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A Contrastive Study of the Phonological System of English and Korean

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A CONTRASTIVE STUDY OF THE PHONOLOGICAL

SYSTEM OF ENGLISH AND KOREAN

BY

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A thesis submitted in partial fulfillment
of the requirements for the degree
Master of Arts
Major in English
South Dakota State University
1987

A CONTRASTIVE STUDY OF THE PHONOLOGICAL

SYSTEM OF ENGLISH AND KOREAN

This thesis is approved as a creditable and indepen-
dent investigation by a candidate for the degree, Master of
Arts, and is acceptable for meeting the thesis requirements
for this degree. Acceptance of this thesis does not imply
that the conclusions reached by the candidate are necessarily
the conclusions of the major department.

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ACKNOWLEDGEMENTS

I would like to express my gratitude to my thesis adviser Dr. John Taylor for teaching linguistics and introducing me to contrastive study. This study could not have been completed without his valuable advice.

I am also deeply grateful to Dr. Ruth Alexander, Head of English Department, for her kindness. She helped me a lot when I was in trouble.

Still I have a person to whom I have to express my thanks. Dr. Yo-In, Song, he recommended me to study abroad and he inspired me to further effort.

Finally, I wish to express my deep indebtness to my wife who has thoroughly supported my study in the United States. I hope this study would be a small reward for her full support.

<div align="right">YKC</div>

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INTRODUCTION

This study is intended as a contrastive analysis of selected aspects of the phonological systems of English and Korean. Contrastive analysis is basically the manner in which most foreign language courses are taught. The field of contrastive linguistics has recently split into three areas: traditional contrastive analysis, error analysis, and interlanguage. Contrastive analysis is concerned with the comparison of two languages in order to determine both the similarities and differences between them.

This study is based on the theory of contrastive phonology which compares phonological properties of two languages in order to determine areas in the phonological system of one language which may create learning difficulties for speakers of the other language.

In this study, the focus is on the contrastive analysis of phonological systems of English and Korean, e.g., sound systems, phonological processes, and phonotactics. Especially in the section of Korean phonology, the emphasis is on purely phonological phenomena, which are dependent upon the formation of phonological rules. In English sections, I treat the important and salient phonological phenomena.

The introduction provides general information relevant to this study.

In chapter 1, I examine the theoretical background

CHAPTER 1

THEORETICAL OVERVIEW OF CONTRASTIVE ANALYSIS

1.0 Introduction

This chapter provides an overview of the contrastive analysis theory, with respect to its assumptions, methodology, claims and pedagogical implications. Obviously the errors or the mistakes which students make in the process of learning a source language or target language have been of much concern to foreign language teachers and textbook writers for a long time. A systematic approach to this problem, grounded in linguistic theory, has been attempted in only relatively recent years. Contrastive analysis, and interlanguage are studies that help us understand the process of foreign language learning and teaching (Sridhar 281-358).

1.1 Definition of Contrastive Analysis

Contrastive analysis may be roughly defined as a subdiscipline of linguistics which is concerned with the comparison of two or more languages in order to determine both the similarities and differences between them. This type of investigation has also been called "comparative linguistics" or "contrastive linguistics." However, for traditional reasons, the term "contrastive analysis" or "contrastive linguistics" is the most frequently used for this type of investigation. Contrastive analysis assumes

that many of the mistakes by learners are caused by differences between the native and target languages, and leads to a large number of extremely valuable language descriptions and pedagogical grammars. Most linguistic researchers have usually claimed contrastive analysis as being central to other research, e.g., in developing a general theory of language based on "universals" of language, diachronic change, and of dialectal variation--both in language acquisition studies as well as in interlingual translation (Spolsky 250-257).

1.2 History of Contrastive Analysis

Contrastive analysis is not a totally new methodology in foreign language teaching; in fact theoretical CA goes back to the last decade of 19th Century. Furthermore during the Second World War, great interest was aroused in the United States, and contrastive studies were recognized as an important part of foreign language teaching methodology. Contrastive analysis came to be viewed as being of value especially in an applied sense. Charles C. Fries originally developed contrastive analysis as an integral part of foreign language teaching, and Robert Lado expanded and clarified it (1-8). Fries says that "the most effective materials for foreign language teaching are based upon a scientific description of language to be learned carefully with a parallel native language of the learner (9)." With

the publication of Noam Chomsky's <u>Aspects of the Theory of Syntax</u> (1965), transformational theory gave a fresh impetus to CA, making it possible or the comparison of the two languages to be more explicit and precise in its terminology. Robert Lado argues that the concept of generative grammar on a transformational model (Chomsky 128-147) introduces a new dimension in contrastive linguistics (123-133).

Stockwell and Bowen are the first linguists who attempted to show much influence of transformational theory on contrastive analysis, with publishing of <u>The Sounds of English and Spanish</u>, based on transformational model.

Today most of phonological works on contrastive analysis have centered on segmental phonology, e.g., comparison of phonemes, distinctive features, and phonotactics. Not much research emphasizes a non-segmental or prosodic phonology, e.g., comparison of stress patterns, tones, intonation, and sentence structure. This results from segmental phonology being a more accessible and 'simpler' level than other aspects of language. Even after the revival of syntax within the context of generative grammar, the number of contrastive syntactic studies still remains small, partly due to the rapid changes and polemical arguments in systematic theory in the last three decades. The area of semantics has rarely been touched except, for example, in the work of E. Oksaar (187-201). This lack of interest in contrastive semantic studies results directly from the lack of

an adequate general linguistic theory of semantics. Thus, the picture of contrastive studies today shows a strong bias toward phonology and moderate emphasis on syntax. Also it reflects the theoretical bias of American Structuralism. Even if morphology has previously been subsumed under the domain of phonology and syntax, it has only recently been studied intensively within transformational- generative grammar.

1.3 Criticism of Contrastive Analysis

Some major criticism of CA occurred at the 1968 Georgetown University Round Table Meeting related to the theoretical basis of CA, and the predictions made by CA (Alatis 11-201). Critics of CA such as Carroll, Catford, Ferguson, Gleason, Lee, Lado, Moulton, Pietro, Stockwell, who participated in 19th Annual Round Table Meeting on linguistics of Georgetown University, have argued that interference from the native language is not the sole source of error in target language learning. There are other sources which CA fails to predict. Moreover, the critics argue that many of the difficulties predicted by CA do not show up in actual performance, and many errors that do show up are not predicted by CA. According to D.A. Willkins, CA gives an "over-simplified view" of foreign language learning (99-107). W.R. Lee says that there are instances of interference not only from source language but also from target language; the learner will tend to notice and produce by false analogy

wrong patterns of that language, as well as patterns of his own language (185-194). In view of the above criticisms, the opponents to CA propose that the role of CA should strive to be explanatory and not merely predictive. S.P. Corder (161-170) and Duskova (11-30) say that CA and EA are not alternative methods to achieve the same end. They realize that EA can become fully explanatory only if errors from source language interference are also taken into account.

1.4 Theoretical vs. Applied CA

Contrastive studies are usually divided into theoretical and applied. Theoretical contrastive studies are concerned with similarities and differences in the structure of two or more languages, whereas applied contrastive studies aim at making use of the theoretical analysis for some specific purpose, e.g., theoretical studies are in equal degree interested in similarities and differences while applied studies often concentrated on latter only. A large number of theoretically oriented studies written during the past few years attempt to establish CA as an independent study without the constraints of applied linguistics. J. Fisiak introduced the notion of "specified theoretical contrastive studies" (9-38). The "general theoretical studies" deal with the methodological principles of contrastive works, and applied contrastive studies represent an analysis of two languages having a specific non-linguistic purpose, such as the

explanation of interference errors. Fisiak suggests that theoretical CA and applied CA should be kept as to distinctive activities it progress is to be made in CA (341-351).

1.5 Definition of Contrastive Phonology in CA

As most commonly understood, contrastive phonology compares phonological properties of two languages in order to determine areas in the phonological system of one language which may create learning difficulties for speakers of the other language. Viewd in this way, contrastive phonology draws its conclusions from structural analysis of linguistic analysis. Contrastive phonology establishes systematic differences and similarities between phonological systems, providing comparisons researchers must specify as the potential problems which speakers of one language face when attempting to master the phonological system of the other one. Traditionally, the former language, which is usually the native tongue, is called the source language, and the new or foreign tongue is referred to as the target language. According to a long-standing tradition, contrastive phonology has an applied bent, the ultimate objective being to describe practical phonological learning problems and to provide cross-structural insights that might assist in overcoming these obstacles (Eliasson 180-186).

Kohler, who is a professor of phonetics and director of the Phonetics Institute at Christian-Albrechts University

of West Germany, characterizes contrastive phonology as follows: the aim of contrastive phonology seems to be quite straight-forward and logical, it is to analyze the difference in sound structures between languages and thus to lay the foundation for a systematic and illuminating error analysis and correction of pronunciation in foreign language learning. The first problems arise in connection with choosing the phonological model for the description of the phonetic systems of individual languages and for their comparisons. A truly structural approach, in which the values of units are determined by their mutual relation with one particular language, precludes a contrastive phonology within the same frame work: the comparison only becomes feasible via absolute phonetic facts, not simply through their relative phonological structuring in each language. A further set of problems is connected with the practical status of phonological descriptions and of contrastive similarities or differences. A descriptive account of the sound structure of a language can abstract from speaking and listening and may follow such principles as economy, simplicity, pattern congruity or integration of levels of description without considering speech performance, but the relation of phonological categories and units to the processes of articulation and perception has to be psychologically real in the case of a contrastive phonology that is to be applied to pronunciation

teaching. Therefore, phonological elements can no longer be ambivalent with regard to production as is common in descriptive and more theoretical phonologies. The articulatory and auditory repertoires in average users of a particular language transcend the limits determined by the native language to different degrees, and consequently their expansion leads to diverging difficulties (Kohler 73-87).

Contrastive phonology was born in the structuralist era and has up to quite recently been predominantly structuralist in character. Accordingly, its main concern has been contrasting units like phonemes, sometimes distinctive features, and occasionally distributional patterns (Eliasson, "Abstract Phonology and Contrastive Analysis" 137-150). The impact of generative theory on contrastive phonology, on the other hand, remained weak. For instance, a central and most important objective of generative phonology is to study and formulate phonological processes appeared relatively in contrastive phonology but extensive contrastive analyses of phonological rules are still rare (Gussman 113-123).

CHAPTER 2

THE SOUNDS OF ENGLISH AND KOREAN

2.0 Introduction

All languages have their own sound patterns such
that the language has a set of sounds which occur in partic-
ular arrangement in the words and sentences of that language.
"Sound pattern" also implies processes of adding, deleting,
and changing speech sounds. Although all languages share
certain basic properties, no languages have exactly the same
sound pattern. First, the phoneme inventories may not be the
same; second, the rules or processes that affect the phonemes
may vary from language to language.

This chapter deals with the classification and de-
scription of phonemes, and distribution of allophones, of
English and Korean.

2.1 The Sounds of English

This section deals with a brief analysis of the
sounds of English and their salient phonetic manifestations
in terms of articulatory and distinctive features.

2.1.1 Classification of English Vowels

A classification of English vowels is made according
to the parameters of tongue height (high vs. low), tongue
retraction (front vs. back) and lip rounding (rd vs. unrd).
The following vowel chart shows only two of the dimensions

of vowel quality. It does not show anything about the degree
of allophonic lip rounding, nor does it indicate anything
about the allophonic vowel length (Ladefoged 34).[1]

(2.1)   Front   Central   Back

	Front		Central		Back	

High   i(iy)   u(uw)
        ɩ(I)   ꙍ(U)

Mid   e(ey)   o
        ɛ   ə   ɔ

        æ   ʌ   ɒ
Low   ɑ (a)

Wolfram and Johnson defined the quality of English
vowels according to the tongue position as follows: high
vowels involved the rising of the body of the tongue from
the neutral position, whereas low vowels are produced with
a lowering of the body of the tongue from the neutral posi-
tion. Midvowels are uniquely characterized by being simul-
taneously [-high] and [-low]. Front vowels are produced
with in front of the neutral positions, while back vowels
are produced with the body of the tongue moved back from
the neutral position. Tense vowels are produced with a more
deliberate gesture that involves considerable muscular ac-
tivity at the base of the tongue, but lax vowels are pro-
duced with less muscular activity.

    A. Front vowels

        The high front tense vowel [iy] is typically found
in beat [biyt] and keep [kiyp]. The high front lax vowel [I]

occurs in <u>bit</u> [bIt] and <u>sit</u> [sIt]. The mid front tense vowel [ey] is used in English in its "pure" form (undiphthongal form), although it is associated with the vowel in <u>bait</u> [beyt] and <u>late</u> [leyt]. The mid front lax vowel [ɛ] occurs in <u>bet</u> [bɛt] and <u>met</u> [mɛt]. The low front tense vowel [æ] occurs in <u>sat</u> [sæt] and <u>bat</u> [bæt] in many varieties of English. For most Americans, the low and central vowels do not enter into a tense-lax contrast.

B. Central Vowels

According to Ladefoged (81), there are ony two central vowels. The mid central vowel [ə], commonly referred to as "schwa," and low central vowel [ʌ], sometimes called "cret." The schwa very commonly occurs in unstressed position in most dialects of English, e.g., <u>around</u> [rawnd], <u>telegraph</u> [tʰɛləgræf], and <u>sofa</u> [sowfə], but [ʌ] typically occurs in stressed syllables such as <u>cup</u> [kʰʌp] or <u>cutting</u> [kʰʌtIŋ]. The mid central vowels may also be retroflexed. The retroflex [ ] is found in unstressed syllables such as in <u>mother</u> [mʌɣɚ] and <u>runner</u> [rʌnɚ].

C. Back Vowels

The high back tense vowel [uw] is found in words like <u>too</u> [tʰuw] or <u>boot</u> [buwt]. There is a tendency to glide into another vowel, (e.g., [uw]), so English speakers usually do not produce a [u] without gliding. The high back lax vowel [U] is the typical vowel of <u>book</u> [bUk] and <u>put</u> [pUt]. The mid back tense vowel [0] is most frequently produced in a

glide to the [w]. The mid back lax vowel [ɔ] is used in the
vowel of the words like <u>caught</u> [kʰɔt] and bought [bɔt]. The
low back vowel [a] is found in <u>father</u> [faɣɚ] and <u>top</u> [tap]
(Wolfram and Johnson 29-30).

2.1.1.1 Tense vs. Lax

Vowels are also differentiated by the degrees of
muscular energy involved in their articulation. For example,
compare the words <u>beat</u> and <u>fool</u> with <u>bit</u> and <u>full</u>. The pri-
mary difference between the two sets of words is that one
is produced with a great degree of muscular activity, where-
as the other is relaxed. The tense vowels are relatively
longer, higher, and more diphthongal than the lax vowels.
The lax vowels are shorter, lower, and slightly more central-
ized than the corresponding vowel (Wolfram and Johnson 64-
65; Ladefoged 74).

2.1.1.2 Length of vowels

Another way of classifying the English vowels is
"long" and "shorter." English vowels and diphthongs are sub-
ject to considerable variation in length according to their
position in words. Thus, short (lax) vowels are longer before
a voiced consonant than before a corresponding voiceless
segment. Lengthening is observable, therefore, before word-
initial nasals, as in <u>man</u>. Similarly, tense vowels and diph-
thongs are longer before voiced consonants than before
voiceless consonants. The duration of vowels depends on the
number of syllables in words and sentence as well as stress

and intonation. Tense (long) vowels have a shorter duration
in syllables followed by two or more syllables than in syl-
lables followed by one or none. They are the longest in mono-
syllables of the types <u>see</u> and <u>seen</u>. Bearing in mind the above
facts, to facilitate comparison, the phonetic vowel length
for tense vowels in English can be described in tense of
length - halflong and long - half long before voiceless con-
sonants and long elsewhere. This can be represented by the
following rule (Bronstein 143).

(2.2)
$$[+\text{tense}] \xrightarrow{\text{V}} [-\text{long}] \, / \, \underline{\quad} \begin{bmatrix} +\text{cons} \\ -\text{vd} \end{bmatrix}$$

2.1.1.3 Distinctive features

It would be possible to follow Chomsky and Halle's
system of distinctive features, but it is very difficult to
accomodate all English vowels within the frame of Chomsky and
Halle's distinctive features (176). Because many unsettled
issues remaining concerning the most natural and economical
list of distinctive features for English (Wolfram and John-
son 62), various phonologists and phoneticians have suggest-
ed further modifications since the appearance of <u>The Sound</u>
<u>Pattern of English</u> in 1968 (Hyman 53). Therefore, consider-
ing current conventional treatments, the features [high] and
[low] are sufficient to classify them vertically. Thus, the
high vowels /iy,I,uw,U/ are [+high], the low vowels /æ,ʌ,a/
are [+low], and the mid vowel /e(ey),ɛ,ə,o,ɔ/ are [-high,
-low]. The feature [+back, -back] is sufficient to classify

them horizontally. The [+back] vowels are /uw,U,o,ɔ,a/ and
[-back] are /iy,I,e,ɛ,æ/. The roundness is distinguished by
the degree of lip rounding. Thus, [+round] vowels are /uw,U
o,ɔ/ and [-round] are /iy,I,e,ɛ,æ,ə/. Accordingly, we employ
the five distinctive features: [tense], [high],   [low],
[back], and [round] together with the feature [syllabic],
which is shared by all vowels.

