-tap(ta)*, *-ttap(ta)*, *-kap(ta)*, and *-up(ta)*. Unlike words with *-sulewum* and *-ewum-type*, words with *-tawum*, *-ttawum*, *-kawum*, and *-wum* do not allow optional *wu*-deletion. This phenomenon also supports the claim that the type of the suffix governs optional *wu*-deletion.

We have seen that optional *wu*-deletion occurring in *p*-irregular verbs is closely related to the types of the suffixes. While optional *wu*-deletion is found in *-sulepta* and *-epta-type*, it is not found in *-lopta*, *-tapta*, *-ttapta*, *-kapta*, and *-upta*. This is confirmed in other grammatical forms. Consider the following adjectival examples derived from the verbs mentioned above:

- (17) a. tacengsulew-un -> tacengsulen 'affectionate'
 b. kancilew-un -> kancilen 'tickling'
 c. kwiyeu-un -> ?kwiyeu 'cute'
 d. saylow-un -> *saylon 'new'
 e. aluntaw-un -> *aluntan 'beautiful'
 f. chakaw-un -> *chakan 'cold'
 g. kuliw-un -> *kulin 'missing'

The adjectival forms in (17) are formed by attaching the VAS *-un* to verb stems. As in derived nouns, optional *wu-* deletion can occur in some adjectival forms. The difference in verbal suffixes affects application of optional *wu-* deletion. Since the examples in (17a-c) are derived from verbal suffixes such as *-sulepta* and *-epta-type*, optional *wu-* deletion is possible. On the other hand, since the examples in (17d-g) are derived from verbal derivational suffixes such as *-lopta*, *-tapta*, *-kapta*, and *-upta*, optional *wu-* deletion is not possible. The examples mentioned above illustrate that contraction is formed only from specific lexical combinations.

5.1.2 Formation

We now discuss how forms are contracted by means of partial deletion, fusion, or complete deletion.

5.1.2.1 Partial Deletion

One type of contraction is the partial deletion of a form. Consider the following examples:

- (18) a. John-i cip-ey ka-taka nemeci-essta.
 John-Nom home-to go-Conj fall down-Past
 'As John went home, he fell down.'
 a'. John-i cip-ey ka-ta(ka) nemeci-essta.
- b. John-i nolay-lul pwulu-myense ka-nta.
 John-Nom song-Acc sing-Conj go-Pres
 'While John sings a song, he goes.'
 b'. John-i nolay-lul pwulu-mye(nse) ka-nta.
- c. John-i cemsim-ul mek-camaca ttena-essta.
 John-Nom lunch-Acc eat-Conj leave-Past
 'As soon as John ate lunch, he left.'
 c'. John-i cemsim-ul mek-ca(maca) ttena-ssta.
- d. Pap-ul mek-unikka pay-ka pwulu-ta.
 food-Acc eat-Conj stomach-Nom be full-Pres
 'Because (one) eats food, he is full.'
 d'. Pap-ul mek-uni(kka) pay-ka pwulu-ta.
- e. John-i cemsim-ul mek-kose ca-ssta.
 John-Nom lunch-Acc eat-Conj sleep-Past
 'After John ate lunch, he slept.'
 e'. John-i cemsim-ul mek-ko(se) ca-ssta.

The verbs in (18) consist of verb root and inflectional suffix. After part of an inflectional suffix is optionally deleted, *-kata*, *-pwulumye*, *-mekca*, *-mekuni*, and *-mekko* result in (18). The inflectional suffix cannot be further divided into two morphological subparts. For example, if *-ta* and *-ka* were separate forms, *ka-ta* and *ka-ka* would be possible in (18a). However, **ka-ka* is an impossible form. Another possibility is that the contracted forms might be considered morpheme alternates, as in *ka-taka-ka-ta*. However, we do not use the term *alternation*, because it is very difficult to find phonological or morphological conditions motivating the contracted forms in (18).

Partial deletion is found in content words. Consider the following examples:

- (19) a. cheum -> chem 'first'
 koul -> kol 'village'
 kaul -> kal 'autumn'
 maul -> mal 'village'
 maum -> mam 'mind'
 ncul -> nol 'glow in the sky'
 taum -> tam 'next'
 yocuum -> yocum 'nowadays'
- b. calangsulew-um -> calangsulem 'being proud'
 ecilew-um -> ecilem 'being dizzy'
 noyew-um -> noyem 'being offended'

Unlike the optional deletion in inflectional suffixes, the optional deletion in (19) affects a vowel. The contracted forms in (19) are formed by deleting *u* or *wu* in content words.

So far, we have seen contracted forms where a vowel is optionally deleted in a content word. Now, we discuss contracted forms where a consonant is optionally deleted in a function word. Consider the following examples:

- (20) a. i/ce/ku kes -> i/ce/ku ke 'this/that/the thing'
 b. mek-ul kes -> mek-ul ke 'something to eat'
 khu-n kes -> khu-n ke 'big thing'

Since a bound noun *kes* in (20) cannot be used independently, determiners in (20a) and verbal adjectival forms in (20b) occur before it. A part of the bound noun disappears in (20). Unlike optional vowel deletion, in this case the coda (-s) is optionally deleted. But this optional deletion is not governed by purely phonological conditions, as illustrated in the following:

- (21) a. *i kulus* -> **i kulu* 'this dish'
 b. *ce nas* -> **ce na* 'that sickle'
 c. *ku mas* -> **ku ma* 'the taste'

The examples in (21) indicate that optional deletion does not always apply in accordance with purely phonological conditions.

5.1.2.2 Fusion

We now consider another form of contraction, in which partial deletion and fusion often take place. In phrases, for example, certain parts are deleted and the remaining parts attach to preceding forms:

- (22) a. *na-nun* -> *na-n* 'I-Top'
 b. *na-lul* -> *na-l* 'I-Acc'

The example in (22a) consists of a pronoun and a topic marker; that in (22b) consists of a pronoun and an accusative case marker. In (22), partial deletion and contraction take place. Part of *nun* or *lul* is deleted and the remaining form attaches to the preceding pronoun.

The following examples illustrate contraction of postpositions:

- (23) a. *i ke (<- kes)-nun* -> *i ken* 'this thing-Top'
 b. *i ke (<- kes)-lul* -> *i kel* 'this thing-Acc'

The examples in (23) consist of a contraction, where the *s* of *kes* is deleted, followed by a postposition. When the contracted forms are combined with postpositions, a further

optional deletion takes place. *Nu* or *lu* is deleted and then the remaining consonant attaches to the preceding form.

