

CONSONANT, VOWEL AND SYLLABLE --
OF ENGLISH LOAN WORDS
IN KOREAN

By

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Bachelor of Arts

Ewha Woman's University

Seoul, Korea

1984

Submitted to the Faculty of the
Graduate College of the
Oklahoma State University
in partial fulfillment of
the requirements for
the Degree of
MASTER OF ARTS
May, 1988

Thesis
1988
L478c
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ACKNOWLEDGMENTS

I would like to express my sincere gratitude to my major adviser, Dr. Bruce Southard, for his intelligent guidance, advice and invaluable help.

I am very happy to have the other committee members, Dr. Carol Lynn Moder, and Dr. Ravi Sheorey, and their advisement in the course of this work. I am sincerely thankful to them.

I also wish to express my appreciation to all the people who assisted me in this work. In particular, I am especially indebted to my husband, Jaihak Lee, for his kind help and endless encouragement. Special thanks are due to my father, Sejong Nam, for his kind help in collecting material and literature for my work in Korea. All my family deserve my deepest appreciation for their constant support, moral encouragement, and understanding.

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CHAPTER I

INTRODUCTION

1.1. Purpose

When a foreign word (source language) is borrowed into and used in another language (target language), its pronunciation, word form, meaning and even part of speech are bound to change more or less. It assimilates into the system of the recipient language as it is used freely by the native speaker.

The purpose of this paper is first to observe and analyze the change of loan words, especially English loan words, in Korean, then to find what factors influence the change, and finally to suggest some mechanism that will possibly illustrate a language borrowing process. Besides, by viewing the changes that loan words from English undergo in the process of nativization into Korean, it may be possible to identify some of the main problems that Korean speakers might have in learning English.

1.2. Review of CA and EA, and Korean Phonology

Contrastive analysis (CA) established by Fries (1945) and Lado (1957) explains that the prime cause of difficul-

ty and error in foreign-language learning is interference coming from the learners' native language. Therefore, according to Lado, we could predict and describe the patterns that would cause difficulty in learning and those that would not cause difficulty, by comparing systematically the language and culture to be learned with the language and culture of the student.

However, many researchers and bilingual teachers have found that CA may be most predictive at the level of phonology and least predictive at the syntactic level and that interference errors are only one of many types of errors found in the lexicon, morphology, and syntax (Dusková, 1969; Richards, 1971). For example, Wilkins (1968) suggests that many errors are due to overgeneralization of a pattern, to interference between forms and functions of the language being learned, and to psychological causes, such as inadequate learning.

The limitations of CA and the discovery of other sources of errors than first-language interference led to interest in error analysis (EA). Through the observation and the analysis of learner errors, EA supporters try to identify the areas of difficulty for the learner and decide the order of grammatical features, the scope of vocabulary and pronunciation teaching, and even the time allotment for practice.

Further, Corder (1967) proposes the hypothesis that errors are evidence of the strategies adopted by the

learners rather than signs of inhibition. The learner is using "a definite system of language at every point in his development (p. 168)," although it is not the system of the second language.

The analysis of loan words may include CA, which is still significant in the phonological aspect, and some of EA, too. Through the analysis of loan words, we not only can compare two languages, the source language and target language, but observe detailed deviations (or errors) from English in the actual situation. Here my assumption is that the loan words could be regarded as the learner's system of language at the beginning point of learning in which he does not have any knowledge of the second language. Thus, he may use the phonological rules of his native language in order to pronounce the given foreign sound elements, producing some systematic deviations or errors. In other words, changes loan words have in the borrowing process will illustrate the systematic deviations from English.

CA and EA of English and Korean have been done which compare phonemes of the two languages and analyze Korean learners' errors in learning English (Lee & Park, 1977; Robson, 1979; Chu & Park, 1979; Borden et al. 1983).

Additionally, traditional descriptions of Korean by Choi (1937) and Huh (1985) explain various aspects of Korean phonology. Especially, C-W Kim investigates the phonetic qualities of Korean phonemes and forms abstract

underlying representations (1965, 1968, 1970). There have been continuous attempts to explain language specific phenomena and phonological rules more generally and naturally. Recently, some studies have approached the troublesome problems from a particular boundary - the syllable (Kim & Shibatani, 1976; Kim-Renaud, 1977, 1978; B-G Lee, 1982; Kang, 1984).

1.3. Framework

In this thesis, after observation of general borrowing situations (in Chapter 2), I will analyze substitutions shown in loan words. Under the assumption that loan words are used in the context of a native language and in native accent, the phonological rules as well as the phonemic system will affect loan words. Thus, how these rules function on phoneme substitutions will be examined, too (in Chapter 3 & 4). Moreover, in Korean and in English, the minimal pronounceable unit is the syllable. But the two languages have different syllable structures. Hyman (1970) states that "foreign sounds are perceived in terms of underlying forms (p.19)". Then, how are English words which have different syllable structures perceived, interpreted and then modified by Korean speakers? My assumption is that new words are perceived sequences of segments, especially syllables rather than individual phonemes, and as Korean words, they are subject to the Korean syllable structure conditions and phonological

rules rather than those of English. In Chapter 5, how loan words are reinterpreted will be examined in relation to syllable structure conditions of Korean.