The following is the matrix of distinctive features
of English vowels (Wolfram and Johnson 66-69).[2]

(2.3)

	iy	I	e	ɛ	æ	ə	ʌ	uw	U	o	ɔ	a
syllabic	+	+	+	+	+	+	+	+	+	+	+	+
high	+	+	−	−	−	−	−	+	+	−	−	−
low	−	−	−	−	+	−	+	−	−	−	−	+
back	−	−	−	−	−	+	+	+	+	+	+	+
tense	+	−	+	−	−	−	+	+	−	+	+	+
round	−	−	−	−	−	−	−	+	+	+	+	−

2.1.1.4 Diphthongs

The typical English diphthongs are classified into
three categories: fronting diphthongs, centering diphthongs,
and backing diphthongd. In this diphthongs, the primary
stress is on the beginning vowel and it is louder than the
final vowel (Wolfram and Johnson 31-32).

A. Fronting diphthongs

(2.4)


```
          Front     Central     Back

    I
High

         e

Mid                              ɔ


Low                              a
```
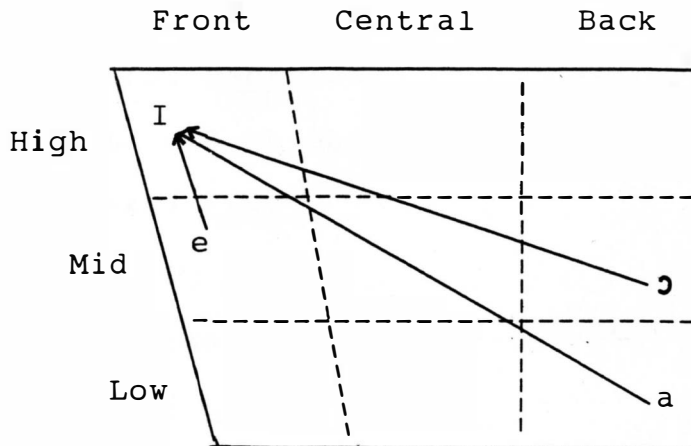
/ey/: consists of two segments [e] and [y]:

> [prey] <u>pray</u>

> [beyt] <u>bait</u>

/ay/: consists of two segments [a] and [y]:

> [rayd] <u>ride</u>

> [bay] <u>bye</u>

/ɔy/: consists of two segments [ɔ] and [y]:

> [ɔyl] <u>oil</u>

> [bɔy] <u>boy</u>

[ɔy] does not occur in unstressed position.

B. Centering diphthongs

(2.5)


```
          Front     Central     Back

    I                             U
High


Mid                  ə
      ɛ           (ɚ)          ɔ


Low
```
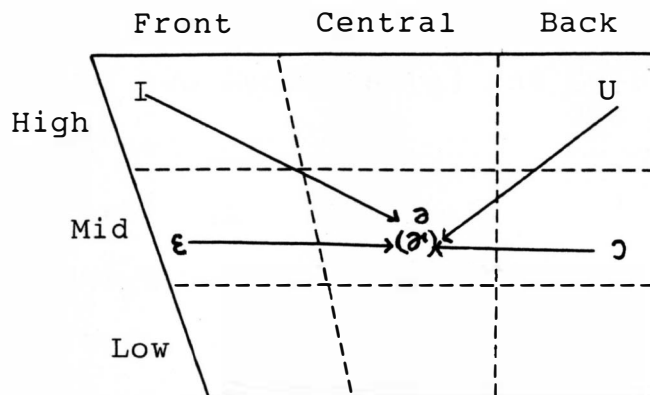
/Iɚ/: consists of two segments [I] and [ɚ]:

        [dIɚ] <u>deer</u>

        [bIɚ] <u>beer</u>

/ɛɚ/: consists of two segments [ɛ] and [ɚ]:

        [bɛɚ] <u>bear</u>

        [spɛɚ] <u>spare</u>

/Uɚ/: consists of two segments [U] and [ɚ]:

        [pUɚ] <u>poor</u>

        [lUɚ] <u>lure</u>

/ɔɚ/: consists of two segments [ɔ] and [ɚ]:

        [hɔɚs] <u>horse</u>

        [dɔɚ] <u>door</u>

    C. Backing diphthongs

(2.6)
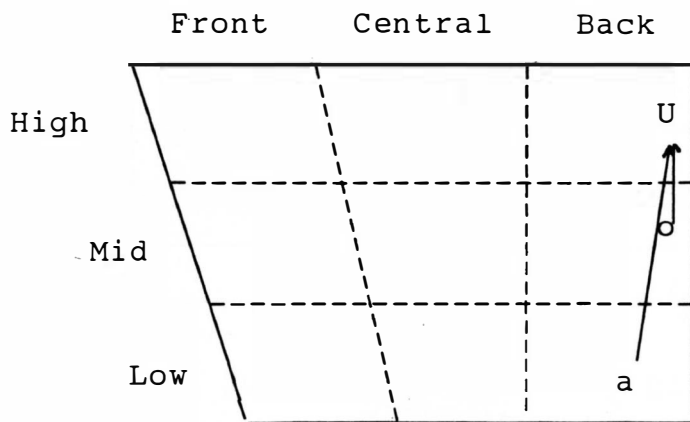
/aw/: consists of two segments [a] and [w]:

        [kʰaw] <u>cow</u>

        [awt] <u>out</u>

/ow/: consists of two segments [o] and [w]:

        [bowt] <u>boat</u>

        [sow] <u>so</u>

2.1.2 English Consonants

The twenty-six English underlying consonants are described according to two parameters, namely, manner and position of articulation. Accordingly, they are: bilabial, labio-dental, dental, alveolar, palatal-alveolar, velar, glottal, and stop, fricative, affricate, nasal, liquid, glide, and two semi-vowels.

A general classification of English consonants is as follow:

(2.7)

		Bilabial	Labio-dental	Dental	Alveolar	Palato-alveolar	Velar	Glottal
Stops	vl	p			t		k	ʔ
	vd	b			d		g	
Fricatives	vl		f	θ	s	š		h
	vd		v	ð	z	ž		
Affricates	vl					č		
	vd					ǰ		
Nasals		m			n		ŋ	
Liquids					l	r		
Glides		w				y	(w)	

2.1.2.1 General Characteristics of English Consonants

2.1.2.1.1 Stops

The most important aspect of English voiceless stops is aspiration. The voiceless stops /p, t, k/ have strong aspiration at the beginning of stressed syllable: [pʰrɪpʰ] prepare, [pʰɪt] pit. They are weakly aspirated intervocalically

and in word-final position, if the stop is released. And they are unaspirated when preceded by the phoneme /s/ and followed by a vowel: [spIt] spit, [spærow] sparrow. The relevant rules are:

(2.8)
$$\begin{bmatrix} +cons \\ -cont \\ -vd \end{bmatrix} \longrightarrow [+asp] \ / \ \#\underline{\quad}$$

(2.9)
$$\begin{bmatrix} +cons \\ -cont \\ -vd \end{bmatrix} \longrightarrow [-asp] \ / \ \left\{ \begin{matrix} \begin{bmatrix} \# \ [s]\underline{\quad}V \\ V \ \underline{\quad}V \\ [-stress] \end{bmatrix} \\ \underline{\quad}\# \end{matrix} \right\}$$

Voiceless stops /p, t, k/ are unreleased when they occur in the end of utterance. The relevant rule is:

(2.10)
$$\begin{bmatrix} +cons \\ -str \\ -vd \end{bmatrix} \longrightarrow \text{(unreleased)} \ /\underline{\quad} \# \quad (\ ): \text{indicates optional}$$

2.1.2.1.2 Nasals

Of the three English nasal consonants, only [ŋ] never occurs initially. Nasals become syllabic in word-final con-sonant clusters: basin [beysn], mutton [mʌtn], spasm [spæzm], bossom [bʌzm], which can be illustrated by the following rule:

(2.11)   [+nas]⟶ [+syl] / [+cons]⟶ #

2.1.2.1.3 Liquids

A lateral sound is always syllabic in word-final consonant clusters: channel [čænəl], cycle [saykəl], handle [hændəl]. The relevant rule would be as follow:

(2.12)
$$\begin{bmatrix} +\text{cons} \\ +\text{lat} \end{bmatrix} \longrightarrow [+\text{syl}] \ / \ [+\text{cons}]\underline{\quad}\#$$

2.1.2.2 Distinctive Features for English Consonants

All English consonants are [+cons] and [-syl]. However, it would be noted that the co-occurrence of the features [-syllabic] and [-consonantal] defines the glides [w] and [y]. The sounds classified as [+syl] and [-cons] are, of course, vowels. The position of articulation can be classified in terms of the features [anterior] and [coronal]. Anterior sounds are articulated in front of the palato-alveolar region, i.e., /p,b,f,v,θ,ð,t,d,s,z,m,n,l, /. The feature [sonorant] groups nasals, liquids, and glides together. The matrix of distinctive features is represented as follow (Wolfram and Johnson 66).

(2.13)

	p	b	t	d	k	g	č	ǰ	f	v	θ	ð	s	z	š	ž	m	n	ŋ	r	l	w	y	h
syl	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
son	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+
cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-[3]
hi	-	-	-	-	+	+	+	+	-	-	-	-	-	-	+	+	-	-	+	-	-	+	+	-
lo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
bk	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	+	-	-
ant	+	+	+	+	-	-	-	-	+	+	+	+	+	+	-	-	+	+	-	-	+	-	-	-
cor	-	-	+	+	-	-	+	+	-	-	+	+	+	+	+	+	-	-	-	-	-	-	-	-
cont	-	-	-	-	-	-	-	-	+	+	+	+	+	+	+	+	-	-	-	+	+	+	+	+
str	-	-	-	-	-	-	+	+	+	+	-	-	+	+	+	+	-	-	-	-	-	-	-	-
dr	-	-	-	-	-	-	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
vd	-	+	-	+	-	+	-	+	-	+	-	+	-	+	-	+	+	+	+	+	+	+	+	-
nas	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-	-
lat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
rd	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-

2.1.2.3 Allophonic Distribution of English Consonants

/p/: /p/ has the allophones [pʰ], [p], and [p̚].

[pʰ] is a voiceless aspirated bilabial stop:

[pʰowst] post

[rIpʰiyt] repeat

[p] is a voiceless unaspirated bilabial stop:

[spat] spot

[rIspɛkt] respect

[p̚] is a voiceless unreleased bilabial stop:

[kʰiyp̚] or [kʰiyp] for keep

[stap̚] or [stap] for stop

[p̚] occurs in free variation with [p] at the end of an utterance.

/b/: /b/ has the allophones [b] and [b̚].

[b] is a voiced unaspirated bilabial stop:

[bæt] bat

[beybiy] baby

[b̚] is a voiced unreleased stop:

[græb̚] grab

[stæb̚] stab

/t/: /t/ has the allophones [tʰ], [t], and [t̚].

[tʰ] occurs at the onset of a stressed syllables:

[tʰɛmpɚ] temper

[tʰeybl] table

[t] occurs preceded by a sibilant:

[stowriy] story

[t̚] occurs in free variation with [t] at the end of an utterance:

> [hɪt̚] or [hɪt] <u>hit</u>
>
> [pʰʊt̚] or [pʰʊt] <u>put</u>

/d/: /d/ has the allophones [d] and [d̚].

[d] is a voiced unaspirated alveolar stop:

> [dey] <u>day</u>
>
> [bɔdiy] <u>body</u>

[d̚] occurs in free variation with [d] at the end of an utterance in some varieties of American English:

> [kʰɪd̚] <u>kid</u>
>
> [guwd̚] <u>good</u>

/k/: /k/ has the allophones [kʰ], [k], and [k̚].

[kʰ] is a voiceless aspirated velar stop which occurs at the onset of a stressed syllable:

> [kʰaynd] <u>kind</u>
>
> [kʰærɪktɚ] <u>character</u>

[k] is an unaspirated velar stop:

> [beykɚ] <u>baker</u>

[k̚] is an unreleased velar stop at the end of an utterance:

> [kʰɪk̚] <u>kick</u>
>
> [stɔk] <u>stock</u>

/g/: /g/ has the allophone [g] which occurs everywhere:

> [gowst] <u>ghost</u>, [ɛg] <u>egg</u>
>
> [strʌgɫ] <u>struggle</u>

/č/: /č/ has the allophone [č]. [č] is an unaspirated
     voiceless alveopalatal affricates:

           [neyčɚ] <u>nature</u>

           [čɚč] <u>church</u>

/ǰ/: /ǰ/ has the allophone [ǰ]. [ǰ] is a voiced alveopalatal
     affricate: [ǰʌǰ] <u>judge</u>

           [mæǰIk] <u>magic</u>

/f/: /f/ has the allophone [f]. [f] is a voiceless labio-
     dental fricative:

           [fow] <u>foe</u>

           [Ifɛkt] <u>effect</u>

           [Inʌf] <u>enough</u>

/v/: /v/ has the allophone [v]. [v] is a voiced labiodental
     fricative: [viyuw] <u>view</u>

           [hɛviy] <u>heavy</u>

           [liyv] <u>leave</u>

/θ/: /θ/ has the allophone [θ]. [θ] is a voiceless dental
     fricative: [θiyn] <u>thin</u>

           [mɛθɔd] <u>method</u>

           [mIθ] <u>myth</u>

/ð/: /ð/ has the allophone [ð]. [ð] is a voiced dental
     fricative: [ðIs] <u>this</u>

           [ræðɚ] <u>rather</u>

           [suwð] <u>soothe</u>

/s/: /s/ has the allophone [s]. [s] is a voiceless alveolar
     fricative: [suwp] <u>soup</u>

[rəsiyv] <u>receive</u>

[beys] <u>base</u>

/z/: /z/ has the allophone [z]. [z] is a voiced alveolar

fricative: [zɛbrə] <u>zebra</u>

[blIzɚd] <u>blizzard</u>

[rowz] <u>rose</u>

/š/: /š/ has the allophone [š]. [š] is a voiceless alveo-

palatal fricative:

[šeym] <u>shame</u>

[tʰIšyuw] <u>tissue</u>

[pUš] <u>push</u>

/ž/: /ž/ has the allophone [ž]. [ž] is a voiced alveo-

palatal fricative:

[ruwž] <u>rouge</u>

[plɛžɚ] <u>pleasure</u>

/h/: /h/ has the allophone [h]. [h] is a voiceless glottal

fricative: [haw] <u>how</u>

[əhɛd] <u>ahead</u>

/m/: /m/ has the allophone [m], [m̩], [m̥] (Rick Floyd 31):

[m̥] is a voiceless bilabial nasal consonant after a

voiceless consonant and in particularly rapid

pronunciation:

[sm̥uwθ] <u>smooth</u>

[mɛm̥fIən] <u>Memphian</u>

[ɱ] is a voiced labiodental nasal consonant before a

labiodental fricative [f]:

[sImɟfəniy] <u>symphony</u>

[ɛmɟfəsIs] <u>emphasis</u>

[kʰʌmɟfɚt] <u>comfort</u>

[m] is a voiced bilabial nasal consonant which occurs everywhere:[mʌ̌ɚ] <u>mother</u>

[hæmɚ] <u>hammer</u>

[kʰowm] <u>comb</u>

/n/: /n/ has the allophone [n] and [ñ]. [ñ] is a voiced alveopalatal nasal consonant before a alveopalatal glide: [kʰæ̃ñən] <u>canyon</u>

[n] is a voiced alveolar nasal which occurs everywhere:

[nayt] <u>night</u>

[maynd] <u>mind</u>

[sʌn] <u>sun</u>

/ŋ/: /ŋ/ has the allophone [ŋ]. [ŋ] is a velar nasal consonant: [Iŋk] <u>ink</u>

[æŋgɚ] <u>anger</u>

[sIŋ] <u>sing</u>

/l/: /l/ has the allophone [l̥], [ɫ], and [l].

[l̥] is a voiceless alveolar lateral consonant after a voiceless consonant:

[pl̥ey] <u>play</u>

[ɫ] is a voiced bilateral alveolar consonant with the back of the tongue raised:

[fiyɫd] <u>field</u>

[fuwɫ] <u>full</u>

[l] is a voiced bilateral alveolar consonant which occurs word initially and before a vowel:

[liyv] leave

[ɛləmənt] element

/r/: /r/ has the allophone [r] and [ř]. [r] is a voiced alveolar liquid consonant occurs word initially and medially: [rawnd] round

[grow] grow

[r] is usually changed into schwa in a word final position: [fɔɚ] for

[dɔɚ] door

[ř] is an alveolar flap intervocalically: In American English, the alveolar /t/ and /d/ are often produced as flap [ř]: [bɛřɚ] better

[læřɚ] ladder

[wʌřɚ] water

[sæřɚdiy] saturday

/w/: /w/ has the allophone [ʍ] and [w]:

[ʍ] is a voiceless labio-velar glide which is usually symbolized as [hw], [w̥], or [hʍ]. This sound is found in dialects that distinguish which [hwɪč] from witch [wɪč] or while [hwayl] from wile [wayl] (Wolfram and Johnson 22).