Moreover, when a contracted form appears with the postposition *-i*, optional deletion as well as fusion takes place in the combination form. Consider the following examples:

- (24) a. *i ke* (<- *kes*)-*i* -> *i key* 'this thing-Nom'
 b. *kin ke* (<- *kes*)-*i* -> *kin key* 'long thing-Nom'

In (24), a combination of *e* and *i* forms *ey*. As discussed earlier, the contractions in (24) are not governed solely by phonological conditions. This fact is confirmed by the following examples:

- (25) a. **na* (<- *nas*)-*i* -> **nay* 'sickle-Nom'
 b. **ma* (<- *mas*)-*i* -> **may* 'taste-Nom'

Contraction is also found in the following examples with another postposition *-uy*:

- (26) a. *na-uy* -> *nay* 'I-Gen'
 b. *ce-uy* -> *cey* 'I (humble)-Gen'
 c. *ne-uy* -> *ney* 'you-Gen'

The examples in (26) consist of a pronoun and a genitive case marker. Unlike partial deletion of *-nun* and *-lul*, the genitive *-uy* is fused with the preceding pronoun.

Interestingly, the deleted forms in (26) always occur with *na* (*ce*) or *ne*. In contrast, this fusion is not found in content forms:

- (27) a. nala-uy -> *nalay 'country-Gen'
 b. swuce-uy -> *swucey 'spoon-Gen'

Although the examples in (26) and (27) have the same vowel sequence, fusion is only possible in (26). The examples in (27) indicate that fusion does not follow strictly phonological conditions, either.

So far, we have seen contraction which takes place in function words. This contraction is not accompanied by any differences of meaning between the non-contracted and contracted forms. However, compared to non-contracted forms, certain other contractions do exhibit differences in meaning. Consider the following examples with the determiner:

- (28) a. i ai -> (i ay) -> yay 'this person'
 b. ce ai -> (ce ay) -> cyay 'that person'
 c. ku ai -> (ku ay) -> kyay 'the person'

The examples in (28) consist of determiner and noun. Each final output is a fused form of determiner and noun. Compared to non-contraction, contraction can have a difference in use. For example, S.-W. Cho (1989:201) presents the following example:

- (29) Yengswu-ka kyay_i/ku ai*_i-uy chayk-ul tenci-essta.
 -Nom his/the person's-Gen book-Acc throw-Past
 'Yengswu threw his_i/the person's*_i book.'

A semantic difference between non-contraction and contraction is also found in other forms. A different

meaning results when *-ko ha* is deleted. Consider the following examples:

- (30) a. *Nay-ka cip-ey ka-lyeko ha-nta.*
 I-Nom home-to go-intend-Pres
 'I intend to go home.'
 a'. *Nay-ka cip-ey ka-lye(ko ha)-nta.*
- b. *John-i cip-ey ka-nta-ko ha-nta.*
 John-Nom home-to go-Pres-that say-Pres
 '(One) says that John goes home.'
 b'. *John-i cip-ey ka-nta(-ko ha)-nta.*

The examples in (30) are constructions with so-called *-ko ha* deletion. In (30a), *-lyeko ha* renders the verb *to intend to*; in (30b), *-ko* and *ha-* are a complementizer and a verb *to say*, respectively. When *-ko ha* is deleted, the results are *kalyenta* in (30a) and *kantanta* in (30b).

This deletion is different from other deletions mentioned above. Compared to non-contracted forms, differences in use appear in contractions with *-ko ha* deletion. The full form is usually used in a general way, whereas the contracted form is used in a very specific way. Consider the following examples:

- (31) a. *Nay/Ney/Mary-ka ka-lyeko ha-nta.*
 I/you/Mary-Nom go-intend-Pres
 -> *Nay/*Ney/*Mary-ka ka-lyenta.*
 'I/You/Mary intend to go.'
- b. *Nay/Ney/Mary-ka ka-lyeko ha-yessta.*
 I/You/Mary-Nom go-intend-Past
 -> **Nay/*Ney/*Mary-ka ka-lyessta.*
 'I/You/Mary intended to go.'
- c. *Nay/Ney/Mary-ka ka-lyeko ha-nunya?*
 I/you/Mary-Nom go-intend-Q
 -> **Nay/Ney/*Mary-ka ka-lyenunya?*
 'Do I/you/Mary intend to go?'

As M.-C. Ahn (1990) points out, the contracted form *-lyenta* appears only with the first person subject and the present tense. The example in (31a) illustrates this condition. The form can also be used in (31c), which is a question sentence with the second person. The contractions in (31) occur only under certain specific conditions.

In the same way, the example in (30b), which appears in a quotation sentence, also needs specific conditions, but they are less strict than the example in (30a). Consider the following examples:

- (32) a. Mary-ka ka-nta-ko ha-nta.
 Mary-Nom go-Pres-that say-Pres
 -> Mary-ka ka-nta-nta.
 '(One) says that Mary goes.'
- b. Mary-ka ka-ssta-ko ha-nta.
 -> Mary-ka ka-ssta-nta.
 '(One) says that Mary went.'
- c. Mary-ka ka-nta-ko ha-nunya?
 -> Mary-ka kanta-nunya?
 'Does (one) say that Mary goes?'
- d. Mary-ka ka-nta-ko ha-yessta.
 -> Mary-ka kantay-ssta.
 '(One) said that Mary went.'

Unlike *kalyenta*, *kantanta* is not restricted by the subject and tense conditions, but is governed only by the condition that there should be no matrix subject. Consider the following examples:

- (33) a. John-i Mary-ka ka-nta-ko ha-nta.
 'John says that Mary goes.'
 a'. *John-i Mary-ka ka-nta-nta.
- b. Mary-ka ka-nta-nta.
 ' (One) says that Mary goes.'
- c. John-i kulenuntey, Mary-ka ka-nta-nta.
 'John says so, it is said that Mary goes.'

(33a) is a sentence without *-ko ha* deletion and both (33a') and (33b) are sentences with *-ko ha* deletion. However, (33a') is odd because of the appearance of the matrix subject. In order to avoid ungrammaticality, the matrix subject must disappear, as in (33b), or we need a kind of adverb *kulenuntey*, as in (33c). Unlike other cases of optional deletions, the sentences showing *-ko ha* deletion are conditioned on the presence of subject or the choice of tense.

Finally, we can find another contraction which has properties similar to *wanna* contraction in English.

Consider the following examples:

- (34) a. Na-nun ka-ko siph-ta/essta.
 I-Top go-to want-Pres/Past
 -> Na-nun ka-kopu-ta/assta.
 'I want/wanted to go.'
- b. Ne-nun ka-ko siph-e ha-nta/yessta.
 you-Top go-to want-VAdvS do-Pres/Past
 -> Ne-nun ka-kopha ha-nta/yessta.
 'You want/wanted to go.'
- c. John-i ka-ko siph-e ha-nta/yessta.
 John-Nom go-to want-VAdvS do-Pres/Past
 -> John-i ka-kopha ha-nta/yessta.
 'John wants/wanted to go.'

- d. Ne-nun ka-ko siph-e ha- \emptyset /yess-nunya?
 you-Top go-to want-VAdvS do-Pres/Past-Q
 -> Ne-nun ka-kopha ha- \emptyset /yess-nunya?
 'Do/Did you want to go?'
- e. John-i ka-ko siph-e ha- \emptyset /yess-nunya?
 John-Nom go-to want-VAdvS do-Pres/Past-Q
 -> John-i ka-kopha ha- \emptyset /yess-nunya?
 'Does/Did John want to go?'