It is possible that this analysis represents some consensus among Korean speakers on acceptable ways to pronounce the loan words with Korean accent, and errors or deviations that learners may make in learning English.

1.4. Problems in Analyzing Loan Words

There are several problems to consider in analyzing loan words from English.

First of all, how can we decide a foreign word is a loan word? Scholars indicate that a loan word should be considered a part of Korean after it is borrowed and has been used widely by Korean speakers (Nam, 1975; Pae, 1975; M-C Kim, 1985). But it is difficult to draw a clear line between foreign words and loan words. For example, pəsi 'bus', latio 'radio', campa 'jumper' and tʰɛksi 'taxi', which are used in everyday life, will be accepted as loan words by every one. There will be no controversy on the words that speakers use without the notice of their borrowing. How about many words used only by a group of speakers, e.g., professionals, or by a certain advertisement? There is no standard established to decide the qualification of a loan word except the somewhat vague idea that we can regard a foreign word as a loan word if it attains great currency by a range of speakers. My data

for the analysis of the phonological aspect of loan words were collected from newspapers, magazines and a dictionary.¹ I used my subjective judgment in an attempt to collect words used widely with familiarity by Korean speakers, although it was occasionally inevitable to choose words of limited distribution for the purpose of the analysis.

Another difficult problem is to find out when and how a loan word was borrowed. If Korean speakers learn a word from the same source and speak the same dialect and have the same degree of bilingualism, the work to analyze loan words can be based on more dependable data. The situation, however, is not so simple. Pae (1975) represents the difficulty in assuming the source language of loan words, saying that kilam, and Kholela could come from any language among English, Japanese, French or German (p. 169). Also, he states that records or documents which were written in Korean letters before 1900 are so rare that inferring the time of borrowing of a loan word is virtually impossible (1976, p.5).

The time of borrowing is important in the research of phonetic substitution. Especially before 1945 many loan words were affected by the Japanese phonological system. Since 1945, the effort to retain the original sounds and eliminate the Japanese style pronunciation has been a language policy of the Korean government (i.e., see M-S Kim, 1978). Furthermore, the stationing of the American

army and the direct interchange of commerce has led to more frequent contact with American English and culture. This close cultural contact and English education in schools cause the same word to be borrowed again. This reborrowing process is well illustrated in the different forms of the same word as follows:

(5)	thru. Jap.	reborrowing	English
	t ^h e ^h elepi ²	; t ^h ellepicy ⁰ n	: television
	latio	; l ⁰ etio	: radio
	c'ok'oles	; c ^h ok ^h ollis	: chocolate
	tonas'i	; ton ⁰ s	: doughnut
	nannin ^h ku	; l ⁰ nnin ^h	: running shirt
	semen	; siment ^h i	: cement
	p'oi	; poi	: boy

It is noticed that younger and older speakers use different forms; the former usually use the reborrowed forms. Sometimes two forms are specialized, as in the case of 'boy'.³

This reborrowing process and the close relationship with the United States makes the assumption possible that many English loan words used today may come from American English rather than Japanese or other languages.

Besides the influence of Japanese, words borrowed long ago might be changed a lot during the time. "Linguists have generally assumed that a scale for the time of borrowing can be set up on the basis of phonological form. Early loans are assumed to be the more distorted words,

while the late are more similar to their models (Haugen, 1950, p. 216)." The analysis in this paper will be limited to the late loans in Haugen's term rather than the distorted words in order to avoid words that show the evident influences of the Japanese phonemic system.

Finally, this thesis focuses on the written form and does not treat intonation. Korean characters themselves are phonetic symbols so that the pronunciation of a written word is always regular. However, there may be a disparity between the written form and the actual spoken form. The phonetic substitution will vary in degree for different speakers and on different occasions. Especially the pronunciation of speakers who have learned English will be different from those who have not. In this respect, the written forms will provide the regular and formal forms of loan words.

NOTES

1. For the collection of loan words, The Sae Gae Times, Dong-A Daily News L.A. Edition, Yeseng Dong-A, (Mar. - Sept. 1987) and A Dictionary of Loanwords in Korean (Pae, 1970) are used. When there is difference between the collected form from newspapers and that in the dictionary, I use the collected form for the current usage after checking its source language. Currently, lenis obstruents rather than fortis obstruents are more frequently used in loan words, compared to those shown in his dictionary.

2. I use a phoneme transcription system for the loan words. For typographical convenience, the following symbols are used instead of the IPA symbols:

	notation	=	IPA
consonant	/c/	=	/tʃ/
	/j/	=	/dʒ/
	/ʃ/	=	/ʃ/
	/ʒ/	=	/ʒ/
	/y/	=	/j/
vowel	/ɛ/	=	/ɛ/
	/ə/	=	/ə/
	/i/	=	/ɯ/
	/y/	=	/y/
	/a/	=	/a/

3. p'oi is used only for an errand boy or a waiter.