[w] is a voiced labio- velar glide which occurs everywhere: [weyt] wait, [haw] how

[kʰrawd] crowd

/y/: /y/ also has allophones [y] and voiceless variant in some varieties of English, symbolized as [hy], [hj], or [y̥].

> [yardz] <u>yards</u>
>
> [ɔnyən] <u>onion</u>
>
> [yu] or [hyu] <u>Hugh</u>
>
> [yumən] or [hyumən] <u>human</u>

2.2 The Sounds of Korean

2.2.1 Introduction

Korean is a syllabary language with no contrast voiced vs. voiceless consonants. Laxness, tenseness, and aspiration are very important distinctive features because Korean aspirated sounds are phonemes, while English aspirated sounds are allophones. Korean rhythm gives approximately the same duration of time to each syllable regardless of the number of syllables involved. In English stresses on pitches are phonemes, but in Korean they have no distinctive features of contrast. The length of vowels, in Korean, is an important distinctive feature because it signals the distinction between the short and the long members of pair (Shin 2-6).

2.2.2 Korean Vowels

Korean has nine-vowel system. As with English, classification of Korean vowels is made according to the parameters of tongue height, tongue retraction, and lip rounding.

The following nine vowels are regarded as the under-lying phonemic vowels in Korean (vowel length is not considered here).[4]

(2.14)

	Front		Back	
High	i		ɨ	u
	e	ö	ə	o
Low	æ		a	

The matrix of distinctive features is represented as follow (Ahn 5):

(2.15)

	i	e	æ	ö	ɨ	ə	a	u	o
High	+	–	–	–	+	–	–	+	–
Low	–	–	+	–	–	–	+	–	–
Back	–	–	–	–	+	+	+	+	+
Round	–	–	–	+	–	–	–	+	+

2.2.2.1 Length of Vowel

The length of vowel, in Korean, has a function which distinguishes the meaning of a word. That is, the length of vowel is a phoneme. The length of vowel occurs only at word level, not in a phrase or sentence. The followings are the short and the long members of a pair in which meanings are distinguished by the length of vowel.

[mal] : [ma:l]   [nun] : [nu:n]
'horse' 'speech'   'snow'   'eye'

[kəri] : [kə:ri]   [pam] :   [pa:m]
'street' 'distance' 'chestnut' 'night'

[malda] : [ma:lda]   [sæ] : [sæ:]
'cease'   'roll'   'new'   'bird'

[talda]   [ta:lda]   [purɨda] : [pu:rɨda]
'sweet'   'weigh'   'call'   'full'

Long vowels, generally, occur in the initial syllable of a word, but the long vowel of the first syllable of a word becomes short when it occurs in the first syllable of second element of a compound word as in [ot+so:l] 'cloth + brush'⟶ [ots'ol]. Even though the length of a vowel is a phoneme, in casual speech the length of vowel of minimal pair is usually excluded. Therefore, distinguishing of meaning of minimal pair depends on the context.

2.2.2.2 Diphthongs

Korean has twelve diphthongs. They are classified into three main categories: "falling diphthongs toward back," "falling diphthongs toward front" and the "neutral diphthong." In diphthongs the point of articulation of /y/ and /w/ should be higher than the vowels which preceded or followed by them (Rhyu 201-209).

A. Falling diphthongs toward back

(2.16)
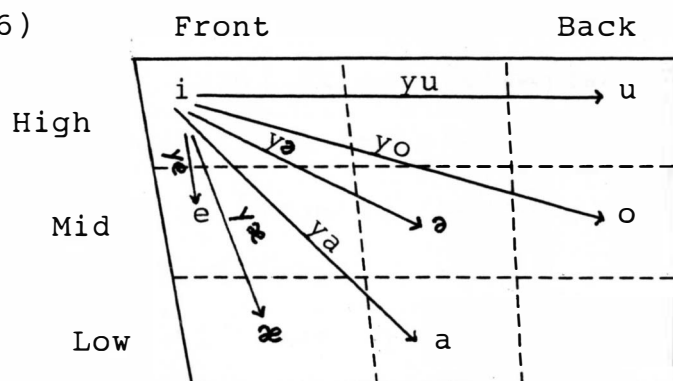
/ye/:   /yesul/ [yesul] 'art',   /muye/ [muye] 'military art'

/koŋyepʰum/ [koŋyepʰum] 'industrial art'

/yæ/:   /yæki/ [yægi] 'story', /yæ/ never occurs word

medially and finally.

/yə/:   /yəsəŋ/ [yəsəŋ] 'female', /muyəntʰan/ [muyəntʰan]

'smokeless coal'

/pyə/ [pyə] 'rice plant'

/ya/:   /yaku/ [yagu] 'baseball', /kohyaŋ/ [kohyaŋ] 'hometown'

/pʰyəŋya/ [pʰyəŋya] 'prairie'

/yo/:   /yosai/ [yosai] 'nowadays', /kɨm-yoil/ [kɨmyoil]

'friday'

/hak-kyo/ [hakk'yo] 'school'

/yu/:   /yutalli/ [yudallĩ] 'uncommonly', /pəpyul/ [pəmñul]

'law'

/kyəŋyu/ [kyəŋyu] 'via'

B. Falling diphthongs toward front

(2.17)
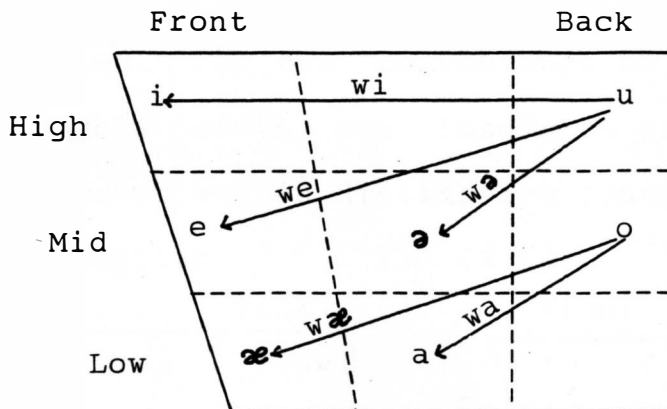
/wa/:   /waŋ/ [waŋ] 'king',/k'wæŋkwali/ [k'wæŋgwari] 'gong'

/kiwa/ [kiwa] 'tile'

/wæ/:   /wækali/ [wægari] 'heron', /s'wæki/ [s'wægi] 'wedge'

/wæ/ [wæ] 'why'

/wə/:   /wənsuŋi/ [wənsuŋi] 'monkey', /tækwəl/ [tægwəl]

'royal palace'

/we/: never occurs word-medially and finally.

/wenmankʰɨm/ [wemmaŋkʰɨm] 'some degree,

/wi/: /wiəm/ [wiəm] 'danger', /suwisil/ [suwiŝil]
'custodian room'
/səŋcʰwi/ [səŋcʰwi] 'accomplishment'

C. Neutral diphthong

/ɨy/ is the only neutral diphthong because /ɨ/ and /i/ belong to the neutral vowel.

/ɨy/: /ɨy/ occurs only syllable initially.

/ɨysa/ [ɨysa] 'medical doctor'

/ɨyhö/ [ɨyhö] 'congress' (cf. /hö-ɨy/ [hö-i] 'conference', /micucuɨy/ [minǰuǰu-i] 'democracy')

2.2.3 Comparison of Underlying Vowels of English and Korean

So far some systematic comparisons of the underlying vowels and their most common allophonic realizations have been illustrated. For the convenience of comparisons, the underlying vowels of the two languages are set out in an articulatory chart and in distinctive feature matrices.

(2.18)   English   (2.19)   Korean

(2.20) English

	i	I	e	ɛ	æ	ə	ʌ	a	u	U	o	ɔ
High	+	+	-	-	-	-	-	-	+	+	-	-
Low	-	-	-	-	+	-	+	+	-	-	-	+
Back	-	-	-	-	+	+	+	+	+	+	+	+
Tense	+	-	+	-	-	-	+	+	+	-	+	-
Round	-	-	-	-	-	-	-	-	+	+	+	+

(2.21) Korean

	i	e	æ	ö	ɨ	ə	a	u	o
High	+	-	-	-	+	-	-	+	-
Low	-	-	+	-	-	-	+	-	-
Back	-	-	-	-	+	-	+	+	+
Round	-	-	-	+	-	-	-	+	+

The important difference between two vowel systems is the feature [tense] which plays no role in Korean but is relevant for differentiating the English vowels.

With regard to diphthongs, all Korean diphthongs can be regarded as deriving from vowel+semivowel combinations. In English, the diphthongs /ey/ and /ow/ are derived from the [+tense] underlying vowels /e/ and /o/, whereas /aw/, /ay/, and /ɔy/ are derived from vowel+semivowel combinations.

2.2.4 Korean Consonants

Korean has twenty-one consonants. There are no con- trasts of voiced vs. voiceless in the stopped, affricated, and fricative sounds. Laxness, tenseness, and aspiration are important distinctive features because they are phonemes. Korean does not have underlying segment which corresponds to /r/ of English.

The following segments are all [-syl], i.e., con- sonants and glides (Ahn 5).

34

(2.22)

		Bilabial	Alveolar	Palatal	Velar	Glottal
Stop	tense[6]	p'	t'		k'	
	lax	p	t		k	
	aspirated	p^h	t^h		k^h	
Affricate	tense			c'		
	lax			c		
	aspirated			c^h		
Fricative	tense		s'[7]			h
	lax		s			
Nasal		m	n		ŋ	
Liquid			l			
Glide		w		y		

2.2.4.1   General Characteristics of Korean Consonants

2.2.4.1.1   Stops

There are three degrees of aspiration in stop sounds underlyingly: tense (unaspirated) consonants like /p',t',k', c',s'/, lax (slightly aspirated) consonants like /p,t,k,c,s/, and aspirated (heavily) consonants like /p^h,t^h,k^h,c^h/. These differences of aspiration are linguistically significant because they change the meaning of words completely. That is, Korean aspiration is phonemic but in English it is non-phonemic.   For instance, in words such as [p'ul] 'horn', [pul] 'fire', and [p^hul] 'grass', the slight differences in pronunciation between the three words distinguished utterances

which have different meanings. The differences between the three utterances may be isolated as a difference in the initial segment. The first word has an unaspirated p', the second word has a slightly aspirated p, and the third word has a heavily aspirated p^h. Therefore, in Korean the difference between [p'], [p], and [p^h] is very important because substitution of one sound for the other can change the meaning of the word. The other specific different characteristic is that voiced stops cannot be recognized as a unit of the phoneme. However, voiceless stops become voiced phonetically between vowels, and between sonorant sounds and vowels (Ahn 163).

/atɨl/ [adɨl] 'son'

/silpi/ [silbi] 'misty rain'

/kǝnkaŋ/ [kǝŋgaŋ] 'healthy'

/nunpola/ [numbora] 'blizzard'

/tampæ/ [tambæ] 'tobacco'

The relevant rule is:

(2.23)
$$\begin{bmatrix} +cons \\ -cont \\ -tense \end{bmatrix} \longrightarrow [+voiced] / \begin{Bmatrix} V \underline{\hspace{1cm}} V \\ C \\ \begin{bmatrix} +cons \\ -obst \end{bmatrix} \underline{\hspace{1cm}} V \end{Bmatrix}$$

2.2.4.1.2 Affricates

Korean has three affricate sounds: /c',c,c^h/. They never occur in the end of syllable. When the underlying form /c/ and /c^h/ occur in the end of syllable, they must be changed into [t] phonetically.

/salkac^h/ [salk'at] 'skin'

/cəcso/ [cəts'o] 'milky cow'

The rule is:

(2.24)
$$\begin{bmatrix} c \\ c^h \end{bmatrix} \longrightarrow [t] / \underline{\quad} \$ \quad (\$ \text{ indicates syllable boundary})$$

  The Korean student who learns English may have no difficulty in pronouncing of voiceless alveopalatal affricate sounds of English but voiced alveopalatal affricate [ǰ] may be considered as a problem to pronounce. It is because Korean has no voiced alveopalatal affricate sound.

2.2.4.1.3 Fricatives

  Korean does not have fricative sounds which correspond to /f,v,θ,ǯ,s,z,š,ž/ of English. Most of Korean students, therefore, tend to substitute their native sound which is nearest in place of articulation of corresponding English fricative sounds. Followings are the example of interference pattern of English fricative sounds.

(2.25) English (target): Korean (source):

English (target)	Korean (source)
[f]	[pʰ]
face [feys] ⟶	[pʰeys]
[v]	[p]
vote [vowt] ⟶	[powt]
[θ]	[s'] or [t']
thick [θIk] ⟶	[s'ik] or [t'ik]
[ǯ]	[t]
though [ǯow] ⟶	[tow]
[š]	[s]
shin [šIn] ⟶	[s̃in]

$$[z] \qquad\qquad [s]$$

peas [piyz] $\longrightarrow$ [p^{h}is]

2.2.4.1.4 Nasals

[n] never occurs in word-initial when it comes before high front tense vowel /i/ and glide /y/. [n] becomes [l] when it comes before or after [l].

/sinla/ [silla] 'Sinla Dynasty'

/k^{h}alnal/ [k^{h}allal] 'edge of a knife'

The rule would be:

(2.26) /n/ $\longrightarrow$ [l] / $\left\{ \begin{array}{l} l\underline{\quad\quad} \\ \underline{\quad\quad}l \end{array} \right\}$

Korean syllable structure does not allow a consonant cluster in the phonetic representation, although Korean allows a consonant cluster in phonemic representation. Therefore, ll in (2.26) is a phenomenon of gemination occurring when an assimilation process results in contiguous identical consonants. In English, gemination typically takes place in more casual and rapid speech styles such as in [gimmi] for give me and [lɛmmi] for let me. There are many cases of gemination which are subsequently reduced to a single segment, e.g., /lɛmmi/ to [lɛmi], /gimmi/ to [gimi]. Once assimilation has resulted in geminated forms, such reductions are to be expected (Wolfram and Johnson 92). But in Korean, geminate form is never reduced in a single consonant in phonetic form.

/n/ becomes [ŋ] when it occurs before /g/ and /k/.
/pankapta/ [paŋgapta] 'glad', /kənkaŋ/ [kəŋgaŋ] 'healthy'

The rule is:

(2.27)   /n/ ⟶ [ŋ] /——— $\left\{ \begin{array}{c} k \\ g \end{array} \right\}$

[ŋ] never occurs word initially, but [m] occurs everywhere.

2.2.4.1.5 Liquids

[l] occurs only syllable finally and never occurs word initially except in loanwords. Therefore, [l] tends to be replaced by [n] because [n] shares the same place of articulation with [l].

English (target)		Korean (source)
[l]	⟶	[n]
<u>line</u> [layn]	⟶	[nayn]
light [layt]	⟶	[nayt]

In North Korean, [l] occurs word initially.

North Korean:	South Korean:
[lodoŋ] 'labour'	[nodoŋ]
[lapʰal] 'trumpet'	[napʰal]
[lagwən] 'paradise'	[nagwən]

/l/ becomes [r] when it occurs between vowels.

/palam/ [param] 'wind'

/salam/ [saram] 'man'

The rule is:

(2.28)   /l/ ⟶ [r] / V———V

A Korean student has difficulty in distinguishing /l/ from /r/ of English because there is no contrast /l/ vs.

/r/ underlyingly in Korean. The followings are the example
of interference pattern which Korean student makes quite
often.

      English (target):   Korean (source):

        [l] ⟶ [r]

        <u>play</u> [pley] ⟶ [prey]

        <u>light</u> [layt] ⟶ [rayt]

    Moreover, a sharp distinction between clear [l] and
dark [ɫ] is not clear in Korean as in English. In English
the quality of the /l/ sound is changed according to the
allophonic distribution: clear [l] occurs word initially,
whereas dark [ɫ] occurs in word final. But in Korean the
quality of /l/ sound is never changed by the allophonic
distribution except intervocalic [r]. That is, /l/ has only
two allophones [l] and [r].

    /ulta/ [ulda] 'cry', /kəntal/ [kəndal] 'sluggard'

    /uli/ [uri] 'we', /tali/ [tari] 'bridge'

[r] never occurs underlyingly, but realized in phonetic form
intervocalically (see 2.28).

2.2.4.2 Distinctive Features for Korean Consonants

(2.29)

	p'	p	pʰ	t'	t	tʰ	s'	s	c'	c	cʰ	k'	k	kʰ	m	n	ŋ	l	w	y	h
syllabic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
sonorant	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	+	+	+	-
consonantal	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	+[8]
obstruent	+	+	+	+	+	+	+	+	+	+	+	+	+	+	-	-	-	-	-	-	-
high	-	-	-	-	-	-	-	-	+	+	+	+	+	+	-	-	+	-	+	+	-
back	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	+	-	+	-	-
low	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+
anterior	+	+	+	+	+	+	+	+	-	-	-	-	-	-	+	+	-	+	-	-	-
coronal	-	-	-	+	+	+	+	+	+	+	+	-	-	-	-	+	-	+	-	-	-
continuant	-	-	-	-	-	-	+	+	-	-	-	-	-	-	-	-	-	+	+	+	+
strident	-	-	-	-	-	-	+	+	+	+	+	-	-	-	-	-	-	-	-	-	-
del rel	-	-	-	-	-	-	+	+	+	+	+	-	-	-	+	+	+	+	+	+	+
nasal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	+	+	-	-	-	-
lateral	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-	-	-
tense	+	-	+	+	-	+	+	-	+	-	+	+	-	+	-	-	-	-	-	-	-
aspirate	-	-	+	-	-	+	-	-	-	-	+	-	-	+	-	-	-	-	-	-	-

In order to make explicit the difference of distinctive fetures between two languages, the distinctive feature matrices of two languages are illustrated on next page.