After *si* in *-ko siph* is deleted, a contraction *-kophu* takes place in (34). Unlike *-ko ha* deletion, this contraction does not have restrictions for subject or tense.

The contraction form *-kophuta* behaves like an *u*-irregular verb. Consider the following examples:

- (35) a. aphu-e -> apha 'to be sick-Inf Suf'
 ippu-e -> ippe 'to be beautiful-Inf Suf'
 b. ka kophu-e -> ka kopha 'to wanna go'

In (35a), which is an *u*-irregular verb, *u* in the verb stem is deleted before vowels. In the same way, *u* is deleted in (35b). The contraction *-kophuta* exhibits the same phenomenon as *u*-irregular verb.

The form *-kophu* differs from other contraction with regard to stranded consonants. Unlike the consonant attachment mentioned above, the stranded consonant does not attach to the preceding *-ko*. Instead, *u*, which is the least marked vowel in Korean, is inserted after *ph*:

- (36) ko siph -> ko ph -> ko phu

In other cases of optional deletions, the stranded consonant attaches to the preceding form. Consider the following examples:

- (37) a. maum -> mam 'mind'
 b. noyewum -> noyem 'anger'
 c. nwukwu-intul -> nwukwuntul 'who-Postp'

After optional vowel deletion applies, the remaining consonants *m* and *n* in (37) attach to the preceding forms.

The following examples also illustrate consonant attachment:

- (38) a. na-nun -> nan 'I-Top'
 b. na-lul -> nal 'I-Acc'

We may wonder whether the initial consonants or the final consonants remain in (38), that is, whether CV (*nu* or *lu*) or VC (*un* or *ul*) is deleted. In light of (37), we can conclude that it is the final consonants in (38) that attach to preceding forms.

In (38), final-consonant survival relates to the fact that, in Korean syllable structure, CVC is divided into CV and C. This is confirmed by facts of a certain language game. C.-G. Gim (1987) and S.-C. Ahn (1988) present the following examples:

- (39) a. hakkyo -> ha[nosa]kkyo 'school'
 b. kwansey -> kwa[pa]n sey[pey] 'custom duties'

Nosa in (39a) is inserted between CV and C, and *pa* in (39b) is inserted between CGV and C, as in the following:

- (40) a. CV[nosa]C
 b. CGV[pa]C

The examples in (39) illustrate that the syllable in Korean is divided into onset-nucleus (CV) and coda (C). In relation to this division, it is likely that CV is deleted and remaining C attaches to the preceding form in (38).

5.1.2.3 Complete Deletion

Unlike partial deletion in a word or phrase, a whole form can be deleted in a phrase or a sentence. In casual speech, the accusative case marker and the nominative case marker often disappear within verb phrases. Consider the following examples:

- (41) a. John-i cemsim-ul mek-essta.
 John-Nom lunch-Acc eat-Past
 'John ate lunch.'
 a'. John-i cemsim mek-essta.
- b. John-i meli-ka aphu-ta.
 John-Nom head-Nom ache-Pres
 'John has a headache.'
 b'. John-i meli aphu-ta.

Postpositions such as *-ul* and *-i* are deleted in (41).

A genitive case marker *-uy* can be deleted in a noun phrase. Compared to the nominative case marker and the accusative case marker, however, it does not freely disappear in noun phrases. Consider the following examples:

- (42) a. Mary-uy pal -> Mary pal 'Mary's foot'
 Mary-uy cip -> Mary cip 'Mary's house'
- b. John-uy pal -> *John pal 'John's foot'
 John-uy cip -> *John cip 'John's house'

The examples in (42) illustrate that although optional deletion is possible, certain conditions seem to affect *-uy* deletion. As H.-m. Sohn (p.c.) points out, *-uy* deletion is subject to a phonological condition. In (42a), *John* ends in a consonant; in (42b), *Mary* ends in a vowel. This shows that *-uy* can be deleted when the word which occurs before *-uy* ends in any vowel.

A clause can sometimes be deleted in certain contexts. Consider the following examples:

- (43) a. Way John-i cip-ey ka-ss-ni?
 why John-Nom home-to go-Past-Q
 'Why did John go home?'
- b. John-i aph-ase cip-ey ka-ss-eyo.
 John-Nom sick-Conj home-to go-Past-Suf
 -> John-i aph-ase (cip-ey ka-ss-e)-yo.
 'Since John was sick, he went home.'
- c. John-i aphu-nikka cip-ey ka-ss-eyo.
 John-Nom sick-Conj home-to go-Past-Suf
 -> John-i aphu-nikka (cip-ey ka-ss-e)-yo.
 'Because John was sick, he went home.'

While a partial form or a function word is often deleted in the optional deletion phenomena mentioned in the previous sections, clause deletion takes place in (43b) and (43c).

The contracted forms in (43) have a very peculiar property. Although the final inflectional suffix cannot be repeated in Korean, the contracted forms in (43) show repetition of final inflectional suffixes:

- (44) a. aphu-ese-yo -> aph-ase-yo
 be sick-Inf Suf-Inf Suf
- b. aphu-nikka-yo
 be sick-Inf Suf-Inf Suf

In (44), the first final inflectional suffix indicates conjunctive meaning and the second inflectional suffix indicates declarative meaning. Normally, verb root or stem is connected with one final inflectional suffix. However, the examples in (44) illustrate the overlapping of final inflectional suffixes.

5.2 Inadequacies of Lexical Phonology

This section, which is related to interface phenomena between lexical word formation and phonology, exhibits the inadequacies of the lexical phonology framework. There are many cases in which non-phonological information triggers a different phonological process. Consider the following examples:

- (45) a. mati [maji] 'the oldest child'
 b. mati [madi] 'joint'

The pronunciation difference can be described as follows:

- (46) a. mat + i
 b. mati

Palatalization takes place in (46a), where there is a morpheme boundary; it does not take place in (46b), where there is no morpheme boundary. Thus, the morpheme boundary conditions palatalization in Korean.

As in the above examples, morpheme boundaries affect phonological phenomena. Lexical phonology opposes the introduction of morpheme boundaries within traditional generative phonology, and claims instead that word formation and phonological processes are intermingled in the lexicon. Since Siegel (1974) first suggested that phonological processes interact with word formation, many linguists, including Pesetsky (1979), Kiparsky (1982, 1985), Mohanan (1982, 1986), Halle & Mohanan (1985), and Pulleyblank (1986), have contributed to developing the lexical phonology framework. Lexical phonology is based on the following assumptions:

- (47) a. *Stratum Ordering Hypothesis*
 The lexicon consists of a set of ordered strata.
 (Mohanan 1986:21)
- b. *Stratum Domain Hypothesis*
 The domain of application of a rule is specified in terms of strata.
 (Mohanan 1986:21)

Although lexical phonology is a plausible way to describe phonological facts in many languages, linguists have pointed out several weak areas: inadequacy of level ordering, bracketing paradoxes, an unconstrained number of levels or strata, loops, and so on.³

First, Aronoff & Sridhar (1983) point out that the affix ordering generalization has exceptions. In *patent-able-ity*, *govern-ment-al*, and *standard-ize-ation*, for example, Class I suffixes are appended to Class II suffixes.

Second, Williams (1981), Pesetsky (1985), and Sproat (1985) point out bracketing paradoxes: (i) There is a discrepancy between morphological and phonological structures of words. For example, the morphological structure of *ungrammaticality* is [[*un-grammatical*]-ity], because *un-* attaches to adjectives. However, the phonological structure is [*un-[grammatical-ity]*], because it does not undergo nasal assimilation. (ii) There is also a discrepancy between morphological and semantic structures of words. For example, the morphological structure of *unhappier* is [*un-[happy-er]*], because *-er* can attach only to mono-syllabic or bi-syllabic words. However, the meaning of *unhappier* is not *not happier*, but *more unhappy*.

Third, lexical phonology lacks control over the numbers of derivational levels, which leads to their proliferation. For example, Siegel (1974) suggests two strata, Allen (1978) three, Kiparsky (1982) three, Mohanan (1982, 1986) four, Halle & Mohanan (1985) five, and Hargus (1985) seven.

Fourth, lexical phonology requires the introduction of the loop in these cases where compounding precedes affixation: [*re [air-condition]*].

Korean has variation of pronunciation in relation to word formation, although the phonological environment is the same. Consider the following examples:

- (48) Derivation: *hes-wusum* [t] 'feigned smile'
 Compounding: *os-an* [t] 'lining'
 Inflection: *pis-i* [s] 'comb-Nom'

In (48), we can detect a phonological process whereby *s* changes to *t*. While *s*-neutralization takes place in derivation and compounding, it does not occur in inflection. Since this demonstrates that a phonological process in Korean is dependent on different word formation processes, it seems that here, at least, lexical phonology can explain Korean phonology in a plausible manner.

Given the examples in (48), we can assume the level ordering of the Korean lexicon, as in the following:

- (49) 1. Derivation, Compounding
2. Inflection

This level ordering is confirmed by other phonological processes. Consider the following examples:

- (50) a. Derivation: kaps-echi [p] 'value'
Compounding: kaps-issta [p] 'to have a value'
Inflection: kaps-i [ps] 'price-Nom'
- b. Derivation: kyewul-nay [∅] 'during winter'
Compounding: mal-so [∅] 'horse and cow'
Inflection: mal-to [l] 'horse-also'

In (50a), consonant cluster reduction occurs in derivation and compounding, but resyllabification occurs in inflection. Consonant cluster reduction or resyllabification can apply to (C)VC1C2 structure in Korean. While the former applies to syllable-final position or (C)VC1C2 + C structure, the latter applies to (C)VC1C2 + V structure. The processes are formulated as follows:

- (51) a. (C)VC1C2\$ -> (C)VC1, (C)VC2
 (C)VC1C2 + CV -> (C)VC1 + CV, (C)VC2 + CV
 b. (C)VC1C2 + V -> (C)VC1 + C2V

Resyllabification should take place in (50a), because the examples illustrate CVC1C2 + V structure. In (50a), however, resyllabification is found only in inflection, not in derivation and compounding. This shows that a difference in word formation processes may block resyllabification.

The examples in (50b) illustrate *l*-deletion. While *l* disappears in derivation and compounding, it remains in inflection. Although the following consonants are all alveolar sounds, *l* is deleted in the former two examples, but it remains in the latter example. This demonstrates that word formation affects *l*-deletion.

The examples in (50) argue for Kiparsky's (1982) bi-strata ordering hypothesis. But it is difficult to apply Kiparsky's framework to Korean, because we cannot find any evidence to differentiate Class 1 from Class 2 affixes, as in English. Thus, S.-C. Ahn (1985) chooses Mohanan's multi-strata ordering hypothesis. He suggests four strata in Korean, as in the following:

- (52) 1. Sub-compounding
 2. Co-compounding
 3. Derivation
 4. Inflection

Notice that compounding precedes derivation. While Mohanan (1986) suggests that derivation precedes sub-compounding and

co-compounding in Malayalam, Ahn adjusts Mohanan's strata to explain Korean.

Lexical phonology is somewhat appropriate to describe phonological phenomena in Korean, but it has many disadvantages, such as violation of the stratum domain hypothesis, an unconstrained number of levels or strata, endless loops, and so on.

First, as H.-S. Sohn (1987:213-14) and D.-S. Park (1990:46-9) point out, the stratum domain hypothesis is violated in Korean phonology, although we rearrange Ahn's strata so that an endless loop is avoided. Since certain phonological processes jump over intermediate stages even in rearranged strata, they claim that lexical phonology does not provide a plausible explanation for Korean phonological phenomena.

Furthermore, the following examples illustrate violation of the stratum domain hypothesis:

- (53) Derivation: puth-ita [ch]~[ch] 'to attach'
 Compounding: kkuth-issta [t]~[s] 'to have an end'
 Inflection: kkuth-i [ch]~[s] 'end-Nom'

In (53), the first pronunciation is formal and the second is informal or casual. In formal pronunciation, palatalization occurs in derivation and inflection, while *t*-neutralization occurs only in compounding. In casual pronunciation, however, palatalization appears only in derivation, and *t*-neutralization occurs in compounding and inflection. Ahn's strata can explain the phenomena in formal pronunciations,

but his strata violate the stratum domain hypothesis with respect to casual pronunciations. Given Kiparsky's or Mohanan's strata, on the other hand, the opposite is demonstrated, in that the stratum domain hypothesis is observed in casual pronunciations, but not in formal pronunciations.

Consider other examples similar to (53):

- (54) Derivation: kkunh-kita [kh]~[nk] 'to be cut'
 Compounding: silh-cung [c']~[c'] 'dislike'
 Inflection: manh-ko [kh]~[kh] 'to be many-End'

In (54), there is a difference between formal and casual pronunciations. In formal pronunciations, aspiration is found in derivation and inflection, whereas consonant cluster reduction takes place only in compounding. In casual pronunciations, consonant cluster reduction occurs in derivation and compounding, but aspiration appears only in inflection. The examples in (54) illustrate the inadequacy of the stratum domain hypothesis. Given Kiparsky's or Mohanan's strata, the stratum domain hypothesis is not obeyed in formal pronunciations, whereas casual pronunciations follow the stratum domain hypothesis. On the other hand, the opposite case is found in Ahn's strata: Formal pronunciations follow the stratum domain hypothesis, whereas casual pronunciations violate the stratum domain hypothesis. Thus, the examples in (53) and (54) prove that the stratum domain hypothesis is not correct.