(2.30)

English:

Feature matrix (left block):

	h	y	w	r	l	ŋ	n	m	ǰ	ð	θ	v	f	g	k	j	č	z	s	ž	š	d	t	b	p
syl	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
son	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
cons	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
hi	−	+	+	−	−	+	−	−	−	−	−	−	−	+	+	+	+	−	−	−	−	−	−	−	−
lo	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
bk	−	−	+	−	−	+	−	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−
ant	−	−	−	−	+	−	+	+	+	+	+	−	−	−	−	−	−	+	+	+	+	+	+	+	+
cor	−	−	−	+	+	−	+	−	+	+	−	−	−	−	−	+	+	+	+	+	+	+	+	−	−
cont	+	+	+	+	+	−	−	−	+	+	+	+	+	−	−	−	+	+	+	+	−	−	−	−	−
str	−	−	−	−	−	−	−	−	+	−	−	+	+	−	−	−	+	+	+	+	+	−	−	−	−
d.r	+	+	+	+	+	+	+	+	+	+	+	+	−	+	+	+	+	+	+	+	−	−	−	−	
nas	−	−	−	−	−	+	+	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
lat	−	−	−	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
tens	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
asp	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
vd	−	+	+	+	+	+	+	+	−	−	+	−	+	−	+	−	+	−	+	−	+	−	+	−	−
obst	−	−	−	−	−	−	−	−	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
pala	−	+	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	−	−	−	−	−	−
labi	−	−	+	−	−	−	−	+	−	−	−	+	+	−	−	−	−	−	−	−	−	−	−	+	+

Feature matrix (right block):

	p	p'	pʰ	t	t'	tʰ	s	s'	c	c'	cʰ	k	k'	kʰ	m	n	ŋ	l	w	y	h
syl	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−
son	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	+	−
cons	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	+
hi	−	−	−	−	−	−	+	+	+	+	+	+	−	−	+	−	+	−	+	+	−
lo	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+
bk	−	−	−	−	−	−	−	−	−	−	+	+	+	−	−	+	−	+	+	−	−
ant	+	+	+	+	+	+	+	−	−	−	−	−	−	−	+	+	−	+	−	−	−
cor	−	−	−	+	+	+	+	+	+	+	+	−	−	−	−	+	−	+	−	−	−
cont	−	−	−	−	−	−	+	+	−	−	−	−	−	−	−	−	−	+	+	+	+
str	−	−	−	−	−	−	+	+	+	+	+	−	−	−	−	−	−	−	−	−	−
d.r	−	−	−	−	−	−	+	+	+	+	+	−	−	−	+	+	+	+	+	+	−
nas	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	−	−	−	−
lat	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−
tens	−	+	+	−	+	+	−	+	−	+	+	−	+	+	−	−	−	−	−	−	−
asp	−	−	+	−	−	+	−	−	−	−	+	−	−	+	−	−	−	−	−	−	−
vd	−	−	−	−	−	−	−	−	−	−	−	−	−	−	+	+	+	+	+	+	−
obst	+	+	+	+	+	+	+	+	+	+	+	+	+	+	−	−	−	−	−	−	−
pala	−	−	−	−	−	−	+	+	+	−	−	−	−	−	−	−	−	−	−	+	−
labi	+	+	+	−	−	−	−	−	−	−	−	−	−	−	+	−	−	−	+	−	−

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2.2.4.3 Distribution of Allophones

/p/: /p/ has allophones [p] and [b].

    [p] occurs word initially:

        /palam/ [param] 'wind'

        /pom/ [pom] 'spring'

        /pul/ [pul] 'fire'

    [p] is never released syllable finally:

        /tætap/ [tædap] 'answer'

        /haptoŋ/ [haptoŋ] 'union'

    [b] occurs intervocalically:

        /nunpola/ [numbora] 'blizzard'

        /hopak/ [hobak] 'pumpkin'

/p'/: /p'/ has the allophone [p']. [p'] never occurs

    syllable finally:

        /p'alkaŋ/ [p'algaŋ] 'red'

        /op'a/ [op'a] 'girl's elder brother'

/pʰ/: /pʰ/ has the allophone [pʰ]. [pʰ] never occurs

    syllable finally:

        /pʰul/ [pʰul] 'grass'

        /hapʰum/ [hapʰum] 'yawning'

    [pʰ] becomes [p] when it occurs syllable finally:

        /ipʰ/ [ip] 'leaf' (cf. /ip/ [ip] 'mouth')

        /kipʰta/ [kipta] 'deep' (cf. /kipta/ [kipta]
                             'stitch')

/t/: /t/ has allophones [t] and [d].

    [t] occurs only word initially:

/talamcwi/ [taramǰwi] 'squirrel'

/tolkolæ/ [tolgoræ] 'dolphin'

[t] is never released syllable finally:

/kot/ [kot] 'at once'

/mut^h/ [mut] 'land'

[d] occurs intervocalically:

/untoŋ/ [undoŋ] 'excercise'

/toltali/ [toldari] 'stone bridge'

/t'/: /t'/ has the allophone [t']. [t'] never occurs
       syllable finally:

/t'alki/ [t'algi] 'strawberry'

/ot'uki/ [ot'ugi] 'roly-poly'

/t^h/: /t^h/ has allophone [t^h]. [t^h] never occurs
        syllable finally:

/t^hok'i/ [t^hok'i] 'rabbit'

/k'at^huli/ [k'at^huri] 'pheasant'

/t^h/ becomes [t] when it occurs syllable finally:

/mut^h/ [mut] 'land'

/kət^h/ [kət] 'surface'

/k/: /k/ has allophones [k] and [g].

   [k] occurs word initially:

/kutu/ [kudu] 'shoes'

/kulɨm/ [kurɨm] 'cloud'

   [k] is never released syllable finally:

/kiək/ [kiək] 'memory'

/sikak/ [sigak] 'time'

[g] occurs intervocalically:

/pulkoki/ [pugogi] 'roast beef'

/kokæ/ [kogæ] 'hill'

/k'/: /k'/ has the allophone [k']. [k'] never occurs
syllable finally: /k'um/ [k'um] 'dream'

/t'alk'ukcil/ [t'alk'ukʃil] 'hiccough'

/kʰ/: /kʰ/ has the allophone [kʰ]. [kʰ] never occurs
syllable finally: /kʰal/ [kʰal] 'knife'

/mulkalkʰwi/ [mulɡalkʰwi] 'web'

All stop consonants, except tense stops, are never
released when they occur syllable finally. The rule is:

(2.31)   [stop] ⟶ [unreleased] / ⎯⎯ $

/s'/: /s'/ has allophones [s'] and [t]. [s'] never occurs
syllable finally: /s'aŋtuŋi/ [s'aŋduŋi] 'twin'

/soms'i/ [soms'i] 'dexterity'

/s/: /s/ has allophones [s] and [t]. [s] never occurs
syllable finally:

/salaŋ/ [saraŋ] 'love'

/kasɨm/ [kasɨm] 'chest'

[s'] and [s] become [t] when they occur syllable
finally:

/tasəs/ [tasət] 'five'

/s'is'ta/ [s'itta] 'wash'

The rule is:

(2.32) $\left\{\begin{array}{c} s \\ s' \end{array}\right\}$ ⟶ [t] / ⎯⎯ $

/c/: /c/ has allophones [c], [ǰ], and [t]. [c] occurs

syllable finally:

/camcali/ [camǰari] 'dragon fly'

/cicin/ [ciǰin] 'earthquake'

[ǰ] occurs intervocalically:

/soŋaci/ [soŋaǰi] 'calf'

/cacənk / [caǰəŋgə] 'bicycle'

/c'/: /c'/ has the allophone [c']. [c'] never occurs

syllable finally:

/c'aksu/ [c'aks'u] 'even number'

/tʰöc'a/ [tʰöc'a] 'rejection'

/cʰ/: /cʰ/ has allophones [cʰ] and [t]. [cʰ] never occurs

syllable finally:

/cʰæk/ [cʰæk] 'book'

/kicʰa/ [kicʰa] 'train'

/c/ and /cʰ/ become [t] when they occur syllable

finally:

/cicta/ [citta] 'bark'

/k'ocʰ/ [k'ot] 'flower'

The rule is:

(2.33) $\left\{ \begin{matrix} c \\ c^h \end{matrix} \right\} \longrightarrow [t] / \underline{\quad} \$$

/m/: /m/ has the allophone [m]. [m] occurs everywhere.

/mataŋ/ [madaŋ] 'yards'

/imo/ [imo] 'mother's sister'

/sɨlpʰɨm/ [sɨlpʰɨm] 'sadness'

/n/:   /n/ has the allophones [n] and [ñ]. [n] occurs
       everywhere:

              /nala/ [nara] 'nation'

              /nakwi/ [nagwi] 'donkey'

              /kipun/ [kibun] 'mood'

          [n̂] occurs before [i] or [y]:

              /ənni/ [ənñi] 'girl's elder sister'

              /cənyək/ [cəñək] 'evening'

/ŋ/:   /ŋ/has the allophone [ŋ]. [ŋ] never occurs syllable
       initially:

              /kaŋaci/ [kaŋaǰi] 'puppy'

              /maŋaci/ [maŋaǰi] 'pony'

              /hɨymaŋ/ [himaŋ] 'hope'

/l/:   /l/ has allophones [l] and [l̂]. [l] never occurs
       syllable initially, except loan-word:

              /tal/ [tal] 'moon'

              /nolæ/ [noræ] 'song'

          [l̂] occurs before [y]:

              /hunlyən/ [hull̂ən] 'training'

              /hullyuŋ/ [hull̂uŋ] 'excellent'

/w/:   /w/ has the allophone [w]. [w] never occurs syllable
       finally: /wancən/ [wanǰən] 'perfection'

              /panwəl/ [panwəl] 'half-moon'

/y/:   /y/ has the allophone [y]. [y] never occurs syllable
       finally: /yumyəŋ/ [yumyəŋ] 'fame'

/h/:   /h/ has the allophone [h]. [h] never occurs syllable

finally:

/hana/ [hana] 'one'

/ahop/ [ahop] 'nine'

2.2.4.4   Brief Review of Phonological Differences Between
          English and Korean

In preceding sections phonological differences of
consonants of two languages have been enumerated through the
chart of distinctive features and allophonic distributions.

The salient phonological differences between two
languages are briefly named one by one.

a. Korean is syllabary language, while English is a
stressed language. That is, in Korean syllables are isochro-
nic with no intonation contours at the end of sentences,
whereas in English stress is isochronic with an unmarked
falling intonation contour at the end of sentences.

b. Korean has no voiced consonant except lateral and
nasals, but lax (slightly aspirated) consonants except /s/,[9]
have voiced counterpart as allophone when they occur inter-
vocalically.

c. Korean has no labio-dental fricatives (f,v),
dental fricatives (θ,ð), or alveopalatal fricatives (š,ž).

d. Korean does not have the phonemic equivalents of
English /b,d,g/, except as allophones, when the lax stop
consonants become voiced between sonorant sounds.

e. Korean has no contrasts of /l/ vs. /r/ underlyingly. /l/ becomes [r] allophonically between vowels.

f. Consonants, which occur in the end of syllable, are only seven in Korean: /p,t,k,m,n,ŋ,l/.

g. English aspirated sounds are allophones, but Korean aspirated sounds are phonemes.

h. In English [pʾ,tʾ,kʾ] occur in free variation with [p,t,k] respectively at the end of words, whereas in Korean [p,t,k] are consistantly unreleased when they occur syllable finally.

Notes for Chapter 2

1. In discussing the properties of English vowels, there are slightly different view of quality of [mid] and [low] vowels between linguists, even though there are no different views of quality of high front, high back, mid front, and mid back vowels. For instance, there is no schwa /ə/ in Chomsky and Halle's vowel chart, whereas Ladefoged's vowel chart has /ə/ and /ʌ/. Chomsky and Halle regard /ɔ/ as [+low] and [-tense], whereas Ladefoged defines /ɔ/ as [-low] and [+tense], among still others Wolfram and Johnson insist /ɔ/ has the quality of [+low] and [+tense]. I followed the Ladefoged system. But I substitute Ladefoged's transcription with Prator and Robinette's because it is a good example of a set of symbols useful for teaching the pronunciation of American English to speakers of other languages.

2. The matrix of distinctive features presented here is taken primarily from Chomsky and Halle (176), with some more recent modifications (Wolfram and Johnson 67). So this list of features may differ slightly from those presented by Chomsky and Halle.

3. Although the glottal fricative [h] is normally voiceless, it may have a slight voicing quality like semivowel [w,y]. Therefore, the three sounds which are [-syl] and [-cons], that is [w,y,h], are described by some of the same features for vowels. [y] is [+high], [-back], and [+voice]. [w] is [+high], [+back], and [+voice]. [h] is [+low], [+back], and [-voice]. These sounds are often called glides. When they occur before vowels as in [hat], [wɛt], [yɛt], they function as consonants. When they combine with a vowel as in [meyt] or [mown], they function as vowels. They are, therefore, sometimes called vowels (Liles 186; Ladefoged 248).

4. There are many different views on the Korean vowel system. For instance, Choi (1973) posits 9 vowels (i,e,æ,ɨ,ŏ,ə,a,u,o), Martin (177-189) also posits 9 vowels (i,e,ɛ,ɨ,ə,ŏ,a,u,o), C-W, Kim (516-527) posits 4 vowels (ɨ, ə,a,o), I-H, Lee (19-44) 8 vowels (i,e,ɛ,ɨ,ə,a,u,o), B-G, Lee (1973) 10 vowels (i,e,ɛ,ü,ö,ɨ,ə,a,u,o). But 9 vowels system (Choi) is generally used in textbook in Korea.

5. Korean does not have rounded diphthongs. /ö/ is often pronounced as diphthong /we/ in dialect of central district of Korea.

6. The Korean unaspirated (tense) consonant seems to be equivalent to pharyngeal air sounds (also called glottalized or ejectives). Pharyngeal air sounds are not aspirated, since aspiration is associated with a stream of air from the lungs, not the pharynx (Rick Floyd 86-87). For example: [p'ul]   [pˀul]   'horn'

                          [t'al]   [tˀal]   'daughter'

                          [k'ul]   [kˀul]   'honey'

                          [c'ata]   [cˀda]   'squeeze'

                          [s'irɨm]   [sˀirɨm] 'wrestling'

The Korean orthography represented as the character for the unaspirated fortis consonant (tense) is a gemination of its lenis counterpart (Kim 4-5).

                    p' ——— pp (ㅃ)
                    t' ——— tt (ㄸ)
                    k' ——— kk (ㄲ)
                    c' ——— cc (ㅉ)
                    s' ——— ss (ㅆ)

7. Unlike other obstruents with three degrees of aspiration, there is no /sʰ/ which is expected in column of alveolar fricative sound. It is because Korean /s/ has more aspiration than a standard IPA [s], and /s/ is an exception

to intervocalically voicing rule which other lax obstruents undergo (Kim 147-154).

8. In Korean /h/ is categorized as a consonant for several reasons, although it is the weakest consonant. First, as a syllable-final segment, it causes aspiration of the following lax consonant (except /s/):

/hayah + ta/ [hayat^{h}a] 'to be white'

Second, it can be followed by a sequence of glide + vowel, e.g., /hwa/ 'anger' and the Korean syllable structure does not allow any glide cluster in word initial position. Third, like other consonants, /h/ is coalesced when it is followed by another consonant, because Korean syllable structure does not allow syllable final CC-cluster in surface forms, e.g., /manh/ [man] 'to be abundant'.

9. /s/ is ruled out from voicing rule because, in Korea, only [-continuant] obstruents including the affricate /c/ as well as stops /p, t, k/ undergo voicing.

CHAPTER 3

PHONOLOGICAL PROCESSES OF ENGLISH AND KOREAN

3.0 Introduction

Phonology is not a static system in which an established unit remains unchanged in all its occurrences. Rather, it is a dynamic system in which units change as they come into contact with other units in the system. We refer to such changes as phonological processes (Wolfram and Johnson 88).

There is a universal principle that applies to all sound systems, namely, that sound units tend to be influenced by their environment. When morphemes are combined to form words, the segments of neighboring morphemes become juxtaposed and sometimes undergo change. For instance, in morphologically related forms <u>electric</u>, <u>electrical</u>, <u>electricity</u>, and <u>fanatic</u>, <u>fanatical</u>, <u>fanaticism</u>. Here the final /k/ of <u>electric</u> and <u>fanatic</u> becomes /s/ before a morpheme beginning with <u>i</u>. Changes also occur in larger or non-contiguous segments other than those in which two morphemes come together, for example, word initial and word final positions, or the relation of a segment vis-a-vis a stressed vowel (Schane 49).