Second, Ahn's strata have to distinguish between verbal inflection and nominal inflection. Despite having the same inflection, different pronunciations occur in casual speech. Consider the following examples:

- (55) a. c-Neutralization
 ceg-ul [c] (-> [j])~*[s] 'to get wet-Inf Suf'
 ceg-ul [c] (-> [j])~[s] 'milk-Acc'
- b. Consonant Cluster Reduction
 ilk-e [lk]~*[k] 'to read-Inf Suf'
 talk-i [lk]~[k] (-> [g]) 'chicken-Nom'
- c. Glide Formation
 po-a [oa]~[wa] 'to see-Inf Suf'
 kho-e [oe]~*[we] 'nose-in'
- d. Aspiration
 mah-ko [kh]~*[k] 'to be many-Inf Suf'
 pap-hako [ph]~[p] (-> [b]) 'meal-and'

Although the second pronunciations in each case are casual and informal, they reveal a distinction. This suggests that Ahn would have to add one stratum to his strata:

- (56) 1. Sub-compounding
 2. Co-compounding
 3. Derivation
 4. Verbal Inflection
 5. Nominal Inflection

As in *mek-ki-ka*, the postposition attaches to gerund forms. This implies that verbal inflection precedes nominal inflection. As for compounding, inflection has to be divided into two strata with respect to different phonological processes. Thus, a five-stratum analysis is more adequate than a four-stratum analysis for Korean.

Third, H.-S. Sohn (1987:212-17) and D.-S. Park (1990) point out that Ahn's strata generate an endless loop.

Consider the following examples:

- (57) a. Stratum 2 -> Stratum 1
 [[alay wi] cip] 'neighboring houses'
 b. Stratum 3 -> Stratum 1
 [ton [pel-i]] 'money-earning'
 c. Stratum 4 -> Stratum 1
 [[cham-ul] seng] 'patience'

The introduction of an endless loop means that lexical phonology is not adequate to describe and explain phonological phenomena in Korean.

Finally, different phonological facts are differentiated by the types of verb. When we assume that *ita* is a special kind of verb (copula), Korean has four different types of verb: action, non-action (description), *issta*, and *ita*. The verbs have different pronunciations in case of making N + V constructions. Consider the following examples:

- (58) a. os-ipta [tn] (-> [nn]) 'to wear clothes'
 b. os-issta [t] (-> [d]) 'to have clothes'
 c. os-ita [s] 'to be clothes'

In (58), *ipta* is an action verb; *issta* is a hybrid verb, as D.-J. Lee (1989) calls it; *ita* is a copula. Although the examples in (58) show the same N + V constructions, *n*-insertion takes place in (58a), *s*-neutralization takes place in (58b), and palatalization takes place in (58c). The

examples in (58) illustrate that pronunciations in the same level or stratum are differentiated by properties of verbs. Lexical phonology could explain the differences in (58). However, lexical phonology misses an important point because the different pronunciations in (58) are related to verbal properties, not word formation.

5.3 Summary

We have examined contraction phenomena in Korean. Contraction is usually found in casual speech, in forms with function words, and specific forms. In addition, contraction is formed by partial deletion of a form, partial deletion plus fusion, and complete deletion of a form such as a word or a clause. Finally, we have pointed out the inadequacies of lexical phonology: contradiction of the stratum domain hypothesis, unconstrained number of levels or strata, endless loops, and so on.

Notes to Chapter 5

1. For ease of exposition, the transcription of long vowels is omitted.

2. As in optional vowel deletion, phonological processes exhibit differences between native and borrowed words. For example, Velar Softening in English applies in Latinate words. In *electric-electricity* and *regal-regency*, /k/ and /g/ change to /s/ and /j/ before front vowels, respectively. But Velar Softening does not take place in a non-Latinate word like *king*.

Ito & Mester (1986:54-55) present another example to differentiate rule application between native and borrowed words. The Japanese lexicon consists of Yamato (native) and non-Yamato morphemes. *Rendaku* voicing in Japanese occurs in only Yamato morphemes, as in the following.

(i) a. *nise* + *kane* 'counterfeit money'

|
g
garasu + *tana* 'glass shelf'

|
d
b. *nise* + *kin* 'counterfeit money'
garasu + *keesu* 'glass case'

The [+Yamato] examples in (ia) undergo *Rendaku*, whereas the [-Yamato] examples in (ib) do not.

3. As Gussmann (1986) points out, lexical phonology cannot explain the following issues: (i) the ordering of affixes within one derivational level. For example, we can have both *-less-ness* (*care-less-ness*) and *-ness-less* (*tender-ness-less*), but only *-ic-ity* (*atom-ic-ity*) is possible and not *-ity-ic* (**atom-ity-ic*). (ii) the selection of competing affixes. For example, the adjective from the noun *period* is *periodic*, and not **period-al* or **period-y*. (iii) the problem why sometimes two derivations are possible with suffixes from different strata (*period-ic* (Class I)-*ness* (Class II) and *period-ic* (Class I)-*ity* (Class I)), while in other cases this is not possible (*im* (Class I)-*polite* and **un* (Class II)-*polite*).

CHAPTER 6
CONCLUSION

This dissertation has dealt with two overall topics in relation to Korean morphology:

- (1) a. (i) How are words formed?
 (ii) How is word formation constrained?
 b. (i) How does word formation interact with syntax?
 (ii) How does word formation interact with phonology?

Chapter 2 has answered the question in (1ai). As in other languages, words in Korean can be formed by derivation and compounding. Nouns and adverbs can be formed by derivation and compounding; verbs can be formed by derivation and compounding, but involve inflection; and postpositions can be formed by compounding.

Since derivation is a kind of word formation in which a prefix or a suffix is attached to a root, it is represented as (Y) X (Z). In Korean, prefixes cannot change lexical categories, but suffixes can. Suffixation usually precedes prefixation.

Compounding includes sub-compounding and co-compounding. The former is represented as XY, and the latter as XX. While sub-compounds can have heads, co-compounds cannot. Since Korean is a right-headed language, Y determines the properties of the sub-compound as a whole.

In Korean, there are differences between derivation and inflection in terms of productivity, category-changing

potential, and phonological phenomena such as tensification and umlaut. In order to make a verbal structure complete, inflectional suffixes are always attached to verb roots or stems. Various inflectional suffixes can be attached, but they have to follow a sequential order: Subject Honorific (*si*)-Tense (*ass/ess*)-Modal (*keyss*)-Hearer Honorific (*sup*)-Mood (*ni*)-Final (*ta*). Although other inflectional suffixes are optional, the final inflectional suffix must occur with a verb root or stem. The honorific suffix *-si* differs from other inflectional suffixes in terms of cooccurrence restrictions, coordinate structures, and negative or progressive structures. The suffix sequence *-si-ass/ess-keyss* differs from *-sup-ni-ta* in terms of clear boundaries, obligatoriness, attachment of *-(u)m* or *-ki*, and position of stress.

Chapter 3 has answered the question in (1aii). It discusses blocking in word formation, which acts as an output filter. Certain possible words are not found in the lexicon. We need a device to constrain word formation. Since there seems to be no phrase structure rules or movement transformations, X-bar schemata or Subjacency cannot apply to word formation. Output filters are more helpful in constraining word formation. Since word formation maximize transparency of meaning or pronunciation, blocking plays a central role in avoiding synonymy or homonymy.