3.1 Categories of Phonological Processes

There are five categories in phonological processes: assimilation, where segments become more alike neighboring segment; dissimilation, where segments become less alike

neighboring segments; syllable structure process, where there is alteration in the distribution of consonants and vowels; weakening and strengthening, where segments are modified according to their position in the word; and neutralization, where segments merge in a particular environment (Schane 49-60).

3.1.1 Assimilation

One of the most common types of phonological process found in language is assimilation. In terms of the tradition-al classification of phonological changes, there are two categories: one is the assimilation to the place of articula-tion of a neighboring sound; the other is the assimilation to the manner of articulation.

3.1.2 Dissimilation

Whereas assimilation refers to the process in which segments take on the character of neighboring segments, dis-similation refers to the process in which segments change to become less like a neighboring segment. On the whole, both in place and manner, dissimilation is much rarer than assimila-tion.

3.1.3 Syllable Structure Processes

Syllable structure processes affect the distribution of consonants and vowels within the word. Consonants or vowels may undergo deletion or insertion. Additionally, two segments may undergo coalescence into a single segment. A segment may

change major class features such as a vowel becoming a glide or two segments may interchange (metathesis). Finally, any of these processes could cause an alteration in the original syllable structure (Schane 52-56).

3.1.4 Weakening and Strengthening

Not all changes in syllabic structure necessarily lead to simpler syllable structure. The syllable structure might become more complex if a vowel in an original CVCV configuration were to be deleted so that two consonants come together. Such deletions are often caused by segments occupying a weakly stressed position in the syllable. In processes of aphesis, syncope, and apocope, the important factor is the weakening. That is, aphesis refers to the loss of an unstressed initial vowel or syllable, syncope is the loss of a medial vowel or syllable, and apocope is the loss of a final vowel or syllable. Stressed vowels and tense vowels are the strong ones. Whereas weak vowels may undergo aphesis, syncope, apocope or reduction, strong vowels frequently diphthongize (Schane 57-58).

3.1.5 Neutralization

Neutralization is the particular process that results in the cancellation of contrasts between phonological units. That is, two or more units that ordinarily contrast lose that contrast in certain environments (Wolfram and Johnson 93-94).

3.2   Phonological Processes of English

3.2.1   Assimilation

3.2.1.1   Assimilation to the Place of Articulation

3.2.1.1.1   Nasal Assimilation

/n/ assimilates in place of articulation to a follow-ing obstruent or nasal.   In English negative prefix /in-/ is the one of the most widely cited cases of assimilation to the place of articulation.

indirect [IndIrɛkt], integrity [Int^{h}ɛgrItiy]

input [ImpUt],   inbound [Imbawnd]

important [Imp^{h}ɔrtənt], immature [Imæč ə]

incomplete [Iŋk^{h}ʌmplIt], inglorious [IŋglɔrIəs]

The relevant rule is:

(3.1)

$$[+nas] \longrightarrow \left\{ \begin{bmatrix} +ant \\ +cor \end{bmatrix}(n) \atop \begin{bmatrix} +ant \\ -cor \end{bmatrix}(m) \atop \begin{bmatrix} -ant \\ -cor \end{bmatrix}(ŋ) \right\} / \underline{\hspace{1cm}} \left\{ \begin{bmatrix} +ant \\ +cor \end{bmatrix}(t,d, \text{ etc.}) \atop \begin{bmatrix} +ant \\ -cor \end{bmatrix}(p,b, \text{ etc.}) \atop \begin{bmatrix} -ant \\ -cor \end{bmatrix}(k,g, \text{ etc.}) \right\}$$

This rule may be simplified as following alpha-variables (Wolfram and Johnson 136-137).[1]

(3.2)

$$[+nas] \longrightarrow \begin{bmatrix} \alpha ant \\ \beta cor \end{bmatrix} / \underline{\hspace{1cm}} \begin{bmatrix} -son \\ \alpha ant \\ \beta cor \end{bmatrix}$$

3.2.1.1.2   Gemination

When an assimilation process results in contiguous identical consonants, it is called gemination.   There are a

number of cases of gemination in English which typically take place in more casual and rapid speech style. Some of these are fairly well known, as in /gimmi/ for <u>give me</u> and /lɛmmi/ for <u>let me</u>. There are many cases of gemination which are subsequently reduced to a single segment (e.g., /lɛmmi/ to /lɛmi/, or /gimmi/ to /gimi/). Once assimilation has resulted in geminate forms, such reductions are to be expected.

3.2.1.1.3 Palatalization

Palatalization is the assimilation process in which a consonant sound takes on the quality of a high front vowel or glide. In English velar stop /k/ and /g/ become [s] and [ǰ] respectively before high front vowel /i/ and glide /y/:

<u>electric</u> [IlɛktrIk] ⟶ <u>electricity</u> [IlɛktrIsItiy]

<u>fanatic</u> [fənætIk] ⟶ <u>fanaticism</u> [fənætIsIzm]

<u>analogous</u> [ənæləgəs] ⟶ <u>analogy</u> [ənæləǰiy]

The rule is:

(3.3) $\begin{Bmatrix} k \\ g \end{Bmatrix} \longrightarrow \begin{Bmatrix} s \\ \check{j} \end{Bmatrix} / \underline{\quad} \begin{Bmatrix} i \\ y \end{Bmatrix}$

These process of alternations reflect a historical palatalization followed by a shift in place of articulation (Schane 50).

The most common palatalization process in English is that the alveolar stop /t/, /d/, and alveolar fricative /s/ become [č], [ǰ], and [š] before [i] or [y]:

<u>meet you</u> /mItyuw/ [mIčə]

<u>picture</u> /pIktyuwɚ/ [pʰIkčɚ]

did you /dɪdy̆uw/ [dɪǰə]

miss you /mɪsyuw/ [mɪšə]

position /pʰəzɪšən]

The rule is:

(3.4)
$$\left\{\begin{matrix} t \\ d \\ s \end{matrix}\right\} \longrightarrow \left\{\begin{matrix} č \\ ǰ \\ š \end{matrix}\right\} / \underline{\quad} \left\{\begin{matrix} i \\ y \end{matrix}\right\}$$

3.2.1.1.4 Labialization

In some varieties of English, /l/ becomes [w] when it occurs before some consonants:

/ɛlm/ [ɛwm] elm

/fɪlm/ [fɪwm] film

/mɪlk/ [mɪwk] milk

/pʌlp/ [pʰʌwp] pulp

/mɪlwɔkiy/ [mwɔkiy] Milwaukee

3.2.1.2 Assimilation to the Manner of Articulation

One of the most widely cited cases of assimilation to the manner of articulation in English is the suffix of plural noun, possessive, third person singular, and the regular past tense suffix in voicing with a preceding consonant. The voicing of the plural suffix is dependent on the voicing of the preceding segment. In this rule, the initial consonant in a suffix matches the voicing specification of the final consonant of the base. This rule also applies to the regular past tense suffix, third person singular verb, and possessive form.

$$\underline{\text{cats}} \ [k^h\text{æts}]\text{------}[k^h\text{æbz}] \ \underline{\text{cabs}}$$

$$\underline{\text{packs}} \ [p^h\text{æks}]\text{------}[t^h\text{ægz}] \ \underline{\text{tags}}$$

$$\underline{\text{Rick's}} \ [\text{rIks}]\text{------}[t^h\text{ɔmz}] \ \underline{\text{Tom's}}$$

$$\underline{\text{speaks}} \ [\text{spIks}]\text{------}[\text{sɛz}] \ \underline{\text{says}}$$

In this case, the voiceless sibilant fricative [s] is used when the preceding segment is voiceless, and the voiced is used when the preceding segment is voiced. The voicing rule is:

(3.5)
$$\begin{bmatrix} +ant \\ +cor \\ +str \\ -vd \end{bmatrix} \longrightarrow [+vd] \ / \ [+vd] \ \underline{\quad} \ \# \ \text{(plural, 3rd singular possessive)}$$

/s/   [z]

$$\underline{\text{picked}} \ [p^h\text{Ikt}]\text{------}[\text{brægd}] \ \underline{\text{bragged}}$$

$$\underline{\text{rapped}} \ [\text{ræpt}]\text{------}[\text{reyzd}] \ \underline{\text{raised}}$$

$$\underline{\text{passed}} \ [p^h\text{æst}]\text{------}[\text{rIbd}] \ \underline{\text{ribbed}}$$

In this case, the voiceless stop is used when the preceding segment is voiceless, and the voiced stop is used when the preceding segment is voiced. The devoicing rule is:

(3.6)
$$\begin{bmatrix} +ant \\ +cor \\ -cont \\ +vd \end{bmatrix} \longrightarrow [-vd] \ / \ [-vd] \ \underline{\quad} \ \# \ \text{(past)}$$

/d/   [t]

3.2.2 Dissimilation

Whereas assimilation refers to the process in which

segments take on the character of neighboring segments, dissimilation refers to the process in which segments change to become less like a neighboring segment (Wolfram and Johnson 93). In the word of <u>diphthong</u>, the sequence of two voiceless fricatives [fθ] symbolized by the medial <u>phth</u> requires an effort to enunciate. Consequently, many speakers pronounce medial [pθ], replacing fricative [f] with stop [p] as in followings:

/dIfθɔŋ/ [dIpθɔŋ] <u>diphthong</u>

/næfθa/ [næpθa] <u>naphtha</u>

/dIfɛɾriyə] <u>diphtheria</u>

Another example of dissimilation is the case of [ðz] and [θs] as in [klowðz] <u>clothes</u> and [fIftInθ sɛnčuəriy] <u>fifteenth century</u>. Also, in these cases, <u>ths</u> requires an effort to pronounce exactly. So, [ð] or [θ] are reduced as in [klowz] and [fIftInsɛnčuriy].

The ultimate dissimilation is the complete loss of one sound because of its proximity to another similar sound (Pyles and Algeo 39).

3.2.3 Syllable Structure Processes

3.2.3.1 Deletion

In the phonological process of deletion, units which occur in some contexts are lost in others. In many cases, deletion processes change the syllable structure of a word, thereby creating preferred types of syllable patterns. For example, deletion processes may break up clusters of consonants or vowels in order to arrive at the more universally preferred

CV pattern. Thus if we look at the alternation of the indefinite article forms <u>a</u> and <u>an</u> before items beginning with a vowel, this distribution prevents the occurrence of CC or VV seqence (Wolfram and Johnson 95).

3.2.3.1.1 Consonant Deletion

One of the most typical processes of deletion is the <u>g-deletion</u>. For example, consider the relationship between following forms:

    [sayn] <u>sign</u>,   [sIgnəčɚ] <u>signature</u>

    [rIzayn] <u>resign</u>, [rɛzIgneyšən] <u>resignation</u>

In this case, we can observe that <u>g</u> is deleted when it occurs before word final <u>n</u>, but <u>g</u> occurs when a suffix like <u>-ature</u> or <u>-ation</u> is added. The relevant rule is:

(3.7)

$$\begin{bmatrix} +ant \\ -dr \\ +vd \end{bmatrix} \longrightarrow \emptyset \ / \ \underline{\quad\quad} \ [+nas]$$

    /g/   /n/

The other case of <u>g</u>-deletion we can observe in English is as followings:

    [sIŋ] <u>sing</u>   [sIŋɚ] <u>singer</u>

    [hæŋ] <u>hang</u> [hæŋɚ] <u>hanger</u>

    [brIŋ] <u>bring</u> [brIŋɚ] <u>bringer</u>

In this process, n-assimilation occurs first, and then /g/ is deleted.

However, in case of <u>finger</u>, <u>jungle</u>, <u>hunger</u>, <u>g</u> is not

deleted. Because the q's in these words differ from those mentioned above in terms of phonological boundary. That is, singer is different from finger in terms of morphorphoneme:

#singer#   #finger#

*[sɪŋgəʳ]   [fɪŋgəʳ]   (+: morpheme boundary)

[sɪŋ+əʳ]   *[fɪŋ+əʳ]

Historically speaking, /-ng/ had long been practically universally in pronounced [-n]. According to Wyld, "This habit obtains in practically all regional dialects of the South Midlands, and among large sections of speakers of Received Standard English (289). "The velarization of the /n/ to [ŋ] began as a hypercorrect pronunciation in the first quarter of the nineteenth century and, still according to Wyld, "has now a vogue among the educated at least as wide as the more conservative one with [-n] (289). "Long before Wyld wrote these words, the [-n] pronunciation had come to be considered substandard in many parts of the United States, largely because of the crusade that teachers had conducted against it, though it continues to occur rather widely in unselfconscious speech on all social levels (Pyles and Algeo 179).

Another widely recognized case of deletion in casual conversation of English is as follow:

/wɛst sayd/ [wɛs sayd] west side

/blaynd mæn/ [blayn mæn] blind man

/wayld gus/ [wayl gus] wild goose

In these examples, the final segment of a word final consonant is deleted when the following word begins with a consonant. If the following word begins with a vowel, this process usually does not apply. Deletion processes of this type are relatively common in casual speech styles.

3.2.3.1.2 Vowe Deletion

In certain English morphemes which terminate in a vowel, the vowel is deleted before a suffix beginning with a vowel (Schane 53):

Mexico [mɛksIkow] ⟶ Mexican [mɛksIkən]

cello [čɛlow] ⟶ cellist [čɛlIst]

Spain [spɛin] ⟶ Spanish [spænIš]

In contracted forms of English such as He's pretty, You're intellegent, vowel i and a are also deleted. This type of deletion process is also relatively common in rapid speech styles.

3.2.3.2 Epenthesis

Inserting a sound segment into a word is called epenthesis. Both vowels and consonants may be inserted in epenthetic processes.

3.2.3.2.1 Consonant Epenthesis

The automatic insertion of voiceless stops is a good examples of epenthesis. The [p] which sometimes occurs in words like attempt [əthɛmpt] and comfort [khʌmpfɚt] results from a process which inserts a voiceless stop following nasal and preceding another voiceless consonant. The same epenthetic

process occurs in words like <u>since</u> [sInts] and <u>sense</u> [sɛnts].

The epenthetic stop matches the place of articulation of the nasal (Wolfram and Johnson 98):

$$/sʌmeIŋ/ \quad [sʌmpθIŋ] \quad \underline{something}$$

$$/wɔrmθ/ \quad [wɔrmpθ] \quad \underline{warmth}$$

$$/čɔmskiy/ \quad [čɔmpskiy] \quad \underline{Chomsky}$$

$$/əkrɔs/ \quad [əkrɔst] \quad \underline{across}$$

$$/tʰɛns/ \quad [tʰɛnts] \quad \underline{tense}$$

The relevant rule would be:

(3.8)

$$\emptyset \longrightarrow \begin{bmatrix} +ant \\ -cont \\ -vd \end{bmatrix} / \ [+nas] \ \underline{\qquad} \ \begin{bmatrix} +ant \\ +cor \\ -vd \end{bmatrix}$$

$$[p,t] \qquad [m,n] \qquad [θ,s]$$

3.2.3.2.2   Vowel Epenthesis

The insertion of the vowel in plurals and regular past tense (so called I-epenthesis) is a general process in English. The vowel of [Iz] in [bʌsIz] <u>buses</u> and [fIšIz] <u>fishes</u> is inserted between sibilants. This phenomenon of insertion is understandable since the addition of /s/ or /z/ to a word which ends in a sibilant would result in a doubled or length-ened segment. This might be difficult to perceive as a plural form (e.g., *[rozz] <u>roses</u> or *[bʌss] <u>buses</u>). Adding the vowel makes the plural formation easier to perceive. The rule of plural epenthesis is as follow:

(3.9)

$$\emptyset \longrightarrow I / \begin{bmatrix} +cor \\ +str \\ +dr \end{bmatrix} \# \ \underline{\qquad} \ plural$$

The other I-epenthesis occurs in the regular past tense. The consonant involved are different with plural epenthesis, but the general principle is the same.

[pʰlæntId] <u>planted</u>

[stʌdiyd] <u>studied</u>

[weytId] <u>waited</u>

In these examples, if the base form ends in /t/ or /d/, then the vowel will be inserted to keep two alveolar stops from occurring next to each other.

The rule is:

(3.10)
$$\emptyset \longrightarrow I \ / \begin{bmatrix} +cor \\ -str \\ -dr \end{bmatrix} \# \underline{\quad} \ past$$

Another instance of epenthesis concerns the schwa which is inserted between consonant-sonorant clusters in some varieties of English (Schane 54):

/sɛntrəl/ [sɛntərəl] <u>central</u>

/saykl/ [saykəl] <u>cycle</u>

/spæzm/ [spæzəm] <u>spasm</u>

/æθliyt/ [æθəliyt] <u>arthlet</u>

/ærəraytIs/ [ærəəraytIs] <u>arthritis</u>

/dIzæstrəs/ [dIzæstərəs] <u>disastrous</u>

/ɛlm/ [ɛləm] <u>elm</u>

/ǰʌǰmənt/ [ǰʌǰəmənt] <u>judgment</u>

/čIldrən/ [čIldərən] <u>children</u>

/blow/ [bəlow] <u>blow</u>

The rule would be:

(3.11)

$$\emptyset \longrightarrow \partial / \begin{bmatrix} +cons \\ -son \end{bmatrix} \text{---} [+son]$$

3.2.3.3 Coalescence

Coalescence is a process of both assimilation and deletion. In English palatalization, when morpheme final t, d, s and z combines with the y, it produces alveopalatal fricatives š, ž. This is particularly evident before the suffix -ion. Thus, /t/ + /y/ and /s/ + /y/ become /š/, and /d/ + /y/ and /z/ + /y/ become /ž/.

/rIleysyən/ [rIleyšən] relation

/Iveyzyən/ [Iveyžən] evasion

/rIgrɛsyən/ [rIgrɛšən] regression

/kʰənfyuwzyən/ [kʰənfyuwžən] confusion

This process is interpreted as the result of two processes. The palatalization process operates first and then /y/ is deleted.

However, there is not sufficient evidence to suggest that all types of coalescence should be treated as assimilation followed by deletion (Wolfram and Johnson 99-98; Schane 54-56).

3.2.3.4 Major Class Feature Changes

A segment may change major class membership. It is quite common for high vowels and lateral liquids to become glides. In English, unstressed prevocalic i becomes y after l, but not after n:

[pʰəvIlyən] <u>pavilion</u>

[bɑtʰælyən] <u>battalion</u>

[rIbɛlyən] <u>rebelion</u>

The rule would be:

(3.12)
$$\begin{bmatrix} +hi \\ -bk \\ -tense \end{bmatrix} \longrightarrow \begin{bmatrix} -syl \\ -cons \\ -rd \end{bmatrix} / \underline{\quad} \ [+lat]$$

/i/   [y]   /l/

3.2.3.5 Metathesis

Metathesis is the process of the exchange of position of certain segments. This is a type of permutation, where segments change their position within a linear sequence. Most metatheses are sporadic; for instance, there have been a number of apparent metatheses in the history of English. In Old English we find interchanges of /r/ and its contiguous vowel as in follow (Lass 188):

OE	MoE
<u>hros</u> ⟶	<u>horse</u>
<u>cræt</u> ⟶	<u>cart</u>
<u>brid</u> ⟶	<u>bird</u>
<u>drit</u> ⟶	<u>dirt</u>
<u>thridde</u> ⟶	<u>third</u>

The relevant rule would be as follow:[2]

(3.13)
$$C \begin{bmatrix} +son \\ -ant \\ +cor \end{bmatrix} V \quad C \longrightarrow 1\ 3\ 2\ 4$$

1   2   3   4

The most frequently cited example of this process is the case of <u>ask</u>. In some varieties of English, <u>ask</u> is pronounced as [æks]. The underlying form of <u>ask</u> is /æsk/. A speaker who pronounces <u>ask</u> as /æks/ would have a rule which reversed the order of <u>sk</u> in word final context. The rule would be written as follow:

(3.14)　　　／s／　　／k／　　　　／k／　／s／　　#

$$
\begin{bmatrix} +ant \\ +cor \\ +str \\ -vd \end{bmatrix}
\begin{bmatrix} -ant \\ -cor \\ -str \\ -vd \end{bmatrix}
\# \longrightarrow \quad 2 \quad\quad 1 \quad\quad 3
$$

　　　　　　　　１　　　　２　　　３

The following example of /r/ plus a vowel are interpreted as metathesis:

[pʰrIskrIpšən]　　　[pʰɚskrIpšən] <u>prescription</u>

[hʌndrəd]　　　[hʌndɚd] <u>hundred</u>

[mɔdɚn]　　　[mɔdrən] <u>modern</u>

[æstərIsk]　　　[ækstərIks] <u>asterisk</u>

[eyprən]　　　[eypərn] <u>apron</u>

All these examples concern the metathesis of contiguous segments. However, there is an example of metathesis in which the other of non-contiguous elements is involved, such as the pronunciation of <u>relevant</u> [rɛləvənt] as [rɛvələnt], and <u>Calvary</u> [kʰælvəriy] as [kʰævəlriy].

3.2.4　Weakening and Strengthening

3.2.4.1　Aphesis

Aphesis refers to the loss of an unstressed initial

vowel or syllable. Aphesis is a relatively common phenomenon in casual styles of English. In standard varieties, it is most common in unstressed syllables of prepositions, conjunctions, and adverbs.

[əbawt] about ⟶ [bawt] <u>'bout</u>

[ərawnd] around ⟶ [rawnd] <u>'round</u>

[bɪkʰɔz] because ⟶ [kʰɔz] <u>'cause</u>

[ɪksɛpt] except ⟶ [sɛpt] <u>'cept</u>

In some non-mainstream varieties of English, aphesis can be extended to other word classes (Wolfram and Johnson 97):[3]

<u>electrician</u> ⟶ <u>'lectrician</u> [lɛktrɪšən]

<u>potato</u> ⟶ <u>'tato</u> [tʰeytə]

<u>remember</u> ⟶ <u>'member</u> [mɛmbɚ]

<u>supposed to</u> ⟶ <u>'pozta</u> [pʰʌzta]

3.2.4.2 Syncope

Syncope is the loss of a medial vowel or syllable. In English, when the stressed syllable is followed by two unstressed ones, the vowel immediately following the stressed syllable is often dropped in colloquial speech, particularly if it is followed by a single sonorant consonant (Schane 57):

<u>chocolate</u> ⟶ <u>choc'late</u> [čɔklɪt]

<u>happening</u> ⟶ <u>happ'ning</u> [hæpnɪŋ]

<u>every</u> ⟶ <u>ev'ry</u> [ɛvriy]

<u>federal</u> ⟶ <u>fed'ral</u> [fɛdrəl]

<u>government</u> ⟶ <u>gov'ment</u> [gʌvmənt] or [gʌbmənt]

3.2.4.3 Apocope

Apocope is the loss of a final unstressed vowel or syllable, most often a reduced or schwa-like vowel as in <u>mine</u> [mayn] . Apocope was active in earlier stages of its development. Derivation of <u>sing</u> from OE <u>singan</u> or <u>find</u> from <u>finde</u> results from apocope (Schane 97).

3.2.5 Neutralization

3.2.5.1 Consonant Neutralization

One of the most commonly cited cases of neutralization is that of word-medial alveolar stops. In initial and final word position, English maintains a contrast between /t/ and /d/. But in intervocalic position, many speakers of American English pronounce /t/ and /d/ as [ř] (flap ř). The segment [ř] only occurs following a vowel or liquid (actually, any [+son] segment) and before an unstressed syllable. Then, [ř] should be assigned to either the phoneme /d/ or /t/.

<u>rating</u> /reytIŋ/ ⟶ [reyřIŋ] ⟵ /reydIŋ/ <u>raiding</u>

<u>latter</u> /lætɚ/ ⟶ [læřɚ] ⟵ /lædɚ/ <u>ladder</u>

<u>betting</u> /bɛtIŋ/ ⟶ [bɛřIŋ] ⟵ /bɛdIŋ/ <u>bedding</u>

The rule would be:

(3.15)
$$\left\{\begin{matrix} t \\ d \end{matrix}\right\} \longrightarrow [ř] \ / \ [+son] \ \rule{1cm}{0.4pt} \ [-stressed]$$

The distribution of [ř] in the process of neutralization of /t/ and /d/ represented as follow:

(3.16)   /t/   /d/   (after a sonorant,
                                          before unstressed
            [t]   [r]   [d]   syllable)

3.2.5.2 Vowel Neutralization

In English, a great deal of neutralization is found
in the vowel system, where unstressed vowels reduce, that is,
different unstressed vowels merge to schwa (Schane 60-61).
For instance, telegraph and photograph, the first syllable
has primary stress, the second syllable is unstressed, and
the third syllable receives secondary stress. These words
are usually pronounced like [tʰɛ́ləgræf] and [fówtəgræf],
with a schwa-like vowel in the unstressed syllable. But if
we add a suffix -y, the stress pattern will be changed like
[tʰəlǽgrəfiy] and [fətʰágrəfiy]. The first and third sylla-
bles are relatively unstressed. Consequently, /ɛ/ and /ow/
are reduced to schwa. Other examples are:

impose [Impówz]   [Impəzĭšən] imposition

prepare [pʰrIpʰɛ́ɚ]   [pʰrIpəréyšən] preparation

relate [rIléyt]   [rɛ́lətIv] relative

Other types of neutralization between vowel contrasts
in English may be peculiar to specific regional and social
varieties. Examples are as follow:

[pʰIn] or [pʰɨn] for pin

[pʰɨn] or [pʰIn] for pen

            pin   pen

      [pʰIn]   [pʰɨn]   [pʰɛn]

Similarly, in some varieties the contrast between /ɛ/ and /æ/ may be neutralized before /r/. Thus, words such as <u>merry</u> and <u>marry</u> or <u>berry</u> and <u>Barry</u>, may be produced identically. In other environments, these vowel differences will be retained [bɛt] for <u>bet</u> and [bæt] for <u>bat</u>) because the neutralization is restricted to the phonological context of following /r/ (Wolfram and Johnson 95).

3.3 Phonological Processes of Korean

3.3.1 Consonant Related Phenomena

3.3.1.1 Assimilation

When a syllable-final consonant is followed by another consonant, the syllable-final consonant assimilates with the following consonant or vice versa.

A. /p/, /t/ and /k/ become [m], [n], and [ŋ] when they occur before /m/ and /n/ repectively.

/papmul/ [pammul] 'water for boiling rice'

/apʰnal/ /apnal/ [amnal] 'future'

/matmyənɨli/ [mammyənɨri] 'the eldest daughter-in-law'

/puəkʰmun/ /puəkmun/ [puəŋmun] 'kitchen door'

The rule is:

(3.17)
$$
\begin{bmatrix} +cons \\ -cont \\ -tense \\ -str \end{bmatrix} \longrightarrow [+nas] \, / \, \underline{} \begin{bmatrix} +ant \\ +nas \end{bmatrix}
$$

B. /l/ becomes [n] when it occurs after /m/ and /ŋ/.

/namlu/ [namnu] 'tatter'

/coŋlo/ [coŋno] 'street name of Korea'

The rule is:

(3.18)
$$[+\text{lat}] \longrightarrow \begin{bmatrix} +\text{cor} \\ +\text{nas} \end{bmatrix} / \begin{bmatrix} -\text{cor} \\ +\text{nas} \end{bmatrix} \underline{\hspace{1cm}}$$

    C. /l/ becomes [n] when it occurs after /p/, /t/

        and /k/. After this process, /p,t,k/ are nasalized.

        /səpli/ /səpni/ [səmni] 'providence'

        /myəcʰli/ /myətni/ [myənni] 'how many miles'

The rule is:

(3.19)
$$[+\text{lat}] \longrightarrow \begin{bmatrix} +\text{cor} \\ +\text{nas} \end{bmatrix} / \begin{bmatrix} +\text{ant} \\ -\text{cont} \\ -\text{tense} \end{bmatrix} \underline{\hspace{1cm}}$$

3.3.1.2 Coalescence

      When a non-continuant and /h/ are contiguous, they

are replaced by an aspirated non-continuant (Schane 54).

This process also involved a kind of deletion in Korean.

    /nak/ 'fall' + /hwa/ 'flower' ⟶ [nakʰwa] 'fallen
                                    flower'
    /kup/ 'bend' + /hita/ (causative suffix) ⟶
    [kupʰida] 'to bend'
    /coh/ 'good' + /ko/ 'and' ⟶ [cokʰo] 'good and'
    /noh/ 'to lay' + /ta/ (verb ending) ⟶ [notʰa] 'to
                                    lay'
    /olh/ 'right' + /ci/ (exclamation ending) ⟶
    [olcʰi] 'O.K'

The rule is :

(3.20)
$$\begin{bmatrix} -\text{cont} \\ -\text{nas} \\ -\text{tens} \end{bmatrix} \longrightarrow [\text{aspirated}] / \begin{Bmatrix} \begin{bmatrix} +\text{cons} \\ -\text{str} \end{bmatrix} \underline{\hspace{1cm}} \\ \underline{\hspace{1cm}} \begin{bmatrix} +\text{cons} \\ -\text{str} \end{bmatrix} \end{Bmatrix}$$

3.3.1.3 Epenthesis

3.3.1.3.1 /t/-Epenthesis[4]

When two morphemes or words make a compound noun, /t/ is inserted between two units if the first unit ends with a vowel and a second unit begins with non-sonorant. After /t/ insertion, the initial segment of the second word is tensed if the first word ends with a consonant. The epenthetic /t/ (derived from /s/) serves as a genitive marker of the first word.

/c^{h}o + pul/   /næ+ ka/
'candle' 'light'   'river' 'side'

[[c^{h}o] t [pul]]   [[næ] t [ka]   /t/-Epenthesis

[c^{h}otpul]   [nætka]

[c^{h}op'ul]   [næk'a]   tensification
'candle light'   'riverside'

The rule would be:

(3.21)

$$\emptyset \longrightarrow t\ /\begin{bmatrix} +son \\ -cons \end{bmatrix}_N \underline{\qquad}_N \begin{bmatrix} C \end{bmatrix}$$

3.3.1.3.2 /n/-Epenthesis

If the initial element of the second word is /i/ or /y/, or if the first morpheme ends with a vowel and second morpheme begins with /m/ and /n/, then /n/ is inserted between words.

/i + mom/   /k^{h}o + nal/   Underlying form
'teeth' 'ridge'   'nose' 'edge'

[[i] n [mom]]   [k^{h}o] n [nal]]   /n/-Insertion

[inmom]   _____

[immom]   [kʰonnal]   Surface form

The rule is:

(3.22) $\emptyset \longrightarrow$ n / V]$_N$ —— N$\begin{bmatrix}+ant\\+nas\end{bmatrix}$

/cip+il/   /ca +y pʰ/   Underlying form
  'house' 'work'   'closet' 'side'
    [[cip]n[il]]   [[caŋ]n[yəp]]   . /n/-insertion

    [cipnil]   [caŋnyəp]

    [cimnil]   [caŋñəp]   Surface form

The rule is:

(3.23) $\emptyset \longrightarrow$ n / C]$_N$ —— N$\begin{Bmatrix}i\\Y\end{Bmatrix}$

3.3.1.4 Palatalization

There are four kinds of palatalization in Korean.
They are /t/-palatalization, /s/-palatalization, /n/-palatal-
ization, and /l/-palatalization. In Korean, not only dental
stops such as /t/ and /tʰ/ but also dental fricatives /s/ and
/s'/, the dental nasals /n/ and liquid /l/ undergoes the
palatalization process before /i/ or /y/.

3.3.1.4.1 /t/-palatalization

/t/ and /tʰ/ become /c/ and /cʰ/ respectively before
/i/ or /y/.   /mat-i/   /putʰ-i-ta/   Underlying form

          [madi]   _____   Voicing

          [maci]   [pucʰida]   Palatalization

          [mäji]   _____   Voicing

      'eldest person' 'to stick on'

The rule is:

(3.24)
$$\left\{\begin{matrix} t \\ t^h \end{matrix}\right\} \longrightarrow \left\{\begin{matrix} c \\ c^h \end{matrix}\right\} / \underline{\quad} \left\{\begin{matrix} i \\ y \end{matrix}\right\}$$

/t/-palatalization never occurs in a single morpheme:

/canti/ [candi] $\longrightarrow$ *[canǰi] 'lawn'

/t^hik'ɨl/ [t^hik'ɨl] $\longrightarrow$ *[c^hik'ɨl] 'dust'

Moreover, as /t/- palatalization does not apply across a word boundary, it is not applicable to /həs + hilc^hæk/ /hətilc^hæk/ [hədilc^hæk] 'fruitfulness reproch', /kət^h + him/ /kəthim/ [kət^him] 'superficial strength,' because all of these are "Determiner + Noun" constructions. As they are all phrase-level, /t/- palatalization rule is not applicable (Ahn 100-101).

3.3.1.4.2 /n/-palatalization

/n/ becomes [ñ] before /i/ or /y/.

Unlike /t/-palatalization, /n/-palatalization applies even across word boundary.

/əməni/ [əməñi] 'mother'

/k'ini/ [k'iñi] 'meal'

/sam-nyən/ [samñən] 'three years'

/ton-i/ [toñi] 'money' subj.

/po-ni/ [poñi] 'Do you see?'

The rule is:

(3.25)
$$/n/ \longrightarrow [ñ] / \underline{\quad} \left\{\begin{matrix} i \\ y \end{matrix}\right\}$$

In casual speech, /n/-palatalization may occur in

sentence level such as in following sentence:

/kɨ-nɨn i salam-ɨl alko iss-ta/
'He' S'this' 'person' O 'knows' Aspect

[kɨnɨñi saramɨl algo itt'a]
    'He knows this person.'

3.3.1.4.3 /s/-palatalization

/s/ and /s'/ become [š̄] and [š̂'] respectively before
/i/ and /y/. /s/-palatalization applies to non-derived word
as well as derived one.

    A. Non-derived

        /si/ [š̄i] 'poem'

        /s'i/ [š̂'i] 'seed'

        /kasi/ [kaš̂i] 'thorn'

        /akas'i/ [agaš̂'i] 'young lady'

    B. Derived

        /os-i/ [oš̂i] 'cloth' subj.

        /kaps-i/ [kapš̂'i] 'price' subj.