Chapter 4 has answered the question in (1bi). Words and phrases in Korean are often structurally identical. For example, a derived noun may resemble a nominalization and a verb + noun construction appears as both a noun compound and a noun phrase. Since words are formed in the lexical component and phrases in the syntactic component, they exhibit different behavioral properties.

In 4.1, we have seen differences between derived nouns and verbal nominalizations in terms of semantic idiosyncrasy, modification, and lexical integrity. There are also differences between compounds and phrasal nominalizations in terms of semantic idiosyncrasy, modification, lexical integrity, and affixation. In addition, compounds and phrasal nominalizations differ in terms of thematic relations: vague argument relationship between head and nonhead, the occurrence of the SUBJ argument, and the occurrence of all internal arguments.

In 4.2, we have dealt with the verb + noun construction, which occurs as both a noun compound and a noun phrase. Noun compounds differ from noun phrases with regard to phonological phenomena such as vowel length, juncture (pause), and vowel deletion. Moreover, they differ with regard to semantic regularity, lexical integrity, modification, and number.

In 4.3, we have dealt with the verb + verb construction, which occurs as a verb compound, a conjunction construction, and an auxiliary construction. Verb compounds

have the same properties that are found in lexical word formation: *l*-deletion, Gapping, and the Do-So Rule.

Conjunction constructions have two kinds of forms: *Verb Stem-a/e* and *Verb Stem-ko*. The two forms differ: First, while the former cannot have a separate subject or object, the latter can. Second, the tense suffix *-ass/ess* can not be inserted into *Verb Stem-a/e*, but it can be inserted into *Verb Stem-ko*. Conjunction constructions act like phrases in terms of semantic compositionality and lexical integrity. The so-called auxiliary construction is composed of a main verb and an auxiliary verb. The main verb determines the meaning and function of the auxiliary construction.

Auxiliary constructions are ambiguous between lexical and phrasal status: First, the tense suffix *-ass/ess* cannot be inserted into the auxiliary construction, but postpositions such as *-lul* and *-nun* can be inserted into the auxiliary construction. Second, the auxiliary construction exhibits properties of a word in terms of Gapping, whereas it exhibits properties of a phrase in relation to the Do-So Rule. The auxiliary construction with *-a/e cwuta* exhibits peculiar properties: Most constructions with *-a/e cwuta* are the same as other auxiliary constructions, but *pilli-e cwuta* and *tulli-e cwuta* have lexical idiosyncrasy. And such constructions as *thul-e cwuta*, *ilk-e cwuta*, and so on are auxiliary constructions, but they can take noun phrases with *-eykey*.

The noun + verb construction in 4.4 is ambiguous between compound and phrase in relation to *s*-neutralization. But the noun + verb construction exhibits properties of a phrase in terms of juncture, semantic idiosyncrasy, lexical integrity, and the Anaphoric Island Constraint. In addition, noun + verb constructions do not exhibit properties of lexical incorporation as proposed by Rosen (1989) in terms of ergativity/absolutivity in case marking and stranding of determiners or modifiers. Nor do they exhibit properties of syntactic incorporation as proposed by Baker (1988) in terms of the assignability of Theme to the noun phrase and the lack of required case marking in an incorporated noun.

Chapter 5 has answered the question in (1bii). We have considered the environments where contraction is formed: casual speech, forms with functional or bound words, and specific forms. We have described how contraction is formed: partial deletion, partial deletion plus fusion, and complete deletion. Finally, we have noted several inadequacies of lexical phonology: violations of the stratum domain hypothesis, the unconstrained number of levels or strata, endless loops, and unexplainability based on verb classification.

REFERENCES

- Ahn, Myong-Chol. 1990. Kwukeuy yunghap hyensang [A study on the phenomena of fusion in Korean]. *The Korean Language and Literature* 103.121-137.
- Ahn, Sang-Cheol. 1985. *The interplay of phonology and morphology in Korean*. University of Illinois dissertation.
- _____. 1988. A multi-tiered analysis of syllable structure. *Papers from the Sixth International Conference on Korean Linguistics*, 16-33. Seoul: Hanshin.
- Allen, Margaret. 1978. *Morphological investigations*. University of Connecticut dissertation.
- Anderson, Stephen R. 1977. Comments on the paper by Wasow. *Formal syntax*, ed. by Peter Culicover, Thomas Wasow, and Adrian Akmajian, 361-377. New York: Academic Press.
- _____. 1982. Where's morphology. *Linguistic Inquiry* 13. 571-612.
- _____. 1984. On representations in morphology: Case, agreement and inversion in Georgian. *Natural Language and Linguistic Theory* 2.157-218.
- _____. 1986. Disjunctive ordering in inflectional morphology. *Natural Language and Linguistic Theory* 4.1-31.
- _____. 1988. Morphological theory. *Linguistics: The Cambridge survey I*, ed. by Fredrick J. Newmeyer, 146-191. Cambridge: Cambridge University Press.
- Archangeli, Diana. 1984a. An overview of the theory of lexical phonology and morphology. *MIT Working Papers in Linguistics* 7.1-14.
- _____. 1984b. *Underspecification in Yawelmani phonology and morphology*. MIT dissertation.
- Aronoff, Mark. 1976. *Word formation in generative grammar*. Cambridge, MA: MIT Press.
- Aronoff, Mark, and S. N. Sridhar. 1983. Morphological levels in English and Kannada or atarizing Reagan. *CLS* 19:2.3-16.

- Bak, Sung-Yun. 1982. Causativization in Korean. *Linguistic Journal of Korea* 7.322-342.
- Baker, Mark. 1988. *Incorporation*. Chicago: University of Chicago Press.
- _____. 1989. Object sharing and projection in serial verb constructions. *Linguistic Inquiry* 20.513-553.
- Bauer, Laurie. 1988. *Introducing linguistic morphology*. Edinburgh: Edinburgh University Press.
- Bloomfield, Leonard. 1933. *Language*. New York: Holt, Reinhart and Winston.
- Booij, Geert E. 1977. *Dutch morphology: A study of word formation in generative grammar*. Dordrecht: Foris
- _____. 1983. Principles and parameters in prosodic phonology. *Linguistics* 21.249-280.
- Booij, Geert, and Jerzy Rubach. 1984. Morphological and prosodic domains in lexical phonology. *Phonology Yearbook* 1.1-27.
- _____. 1987. Postcyclic versus postlexical rules in lexical phonology. *Linguistic Inquiry* 18.1-43.
- Borer, Hagit. 1988. On the parallelism between compounds and constructs. *Yearbook of Morphology* 1.45-66.
- Borowsky, Toni. 1986. *Topics in the lexical phonology in English*. University of Massachusetts dissertation.
- Botha, Rudolf. 1984. *Morphological mechanisms: Lexicalist analysis of synthetic compounding*. Oxford: Pergamon Press.
- Bresnan, Joan. 1982. The passive in lexical theory. *The mental representation of grammatical relations*, ed. by Joan Bresnan, 3-86. Cambridge, MA: MIT Press.
- Burzio, Luigi. 1986. *Italian syntax: A government-binding approach*. Dordrecht: Reidel.
- Carlson, Greg, and Thomas Roeper. 1980. Morphology and subcategorization: Case and the unmarked complex verb. *Lexical grammar*, ed. by Teun Hoekstra, Harry van der Hulst, and Michael Moortgat, 123-164. Dordrecht: Foris.
- Chafe, Wallace. 1970. A semantically based sketch of Onondaga. *IJAL Memoir* 36.