The rule is:

(3.26) $\left\{ \begin{matrix} s \\ s' \end{matrix} \right\} \longrightarrow \left\{ \begin{matrix} \hat{š} \\ \hat{š}' \end{matrix} \right\} / \underline{\quad} \left\{ \begin{matrix} i \\ y \end{matrix} \right\}$

3.3.1.4.4 /l/-palatalization

/l/ becomes [l̂] before /i/ and /y/.

/l/-palatalization also applies to non-derived as
well as derived environments.

    A. Non-derived

        /illyu/ [il̂ĩu] 'first class'

second word is tensified by /t/-epenthesis.

> /næ + ka/   /cam + cali/   Underlying Form
> 'river' 'side' 'sleeping' 'place'
>
> [[næ]t[ka]]   [[cam]t[cari]   /t/-insertion
>
> [næk'a]   [camc'ari]   tensification

The rule is:

(3.28) $[-son] \longrightarrow [+tense] /\ ]_N$ —— $_N[C$

3.3.1.5.2   Tensification in "Determiner + Noun"

This tensification process is the same as in compound noun, but occurs in the environment of "determiner + noun" construction. There are three types of suffixes which change a predicate to determiner: -n, -ɨn, and -ɨl. Tensification in "determiner + noun" occurs only after -ɨl.

> /mək-ɨl + pap/ [məgɨlp'ap] 'rice which will eat'
>
> (cf. /mək-ɨn + pap/ [məgɨnbap] 'rice we ate'
>
>   /mək-nɨn + pap/ [məŋnɨnbap] 'rice we are
>   eating')

The rule is:

(3.29) $[-son] \longrightarrow [+tense] /\ [+lateral]_{Det.}$——

3.3.1.5.3   Tensification in "Verbal stem + Suffix"

When the stem of verb ends with /p,t,k/ and /m,n/, the verbal suffix is tensed.

> /cip-ta/ [cipt'a] 'pick up'
>
> /s'iss-ta/ [s'itta] [s'it'a] 'wash'
>
> /kulm-ta/ [kumt'a] 'skip a meal'
>
> /mək-ta/ [məkt'a] 'to eat'

The rule is:

(3.30)

$$[-son] \longrightarrow [+tense] / \underline{\quad} \begin{bmatrix} +obstruent \\ +nas \end{bmatrix}$$

(except /n/)

3.3.1.5.4 Sino-Korean Tensification

In a Chinese loan-word, if an l-final morpheme is followed by another segment, this initial segment undergoes a tensification.

/paltal/ [palt'al] 'development'

/palsa/ [pals'a] 'shooting'

/kisulca/ [kisulc'a] 'engineer'

/kyəlsim/ [kyəls'im] 'decision'

/tolcin/ [tolc'in] 'rush'

The rule is:

(3.31)

$$\begin{bmatrix} -son \\ +cor \end{bmatrix} \longrightarrow [+tense] / \underline{\quad} [+lateral]$$

3.3.1.6 Syllable Final Obstruent Neutralization

The obstruents divided by aspiration differences maintain their distributions word initially and prevocalically as in (a), but total neutralization occurs word-final position or before another consonant as in (b).

(a) /pul/ [pul] 'fire'   /tam/ [tam] 'fence'

/p'ul/ [p'ul] 'horn'   /t'am/ [t'am] 'sweat'

/pʰul/ [pʰul] 'grass' /tʰam/ [tʰam] 'greed'

/koŋ/ [koŋ] 'ball'   /si/ [ŝi] 'poem'

/kʰoŋ/ [kʰoŋ] 'bean'   /s'i/ [ŝ'i] 'seed'

/ca-ta/ [cada] 'to sleep'

/c'a-ta/ [c'ada] 'to squeeze'

/cʰa-ta/ [cʰada] 'to kick'

(b) /kat/ [kat] 'to collect' (old form)

/kas/ [kat] 'horse-hair hat'

/katʰ/ [kat] 'to be identical'

/kas'/ [kat] 'went'

/kac/ [kat] 'to have'

/kacʰ/ [kat] 'fur'

(e.g. /t, tʰ, s, s', c, cʰ/ ⟶ [t])

/ip/ [ip] 'mouth'

/ipʰ/ [ip] 'leaf'

(e.g. /p, pʰ/ ⟶ [p])

/mək-ta/ [məkt'a] 'to eat'

/sok'-ta/ [sokt'a] 'to thin'

/puəkʰ/ [puək] 'kitchen'

(e.g. /k, k', kʰ/ ⟶ [k])

The syllable final obstruent neutralization rule would be as follow:

(3.32)

$$\begin{bmatrix} +\text{obstruent} \\ \alpha\text{cor} \end{bmatrix} \longrightarrow \begin{bmatrix} +\text{obstruent} \\ -\text{tense} \\ -\text{strident} \\ \alpha\text{cor} \end{bmatrix} / \text{\_\_\_} \$$$

(except /p',t',k'/)

This rule applies without exceptions before a consonant or word finally.

3.3.2   Vowel Related Phenomena

3.3.2.1   Vowel Harmony

In Korean, vowel harmony occurs in only two areas of Korean morphology;[5] between the final vowel of the verb stem and following /ə/ or /a/ initial suffix, and in the words of sound symbolism, e.g., onomatopoeic words and mimetic words.

Vowels in Korean are divided into two classes accord-ing to vowel harmony processes, e.g., "dark' and "light" vowels: it has been interpreted that "light" vowels express "small," "bright," "light," or "shallow," while "dark" vowels express "big," "dark," "heavy," or "deep" (Ahn 184).

Mc Carthy (291-318) and Y.S. Kim (20) divided the Korean vowels in the following way according to the vowel harmony process.

```
     i             ɨ     u     Dark
         ┌────┐      ┌──────────
     e   │ ö  │  ə   │ o     Light
         │    └──────┘
     ────┘
        æ          a
```

By the vowel harmony rules, dark vowel combines with only dark vowel and light vowel combines with only light vowel in the vowel harmony process. Dark and light vowels cannot occur together. Followings are the example of vowel harmony between verbal stem and its initial suffix.

A. Light: ala/ [poara] 'look!'

                   asə/ [poasə] 'look and'

        /po—   ato/ [poado] 'look but'

$$
/po-\begin{cases} \text{ass-ta}/ \ \text{[poat'a]} \ \text{'looked'} \\ \text{ass-ko}/ \ \text{[poak'o]} \ \text{'looked and'} \end{cases}
$$

/k'ak'—
[
ala/ [k'ak'ara] 'Shave!'

asə/ [k'ak'asə] 'shave and'

ato/ [k'ak'ado] 'shave but'

ass-ta/ [k'ak'at'a] 'shaved'

ass-ko/ [k'ak'ak'o] 'shaved and'
]

B. Dark: /pe-
[
əla/ [peəra] 'Cut!'

əsə/ [peəsə] 'cut and'

əto/ [peədo] 'cut but'

əss-ta/ [peət'a] 'cut' (past)

əss-ko/ [peək'o] 'cut (past) and'
]

However, /æ/ and /ö/ are exceptions in this process because /æ/ and /ö/ are composed with /a/ and /i/, and /o/ and /i/ respectively, i.e., /æ/ (ㅐ) = /a/ (ㅏ) + /i/ (ㅣ), /ö/ (ㅚ) = /o/ (ㅗ) + /i/ (ㅣ). Thus, the initial vowel of the suffix does not combine with /a/ or /o/, but combines with /i/. For instance, /mæala/ = /ma + i-əla/ [mæəra] 'Tie it!', /cö -əla/ = /co + i-əla/ [cöəra] 'Tighten it!'.

3.3.2.2 Vowel Reduplication

Vowel duplication is the most typical phenomena of vowel harmony in Korean. Vowel reduplication occurs remarkably in the onomatopoeic words and mimetic words.

A. Onomatopoeic Words

Light   Dark

/colcol/	/culcul/	'murmuring'
/cʰalcʰal/	/cʰəlcʰəl/	'brimming'
/sallaŋsallaŋ/	/səllaŋsəllaŋ/	'rustling'
/k'alk'al/	/k'əlk'əl/	'laughing loudly'
/sokonsokon/	/sukunsukun/	'whispering'

B. Mimetic words

Light	Dark	
/omokomok/	/umukumuk/	'sunken here and there'
/malkʰaŋmalkʰaŋ/	/mulkʰəŋmulkʰəŋ/	'soft and pliable'
/pʰalɨtpʰalɨt/	/pʰulɨtpʰulɨt/	'fresh and green'
/mallaŋmallaŋ/	/mulləŋmulləŋ/	'soft and tender'

In these words, the alternation between vowels of the same vertical series, that is, /ə/ vs. /a/, and /u/ vs. /o/ results in the diminutive shift as expected. In addition to this, the alternation between /ə/ and /o/ and between /u/ and /a/ also results in the same diminutive shift despite the fact that the two vowels within each pair belong to different vertical series. But this is a rather an expected result deriving from the same relation between the paired words in these two pairs. That is, /malkʰaŋ/ and /molkʰaŋ/ have the same diminutive connotation relative to their respective non-diminutive coun-terparts /məlkʰəŋ/ and /mulkʰəŋ/. Thus, it is only natural that the substitution of a member in one pair for the corresponding member in the other would not affect the connotational relation (Kim 67-70).

Notes for Chapter 3

1. Instead of a plus or minus before certain features
in a rule, we use a Greek letter (alpha, beta, gamma, delta,
etc.). This letter indicates that the feature may be either
plus or minus.

2. In this rule, the relevant string of segments (s
and k) and environment (the end of the word) are represented
together as the input to the rule. The segments and relevant
environment and numbered, and the order of these number is
charged appropriately to represent the output. The numbers
1 and 2 represent s and k, respectively; 3 represents the
relevant environment (word boundary) for the rule to operate.

3. In casual written style of English, like some
people occasionally write a wimin for women, sez for says,
and gona be for going to be, and about, around, except, re-
member, potato are sometimes written as 'bout, 'round,
'cept, 'member, 'tato. We call this kind of aphesis as "eye
dialect."

4. /t/-epenthesis represents the so-called "Bindung-s
(sai-sios: epenthetic s)" but it has been generally agreed
that /t/-epenthesis is more appropriate than s-epenthesis,
considering that /t,s,s',c,c^h/ become [t] syllable finally.

5. Historically speaking, middle Korean, like many
languages in Altaic family to which Korean belongs, had a
very regular vertical vowel harmony, i.e., front (palatal)
vs. back (velar) alternation.

CHAPTER 4

SEQUENCES OF SOUNDS: PHONOTACTICS

4.0 Introduction

In previous chapters, I discussed the phonological units of language systems of English and Korean with reference to patterns of contrast among sounds. There are also patterns that govern the sequences of sounds. In every language, regular patterns of permissible sequences of phonemic units combine to form the larger units of the language. Such phonotactics of language mean the regular patterns for combining the sounds of a language in a sequence.

4.1 Sequences of Sounds of English

In American English, we can derive six actual words by combining the three phonemes /p/, /t/, and /a/.

/pa/ <u>pa</u>, /pap/ <u>pop</u>

/apt/ <u>opt</u>, /tat/ <u>tot</u>

/tap/ <u>top</u>, /pat/ <u>pot</u>

It is significant that only six of the possible arrangements of these phonemes actually are used in the construction of English words. Moreover, it is not simply accidental that English lexicon does not include such combinations as */atp/ and */pta/. If, for example, English speakers were asked if */atp/ and */pta/ could be used as words in English, all English speakers would indicate that they could not.

Obviously, the phonetic segments of English are not combined in random order, and somehow speakers of the language know this. In English as many languages, there are strong constraints on how a word may be formed, specifying what may and may not be a permissible word in English. The determination of the patterns of permissible words is an important of speakers' knowledge about their language (Wolfram and Johnson 75-78).

4.1.1 Sequential Structure of Morphemes

There are two aspects of the sequential structure of morphemes that need to be represented. First, there are aspects that relate to the number of consonant and vowel sequences permissible in a morpheme or syllable. English has a limit on the number of segments in a word initial consonant cluster; that is, English morphemes may begin with zero, one, two, or three consonants-it, pit, spit, split-but there are no morphemes beginning with four or more consonants. Thus, we may propose a "syllable structure condition" which restricts initial consonant clusters to a maximum of three members. We may state this condition as follow:

A. Syllable structure condition on initial consonant cluster

A string of segments will be accepted as a permissible English syllable only if it is initiated with three or fewer consonants. Examining the combinations of consonants within the clusters permitted by condition A, we discover that only

certain combinations of segments may occur at the beginning of English words. The words <u>spring</u>, <u>strike</u>, <u>scramble</u>, <u>split</u>, <u>spew</u>, <u>skewer</u>, and <u>squeeze</u> illustrate the permissible for initial three consonant-clusters. In these examples, we recognize that English limits itself to the combinations /spr/, /str/, /spl/, /spy/, /sky/, /skw/, /skr/. This kind of restriction, typically referred to as a "sequential morpheme structure condition," states this aspect of English syllable structure as a condition (a) below:

$$(a). \quad C_1 \qquad C_2 \qquad C_3 \qquad V$$
$$+([-syl]) \quad ([-syl]) \quad ([-syl]) \quad [+syl]$$

The '+' at the beginning of the formula represents the morpheme boundary and indicates that the segment which follows the boundary is initial. Condition (a) should be read as: A string of initial segments will be accepted if it consists of one of the following combinations: CCCV, CCV, CV, or V.

B. Sequential morpheme structure condition on word-initial clusters of three consonants

It is, of course, not sufficient to state that morphemes may have up to three initial consonants. If there are clusters, we need to be more specific and to indicate precisely the restrictions on the types of consonants which can appear in each position.

1. The initial segment must be /s/.

2. The second segment must be a voiceless stop (/p/, /t/, or /k/).

3. The third segment must be either a liquid

(/l/ or /r/) or glide (/y/ or /w/).

If the second segment is /t/, then only /r/, /y/, or /l/ may occur. It is the if-then conditions which narrow down these sequential constraints. These state that if a particular condition obtains in a certain environment, then some other condition must also be met. For example, if a morpheme begins with three consonants, then the first one must be s, the second a voiceless stop, and the third a liquid or semivowel. Thus, the condition (b) would be as follow:

(b). If: +[-syl]   [-syl]   [-syl]

Then:$\begin{bmatrix} +ant \\ +cor \\ +str \\ -vd \end{bmatrix}$ $\begin{bmatrix} -d\colon r \\ -vd \end{bmatrix}$ $\begin{bmatrix} +son \\ -nas \end{bmatrix}$

/s/   /p,t,k /   /r,l,w,y/

In condition (b), however, not every condition of voiceless stop and liquid or glide can occur as mentioned in B (Wolfram and Johnson 77-84; Schane 42-43).

4.1.2   English Syllable Types

The nucleus of the syllable is the maximum peak of sonority and this peak can be surrounded by an onset (initiating segment or segments) and a coda (terminating segment or segments). We can observe that it is impossible to pronounce a syllable without any onset. This seems to be evidence for the fact that syllables are more generally initiated with a consonant onset (Wolfram and Johnson 85).

Following is a list of English syllable types of monosyllabic words:

CV	high	/hay/
CCV	three	/θriy/
CCCV	spree	/spriy/
VC	up	/ʌp/
VCC	elf	/ɛlf/
VCCC	elves	/ɛlvz/
CVC	cup	/kʌp/
CVCC	cups	/kʌps/
CVCCC	sixth	/sIksθ/
CCVC	brag	/bræg/
CCVCC	brags	/brægz/
CCVCCC	glimpse	/glImps/
CCVCCCC	twelfths	/twɛlfθs/
CCCVC	scream	/skriym/
CCCVCC	splits	/splIts/
CCCVCCC	scripts	/skrIpts/
CCCVCCCC	strengths	/strɛŋkəs/

The onset of syllables is typically a consonant. Thus, the dominant consonant-vowel (CV) syllable pattern of English may be the influential factor in the assignment of certain supposedly phonetic classifications (Wolfram and Johnson 85).

4.2 Korean Syllable Structure

Unlike English syllable structure, Korean does not

allow the consonant cluster in the phonetic representation, although Korean allows a consonant cluster at the phonemic representation. Korean has only four types of syllable structure. Follwing is a list of syllable types for monosyllabic words.

V	/i/	[i]	'tooth'
	/æ/	[æ]	'child'
	/o/	[o]	'five'
VC	/ak/	[ak]	'evil'
	/os/	[ot]	'cloth'
CV	/pi/	[pi]	'rain'
	/na/	[na]	'I'
	/k^{h}o/	[k^{h}o]	'nose'
CVC	/tal/	[tal]	'moon'
	/son/	[son]	'hand'
	/him/	[him]	'power'

4.2.1 Consonant Cluster Reduction

Some Korean morphemes have a consonant cluster morpheme finally. Even though Korean allows consonant clusters underlyingly, they are limited in number as shown in below:

possible morpheme final sequences:

stop + fricative: /ps/, /ks/

nasal + affricate: /nc/

lateral + stop: /lp/, /lp^h/, /lt^h/, /lk/

lateral + fricative: /lh/

lateral + nasal: /lm/

Given these CC-clusters in the above, we need a governed way of determining which segments should be on surface, because Korean syllable structure does not allow a consonant cluster in the phonetic representation, although Korean allows a consonant cluster at the phonemic represen-tation.