- Cho, Sook Whan. 1989. Kyay ('s/he'), binding, and logophoricity in Korean. *Harvard Studies in Korean Linguistics III*, 201-211. Seoul: Hanshin.
- Choi, Hyeon-Bae. 1955/1983. *Wulimalpon [Our grammar]*. Seoul: Cengumsa.
- Choi, Young-Seok. 1988. A study of ascension constructions in Korean. University of Hawaii dissertation.
- Chomsky, Noam. 1970. Remarks on nominalization. *Reading in English transformational grammar*, ed. by Roderick A. Jacobs and Peter S. Rosenbaum, 184-221. Waltham, MA: Ginn.
- _____. 1981. *Lectures on government and binding*. Dordrecht: Foris.
- _____. 1986. *Barriers*. Cambridge, MA: MIT Press.
- Chomsky, Noam, and Morris Halle. 1968. *The sound pattern of English*. New York: Harper and Row.
- Christdas, Prathima. 1987. On constraining the power of lexical phonology: Evidence from Tamil. *NELS* 17.122-146.
- Clements, George N., and Samuel Jay Keyser. 1983. *CV Phonology: A generative theory of the syllable*. Cambridge, MA: MIT Press.
- Di Sciullo, Anna-Maria, and Edwin Williams. 1987. *On the definition of word*. Cambridge, MA: MIT Press.
- Dryer, Matthew. 1985. The role of thematic relations in adjectival passives. *Linguistic Inquiry* 16.320-326.
- Fabb, Nigel. 1984. *Syntactic affixation*. MIT dissertation.
- Gim, Cha-Gyun. 1987. A study on syllable structure and some processes in its nucleus in Korean (in Korean). *Mal* 12.25-69. Seoul: Yonsei University.
- Gusmann, Edmund. 1985. Review of Jerzy Rubach (1984). *Linguistics* 23.609-623.
- _____. 1986. Review of Steven L. Strauss (1982). *Studia Anglica Posnaniensia* 18.241-244.
- Halle, Morris. 1973. Prolegomena to a theory of word formation. *Linguistic Inquiry* 4.3-16.

- Halle, Morris, and Karuvannur P. Mohanan. 1985. Segmental phonology of modern English. *Linguistic Inquiry* 16. 57-116.
- Hargus, Sharon. 1985. The lexical phonology of Sekani. UCLA dissertation.
- _____. 1989. Review of The theory of lexical phonology, by Karuvannur P. Mohanan. *Language* 65.164-169.
- Hayes, Bruce. 1989. The prosodic hierarchy in meter. *Phonetics and phonology* 1.201-260. New York: Academic Press.
- Hoeksema, Jack. 1985. *Categorial morphology*. New York: Garland.
- Hoekstra, Teun. 1984. *Transitivity: Grammatical relations in government-binding theory*. Dordrecht: Foris.
- Huh, Woong. 1965. *Kwukeumwunhak [Korean phonology]*. Seoul: Cengumsa.
- Ito, Junko, and Ralf-Armin Mester. 1986. The phonology of voicing in Japanese: Theoretical consequences for morphological accessibility. *Linguistic Inquiry* 17. 49-73.
- Jackendoff, Ray. 1975. Morphological and semantic regularities in the lexicon. *Language* 51.639-671.
- Janda, Richard. 1983. Morphemes aren't something that grows on trees: Morphology as more the phonology than the syntax of words. *CLS* 19:2.79-95.
- Jensen, John T. 1990. *Morphology: Word structure in generative grammar*. Philadelphia: John Benjamins.
- Jensen, John, and Margaret Stong-Jensen. 1984. Morphology in the lexicon. *Linguistic Inquiry* 15.474-498.
- Jo, In-Hee. 1990. Multi-verb constructions in Korean. *Ohio State University Working Papers in Linguistics* 39.265-287.
- Kageyama, Taro. 1982. Word formation in Japanese. *Lingua* 57.215-58.
- _____. 1989. The place of morphology in the grammar: Verb-verb compounds in Japanese. *Yearbook of Morphology* 2. 73-94.

- Kaisse, Ellen M., and Patricia A. Shaw. 1985. On the theory of lexical phonology. *Phonology Yearbook* 2. 1-30.
- Kang, Yeng. 1990. Pokhaptongsaey kwanhan ilkochal [A study on the compound verb]. *Hankwuk ehak sinyenkwu*, 229-240. Seoul: Hanshin.
- Kenstowicz, Michael, and Charles Kisseberth. 1977. *Topics in phonological theory*. New York: Academic Press.
- Kim, Gyung-Ran. 1988. The pitch-accent system of the Taegu dialect of Korean with emphasis on tone sandhi at the phrasal level. University of Hawaii dissertation.
- Kim, Jeong-Ryeol. 1987. Another look at the Korean verb--with reference to the parsing. *University of Hawaii Working Papers in Linguistics* 19:1.45-60.
- Kim, Jong-mi. 1986. Phonology and syntax of Korean morphology. University of Southern California dissertation.
- Kim, Soo-Won. 1988. The OCP and Korean glottalization. *Papers from the Sixth International Conference on Korean Linguistics*, 217-235.
- Kim, Sung-Kon. 1989. Wulimal thossi yenkwu [A study on Korean marker]. Seoul: Konkuk University Press.
- Kim, Young-Hee. 1974. *Hankwuke cosalywueuy yenkwu* [A study on particles in Korean]. *Mwunpep Yenkwu* 1.271-311.
- Kim, Young-Seok. 1985. Aspects of Korean morphology. University of Texas dissertation.
- Kim-Renaud, Young-Key. 1974. Korean consonantal phonology. University of Hawaii dissertation.
- _____. 1982. \dot{i} -Deletion in Korean. *Linguistics in the morning calm* 1, ed. by In-Seok Yang, 478-488. Seoul: Hanshin.
- Kiparsky, Paul. 1982. Lexical phonology and morphology. *Linguistics in the morning calm* 1, ed. by In-Seok Yang, 3-92. Seoul: Hanshin.
- _____. 1985. Some consequences of lexical phonology. *Phonology Yearbook* 2.83-116.
- Ko, Yong-Kun. 1989. *Kwuke hyengthaylon yenkwu* [A study on Korean morphology]. Seoul: Seoul National University Press.