A. Reduction of first element

(1)k: /hɨlk/ [hɨk] 'soil'

/talk/ [tak] 'hen'

/ilk-ta/ [ikta] 'to read'

/nɨlk-ta/ [nɨkta] 'be old'

(1)m: /salm/ [sam] 'life'

/talm-ta/ [tamta] 'resemble'

/cəlm-ta/ [cəmta] 'be young'

(1)p: /palp-ta/ [papta] 'tread on'

/c'alp-ta/ [c'apta] 'be short'

(1)p^h: /ɨlp^h-ta/ [ɨpta] 'to recite'

The rule would be:

(4.1)   C   C ⟶ Ø   C/___ $
                  [-cor]   [-cor]

However, when these CC-clusters occur before vowel-initial suffixes like -i, -ɨl, - la, -ɨn, -ɨmyən, the first element (1) is realized in phonetic representation as in follow:

/hɨlk-i/ [hɨlgi] 'soil' subj.

/salm-ɨl/ [salmɨl] 'life' obj.

/c'alp-ɨn/ [c'alpɨn] 'short' adj.

/ɨlpʰ-əla/ [ɨlpʰəra] 'Recite!'

B. Reduction of second element

p(s): /kaps/ [kap] 'price'

/əps-ta/ [əpta] 'There is no'

k(s): /saks/ [sak] 'wage'

/nəks/ [nək] 'spirit'

n(c): /anc-ta/ [ant'a] 'to sit'

l(tʰ): /haltʰ-ta/ [halt'a] 'to lick'

The rule would be:

$$(4.2) \qquad C \quad \begin{matrix} C \\ [+cor] \end{matrix} \longrightarrow C \quad \emptyset \; / \underline{\quad} \; \$$$

Like as in A, second element of CC-cluster is also realized in phonetic form when they occur before vowel-initial suffixes.

/kaps-i/ [kapŝi] 'price' subj.

/anc-ala/ [anǰara] 'Sit down!'

/haltʰ-ɨmyən/ [haltʰɨmyən] 'if (you) lick'

Unlike CC-cluster reduction mentioned above, /h/ of /nh/ and /lh/, consonant cluster is rather peculiar in the Korean phonology. /h/ is deleted intervocalically, and when it follows a lax stop, the lax stop is aspirated:

/manh-asə/ [manasə] 'because of much'

/coh-ɨn/ [coɨn] 'be good'

The rule is:

$$(4.3) \qquad /h/ \longrightarrow \emptyset \; / \; [+vd] \; \underline{\quad} \; [+vd]$$

/manh-ta/ [mant^{h}a] "be abundant'

/olh-ci/ [olc^{h}i] 'Right!'

The rule is:

(4.4)
$$\begin{bmatrix} +\text{obst} \\ -\text{cont} \\ -\text{tense} \end{bmatrix} \longrightarrow [\text{aspirated}] \ / \begin{Bmatrix} h\text{\underline{\ \ \ \ \ }} \\ \text{\underline{\ \ \ \ \ }}h \end{Bmatrix}$$

A correct account of Consonant Cluster Reduction is to be sought in the characteristic of the ends of Korean syllables. As is pointed out by Kim-Renaud (1974: 135), Korean speakers have an articulatory tendency not to release the syllable-final consonants. The consequences of a general unrelease of final consonants will be that in syllable-final stop clusters, only the first consonant will have an iden- tifiable acoustic effect. If the first consonant is a stop, the oral cavity will necessarily be closed completely. Since it is impossible to move on to the next sound without re- leasing the stop consonant, this alone suffices to explain the reduction of the syllable in B. If, on the other hand, the first member of a cluster is a liquid <u>l</u>, the airflow through the oral cavity is not completely shut off, and the unreleased second member will then have a discernible acoustic effect. In the case of <u>lt</u>^{h}, one can hardly pro- nounce the two segments of the same point of articulation without releasing the second stop.

CONCLUSION

Korean and English belong to quite different language families; Korean belongs to the Altaic languages and English belongs to the Indo-European languages. It is, therefore, natural that there exist many differences and few similarities between the phonological systems of both languages.

Even if English and Korean have similar phonetic sounds, there are quite obvious differences between them in their patterning. They may have incompatible systems from the articulatory and acoustic standpoint, but identical or similar patterns in their inventories of sounds.

The purpose of this study is to make a contrastive analysis of phonological systems between English and Korean, and to highlight a few descriptive and theoretical implications of contrastive analysis. It may be true that contrastive analysis, in a sense, remains inadequate, theoretically and practically, to predict the interference of a foreign language learner and apply its hypothesis in the classroom. But from the practical view of language teaching, phonological contrast between the two languages may play a great role of learning foreign language successfully. Through a careful and systematic analysis of the properties of the two languages, one can derive a reasonably complete inventory of the abstract patterns of phonological difficulties a second language learner might encounter.

APPENDIX

LIST OF NOTATIONS

/ / : phonemic slashes for underlying form

[ ] : phonetic brackets for either surface form or for distinctive features

⟶ : "becomes"

/ : "when" or "in the environment of"

___ : "blank lines" indicates the location of the change' or underline for orthographical representation

{ } : "either A or B" in phonological rule formation or for morphophonemic braces

: word boundary

+ : morpheme boundary

$: syllable boundary

Ø : zero or null symbol

( ) : parenthesis notation or optional notation in phonological rule

* : disallowed sequence

' ' : for meaning in a semantic sense

[[ ]]: compound noun

GLOSSARY

ALLOPHONE: It refers to the actual speech sound that make up phonemes. For example, the phoneme /p/ in English is represented by the allophones [p^h], [p], and [p̚], representing the p-sounds in pill, spill, and stop, if one does not release the p at the end of the word.

ALPHA NOTATION: A transcriptional convention in generative linguistics which makes it possible to simplify the statement of a rule by introducing a variable. In generative phonology, it is used in cases where there is a mutual predictability between sets of features, and avoids the necessity of having to make separate statements for the conditions of occurrence of each feature.

ALVEOLAR: A term in the classification of consonant sounds on the basis of their place of articulation: it refers to a sound made by the blade of the tongue (or the tip and blade together) in contact against the alveolar ridge, which is the bony prominence immediately behind the upper teeth.

ALVEO-PALATAL: It refers to a sound made by the front of the tongue a little in advance of the palatal articulatory area.

ANTERIOR: One of the features of sound set up by Chomsky and Halle in their distinctive feature theory of phonology. Anterior sounds are defined articulatorily as those produced with a stricture in front of the palato-alveolar area in the mouth. Labial and dental consonants are [+anterior].

ARTICULATION: The general term in phonetics for the physiological movements involved in modifying an airflow to produce the various types of speech sounds, using the vocal tract above the larynx. Reference is usually made to the nature of the airstream mechanism, the action of vocal cords, the position of the soft palate, and the other organs in the mouth-tongue and lips in particular.

ASPIRATION: A term in phonetics for the audible breath which may accompany a sound's articulation , as when plosive consonants are released. It is usually symbolized by a small raised [^{h}] following the main symbol. In English pin [p^{h}In], the aspiration may be felt by holding the back of the hand close to the mouth while saying the word; the contrast with bin, where there is no aspiration, is noticeable.

DISTINCTIVE FEATURE: This term has been used in
phonology. It refers to a minimal contrastive unit recognized
by some linguists as a means of explaining how the sound
system of language is organized. Distinctive features may
be seen either as part of the definition sense (a) is referred
to as <u>anterior</u>, in sense (b) is referred to as <u>coronal</u>.

GEMINATION: A term used in phonetics and phonology
for sequence of identical adjacent segments of a sound in a
single morpheme. Because of the syllable division, a geminate
sequence cannot be regarded as simply a long consonant, and
transcriptional differences usually indicate this, e.g.,
[-ff-] is geminate, [-f:-] is long.

<u>GLIDE</u>:   It refers to a transitional sound as vocal
organs move towards or away from an articulation (on-glide
and off-glide respectively). An example is the [y] glide heard
in some pronunciations of words like <u>tune</u> [tyuwn]. Diphthongs
are sometimes referred to as gliding vowels.

GLOTTAL STOP: The audible release of a complete clo-
sure at the glottis is known as a glottal stop, transcribed
[ ]. This is often used in English as in <u>bottle</u> [bʔl], <u>written</u>
[rIʔn].

<u>HIGH</u>:   It refers to high sounds that are a type of
tongue-body feature, and defined articulatorily as those
produced by raising the tongue above the level it holds in
neutral position; close vowels and palatal/velar consonants
are [+high].

<u>INITIAL</u>:   The usual way of referring to the first
element in a linguistic unit, especially in phonology. For
example, the phoneme /k/ occurs in initial position in the
word <u>cat</u>. Other positions are referred to as <u>medial</u> and <u>final</u>.

<u>INTERFERENCE</u>:   A term used in foreign-language learning
to refer to the errors a speaker introduces into one language
as a result of his contact with another language. The most
common source error is in the process of learning a foreign
language, where the native tongue interference.

<u>INTERVOCALIC</u>:   This term refers to a consonant sound
used between two vowels, as in /t/ of <u>attack</u>. The phonetic
characteristics of consonants in this position are often
different from those in other positions, e.g. the amount of
voicing in voiced consonant is likely to be greater.

<u>LABIAL</u>:   It refers to active use of one lip as in
labio-dental sounds, such as [f] or both lips as in bilabial
consonants, such as [b], or rounded vowels, such as [u].

LATERAL: It refers to any sound where the air escapes around one or both sides of a closure made in the mouth, as in the various types of <u>l</u> sound. Air released around only one side of the tongue produces <u>unilateral</u> sounds; around both sides <u>bilateral</u> sounds.

Lax: Lax sounds are those produced with less muscular effort and movement, and which are relatively short and instinct, compared to tense sounds. Examples are vowels articulated nearer the center of the vowel area as in <u>bit</u>, <u>put</u>.

LOW: Low sounds are a type of tongue-body feature, and defined articulatorily, as those produced by lowering the tongue to below the level it holds in neutral position; open-vowels and the glottal fricatives are [+low].

MANNER OF ARTICULATION: One of the main parameters in the phonetic or phonological classification of speech sounds, referring to the kind of articulatory process used in a sound's production. The distinction between consonant and vowel is usually made in terms of manner of articulation. Within consonants, several articulatory types are recognized, based on the type of closure made by the vocal rogans. If the closure is complete, the result is <u>plosive</u>, <u>affricate</u> or <u>nasal</u>. If the closure is partial, the result is a <u>lateral</u>. If the closure is intermittent, the result is a <u>fricative</u>.

MATRIX: A term derived from mathematics to refer to a rectangular array of entities made up of rows and columns, and used in all branches of linguistics as an aid in description or analysis. In phonology, for example, distinctive features are usually descrived within a matrix, where the columns are segments and the rows are features: the cells of the matrix are then filled with pluses or minuses corresponding to the presence or absence of a feature.

MEDIAL: The usaul way of referring to an element occurring within a linguistic unit. The term is especially used in phonology, e.g., the phoneme /i/ occurs in 'medial' position in the word <u>seat</u>.

METATHESIS: This term refers to an alternation in the sequence of elements in a sentence-usually of sounds, but sometimes of syllables, words, or other units. Metathesis is well recognized in historical linguistics (e.g., Old English <u>brid</u> becoming <u>bird</u>), but they can also be seen in performance errors - in such tongue-slips as <u>acsian</u> for <u>ascian</u> of old English, or in the phenomenon of 'Spoonerism'(e.g., <u>the dear old queen </u>becoming <u>the qeer old dean</u>).

MID: It refers to vowels made in the middle area of articulation, as in get, say, go or got.

MINIMAL PAIR: Two words which differ in meaning when only one sound is chnaged are referred to as a 'minimal pair', e.g., pin vs. bin.

MORPHEMES: The morpheme was seen primarily as the smallest functioning unit in the composition of words. Morphemes are commonly classified into free forms and bound forms: thus unselfish consists of the three morphemes un, self and ish, of which self is a free form, un- and -ish are bound form.

NASAL: It refers to sounds produced while the soft palate is lowered to allow an audible escape of air through the nose. Both consonants and vowels may be articulated in this way. Nasal consonants occur when there is a complete closure in the mouth, and all the air thus escapes through the nose.

NEUTRAL: It refers to the visual appearance of the lips when they are held in a relaxed position, with no lip-rounding, and a medium lowering for the lower jaw, as in the vowels of pet or bird.

NEUTRALIZATION: A term used in phonology to describe what happens when the distinction between two phonemes is lost in a particular environment. For example, in English, the contrast between aspirated (voiceless) and unaspirated (voiced) plosives is normally crucial, e.g., tip vs. dip, but this contrast is lost, or neutralized, when the plosive is preceded by /s/, as in stop, skin, speech.

OBSTRUENT: A term used in the phonetic classification of speech sounds to refer to sounds involving a constriction which impedes the flow of air through nose or mouth, as in plosive, fricative and affricate.

OFF-/ON-GLIDE: An off-glide is movement which occurs as the vocal organs leave the position taken up by one speech sound and travel towards the position required for the next sound. An on-glide is the correlative movement which occurs as the vocal organs approach their target position for the articulation of a sound, either from a previous sound.

ONSET: A term refers to the opening segment of a linguistic unit (e.g., a syllable, a tone unit) or to the articulatory movement which initiates a speech sound.

PALATALIZATION: This is a general term referring to any articulation involving a movement of the tongue towards the hard palate. But its more common use is in relation to secondary articulations. For example, a [t] sound, normally made in alveolar position, is said to be 'palatalized' if during its articulation the front of the tongue is raised toward the hard palate: in the case of [t], the palatalization would be most noticeable when the plosive was released, as a palatal glide would be heard before the onset of the next main sound.

PHARYNGEAL: It refers to a sound made in the pharynx. Pharyngeal sound does not occur as speech sounds in English, but similar effects can be heard in stage whispers, as when hey, said forcefully in a whisper, is produced with a pharyngeal rasp.

PHONEME: Phoneme is the minmal unit in the sound system of a language according to traditional phonological theory. For example, the p of pin is exploded with a puff of air following it, whereas the p of capture is not. Those two sounds are quite different as mere sound. But in English they are the same because they function as the same unit in the sound system of English. These functioning units like English /p/ are called phonemes by structural linguists and will be enclosed in slant bars in the text.

PHONEMIC TRANSCRIPTION: Phonemic transcription is the underlying representation of sound. Only the phonemes are given symbols. Phonemic symbols are written between ob-lique brackets (slant bars). /pIn/ pin, /spiyd/ speed

PHONETIC TRANSCRIPTION: Phonetic transcription is the surface form of an utterance representing sounds with extensive phonetic detail. [p^{h}In] pin, [st^{h}ɔp] stop

PLACE OF ARTICULATION: One of the main parameters used in the phonetic classification of speech sounds, re-ferring to where in the vocal apparatus a sound is produced. The conventionally recognized places or points of articula-tion for consonants are labial, labio-dental, dental, alve-olar, palatal, velar, uvular, pharyngeal, and glottal.

REDUPLICATION: A term in morphology for a process of repetition whereby the form of a prefix/suffix reflects certain phonological characteristics of the root, e.g., helter-skelter, shilly-shally.

ROUNDED: It refers to the visual appearance of the lips when they assume a rounded shape, as in the 'close rounding' of [u] and the more 'open rounding' of [ɔ].

SCHWA: The usual name of the neutral vowel [ə], heard in English at the beginning of such words: ago, amaze, or in the middle of afterwards. It is a particularly frequent vowel in English, as it is the one most commonly heard when a stressed vowel becomes unstressed, e.g., [tɛləgræf] vs. [təlægrəfiy].

SEMI-VOWEL: It refers to a sound functioning as a consonant but lacking the phonetic characteristics normally associated with consonants; instead, its quality is phonetically that of a vowel, though its duration much less than that typical of vowels. The common examples in English are [w] and [y] as in wet and yet.

SIBILANT: It refers to a fricative sound made by producing a narrow, groove-like stricture between the blade of the tongue and the back part of the alveolar ridge. These sounds, such as [s] and [š], have a high frequency hiss characteristic.

SONORANT: Sonorant sounds are defined articulatorily as those produced with a relatively free airflow, and vocal cord position such that spontaneous voicing is possible, as in vowels, liquids, nasals and laterals.

SOUND-SYMBOLISM: It refers to a direct association between the form and the meaning of language: the sounds used reflect properties of the external world, as in case of onomatopoeia, e.g., cuckoo, murmur, crash.

STOP: It refers to any sound which is produced by a complete closure in the vocal tract.

STRIDENT: Strident sounds produced by a relatively complex stricture, and marked by relatively high frequency and intensity, as in [f], [s] and [š].

SYLLABLE: A unit of pronunciation typically larger than a single syllabified as in ne-ver-the-less.

TENSE: Tense sounds are produced with a relatively strong muscular effort and relatively strong spread of acoustic energy. The vowels [i] and [u] would be [+tense]; [I] and [U] would be [-tense].

UNDERLYING FORM: is an abstract unit that is related to an actual phonetic segment by means of phonological rules.

VELAR: It refers to a sound made by the back of the tongue against the soft palate, or velum. Examples in English are [k] and [g], and -ng sound [ŋ] as in sing.

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