- Lapointe, Stephen. 1978. A theory of grammatical agreement. University of Massachusetts at Amherst dissertation.
- _____. 1983. A comparison of two recent theories of agreement. CLS 19:2.122-134.
- Lebeaux, David. 1986. The interpretation of derived nominals. CLS 22:1.231-47.
- Lee, Dong Jae. 1989. Classification of verb suffixes and suffixal phrases. Language Research 25:2.329-359.
- Lee, Kee-Dong. 1975. Kusaiean reference grammar. Honolulu: University of Hawaii Press.
- Lee, Pyeng-Kun. 1979/1988. Umwunhyensangey isseseuy ceyyak [Constraints in phonological phenomena]. Seoul: Tower.
- Lees, Robert. 1960. The grammar of English nominalizations. The Hague: Mouton.
- Levin, Beth, and Malka Rappaport. 1986. The formation of adjectival passives. Linguistic Inquiry 17.623-661.
- Lieber, Rochelle. 1980. On the organization of the lexicon. MIT dissertation.
- _____. 1983. Argument linking and compounds in English. Linguistic Inquiry 14.251-285.
- _____. 1988. Phrasal compounds in English and the morphology-syntax interface. CLS 24:2.202-222.
- Marantz, Alec. 1984. On the nature of grammatical relations. Cambridge, MA: MIT Press.
- Martin, Samuel E. 1954. Korean morphophonemics. William Dwight Whitney linguistics series ed. by Linguistic Society of America. Baltimore: Waverly Press.
- Mohanan, Karuvannur P. 1982. Lexical phonology. MIT dissertation.
- _____. 1985. Syllable structure and lexical strata in English. Phonology Yearbook 2.137-155.
- _____. 1986. The theory of lexical phonology. Dordrecht: Reidel.
- Mohanan, Karuvannur P., and Tara Mohanan. 1984. Lexical phonology of the consonant system in Malayalam. Linguistic Inquiry 15:575-602.

- Nespor, Marina, and Irene Vogel. 1986. Prosodic phonology. Dordrecht: Foris.
- Park, Duk-Soo. 1990. Lexicon and syntax of Korean phonology. University of Hawaii dissertation.
- Perlmutter, David M. 1978. Impersonal passives and the unaccusative hypothesis. BLS 4.157-189.
- _____. 1988. The split-morphology hypothesis: Evidence from Yiddish. Theoretical morphology, ed. by Michael Hammond, and Michael Noonan, 79-100. New York: Academic Press.
- Pesetsky, David. 1979. Russian morphology and lexical theory. Ms. MIT.
- _____. 1985. Morphology and logical form. Linguistic Inquiry 16.193-246.
- Postal, Paul M. 1969. Anaphoric islands. CLS 5.205-239.
- Pulleyblank, Douglas. 1983. Tone in lexical phonology. MIT dissertation.
- _____. 1986. Tone in lexical phonology. Dordrecht: Reidel.
- Randall, Janet. 1984. Morphological complementation. MIT Working Papers in Linguistics 7.70-85.
- Roeper, Thomas, and Murphy Siegel. 1978. A lexical transformation for verbal compounds. Linguistic Inquiry 9.199-260.
- Rosen, Sara Thomas. 1989. Two types of noun incorporation: A lexical analysis. Language 65.294-317.
- Rubach, Jerzy. 1984. Cyclic and lexical phonology: The structure of Polish. Dordrecht: Foris.
- _____. 1985. Lexical phonology: Lexical and postlexical derivations. Phonology Yearbook 2.157-72.
- Safir, Ken. 1987. The syntactic projection of lexical thematic structure. Natural Language and Linguistic Theory 5.561-601.
- Scalise, Sergio. 1984. Generative morphology. Dordrecht: Foris.
- Sebba, Mark. 1987. The syntax of serial verbs. Philadelphia: John Benjamins.

- Selkirk, Elisabeth. 1982. The syntax of words. Cambridge, MA: MIT Press.
- _____. 1984. Phonology and syntax. Cambridge, MA: MIT Press.
- Shaw, Patricia A. 1985. Modularisation and substantive constraints in Dakota lexical phonology. *Phonology Yearbook* 2.173-202.
- Shibatani, Masayoshi, and Taro Kageyama. 1988. Word formation in a modular theory of grammar: Postsyntactic compounds in Japanese. *Language* 64.451-484.
- Shim, Jae-Ki. 1982/1983. *Kwukeehwilon [Korean morphology]*. Seoul: Cjpmwuntang.
- Siegel, Dorothy. 1974. Topics in English morphology. MIT dissertation.
- Sohn, Hyang-Sook. 1987. Underspecification in Korean phonology. University of Illinois dissertation.
- Sohn, Ho-min. 1989. Typological characteristics of Korean honorifics. Ms. University of Hawaii.
- _____. 1990. Ms. University of Hawaii.
- Sproat, Richard. 1984. On bracketing paradoxes. MIT Working Papers in Linguistics 7.110-130.
- _____. 1985. On deriving the lexicon. MIT dissertation.
- Stanley, Richard. 1973. Boundaries in phonology. A festschrift for Morris Halle, ed. by Stephen R. Anderson, and Paul Kiparsky, 185-206. New York: Holt, Reinhart and Winston.
- Strauss, Steven L. 1979. Against boundary distinctions in English morphology. *Linguistic Analysis* 5.387-419.
- _____. 1982. *Lexicalist phonology of English and German*. Dordrecht: Foris.
- Sugioka, Yoko. 1985. Interaction of derivational morphology and syntax in Japanese and English. University of Chicago dissertation. [Published: New York: Garland, 1986.]
- Szpyra, Jolanta. 1989. The phonology-morphology interface: Cycles, levels and words. London: Routledge.

- Thomas-Flinders, Tracy (ed.) 1981. Inflectional morphology: Introduction to the extended word-and-paradigm theory. Occasional Papers in Linguistics 4. UCLA.
- Wasow, Thomas. 1980. Major and minor rules in lexical grammar. Lexical grammar, ed. by Teun Hoekstra, Harry van der Hulst, and Michael Moortgat, 285-312. Dordrecht: Foris.
- Williams, Edwin. 1980. Predication. Linguistic Inquiry 11.208-238.
- _____. 1981a. On the notions 'lexically related' and 'head of a word'. Linguistic Inquiry 12.245-274.
- _____. 1981b. Argument structure and morphology. The Linguistic Review 1.81-114.
- _____. 1984. Grammatical relations. Linguistic Inquiry 15.639-673.
- _____. 1987. English as an ergative language: The theta structure of derived nouns. CLS 23:1.366-375.
- Yoon, James H. 1987. Reconciling lexical integrity with affixation in syntax. NELS 17.663-683.
- Yu, Chang-Ton. 1971. Ehwisayenkwu [A historical study on vocabulary]. Seoul: Senmyengmwunhwasa.
- Yu-Cho, Young-mee. 1987. Phrasal phonology in Korean. Harvard Studies in Korean Linguistics II, 328-340. Seoul: Hanshin.