CHAPTER II

THE BORROWING OF ENGLISH IN KOREAN

2.1. The Definition and Scope of Loan Words

A loan word is defined as a word which is borrowed from one language and used as naturally as a native word in a second language (H-S Lee, 1971).

The need to designate new things, persons, places and concepts causes lexical borrowing. Korean has been absorbing a lot of English words through commercial and cultural exchange, and the U. S. Forces retained in Korea after the Korean War have influenced English borrowing, especially American English.

The main borrowings of Korean from English are largely in the sphere of sports, science, women's clothes, cosmetics, and articles of food and goods: i.e., kolp^hi 'golf', p^huspol 'football', l^hkpi m^hchⁱ 'rugby match', lipsit^hik 'lipstick', etc. Many terms relate to elegant life, luxuries, and terms for articles of commerce -- k^hill^hap 'club', k^hap^hi 'coffee', p^hesy^han 'fashion', lesitolan^h 'restaurant' are a few examples. The most concrete words, such as designations for newly invented or imported objects, are especially borrowed and accepted as

loan words and used like native ones: k^həmp^hut^hə 'computer', c^hip 'chip', mɛcikswep^hɨ 'magic chef (a brand)', etc.

The loan word is itself subject to the grammatical, morphological, and phonological systems of the target language when it is integrated with the TL. Since the main focus of this thesis is the phonological change in loan words, I will briefly overview the other aspects, the morphology and the syntax, which may affect the understanding of phonological change.

2.2. The Grammatical and Morphological Aspect

Most of the words borrowed are, as might be expected, nouns in English. Nouns in singular forms are usually accepted. Only a limited number of nouns are borrowed as plural forms, such as sip^hoc^hɨ 'sports'. Some adjectives, adverbs and verbs are found in Korean commercials although it is questionable that all the terms are understood by average Korean speakers.

Grammatically, the commonest phenomenon is the addition of markers to indicate case because Korean is an agglutinative language. For example,

- (1) kika cohahanin p^hilo+nin sip^hoc^hɨ+wa nyusi+ta
 his favorite pro+s.m.¹ sports+and news+be
 His favorite program is sports and news.

Suffixes of the derivational endings are added into the new words and thereby the loan words are adapted to

the native morphology such as əp^hil ('=appeal' noun), əp^hil+hake (adverb), and əp^hil+hata (verb). Certain words appear with a native verb suffix i.e., nok^hi+hata ('knock' + verb suffix) and tica^hin+hata ('design' + verb suffix); other words have other derivational inflections i.e., liə^l+hake ('real' + adverb suffix), həsik^hi+han ('husky' + adjective suffix), and p^hɛsyənnəp^hul+han ('fashionable' + adjective suffix).

A lot of loan words are used in native constructions to form further combinations, such as the compounding of English loan words and existing Korean words: for example, usiŋ+kəp 'championship' + cup, yaku+t^him 'baseball' + team, t^haim+ci 'Time' + magazine, səlp^ha+ce 'sulfa' + drug, kanp^han+sit^ha 'representative' + actor or actress. These "loan blends" (a term used by Haugen, 1950) involve the transfer of some elements and the reproduction of others and are used as one word.

The markers, suffixes, and compounding play a part in transforming the pronunciation of a loan word by forming a breath group with the loan word (see Chapter 3-5 for examples).

In many cases long words are clipped and used more frequently than the original word. The contracted forms seem to be more easily accepted and adopted by Korean speakers.

(2)	Loan word	:	English
	sit ^h en		stainless steel

inp ^h ille(isyən)	inflation
temo	demonstration
daiya	diamond
kolten	corded velveteen
kəm ^ə	chewing gum
p ^h ilo	program/professional
maik ^h ɪ	microphone
mɛsik ^h əm	mass communication

Finally, new vocabulary is not usually added to the closed system items related to grammatical functions. However, according to Yu (1984), the frequent use of passive sentences and the feminine-pronoun kinyə^ə, which is the loan translation of 'she', must be borrowings of English constructions (p. 16). The Korean plural morpheme tɪl is only used with personal nouns (i.e., haksəŋ-tɪl 'students' vs. *yən^hiltɪl 'pencils'), and even for personal nouns, indicating plural is not obligatory, except in order to emphasize plurality. Today, it is not difficult to find the plural form of personal nouns instead of the singular form in articles written by students learning English or scholars who have studied in the United States.

- (3) a. "kukmin"+iy iykyən+i cuyyohata⁴.
 people+of opinion+s.m. important+be
- b. "kukmin+tɪl"+iy iykyən+i cuyyohata.
 people+p.m.+of opinion+s.m. important+be
 Public opinion is important.

Both sentences (3-a, b) can be accepted as grammatical, although the singular form is more natural. There is no need to employ til (plural marker) here. This tendency to indicate plurals may be affected by the system of English inflections.

2.3. The Semantic Aspect

For the most part, the loan words have kept their central English meaning in Korean. In some cases, however, the meaning of a loan word changes (extends or specializes) especially when Korean has the same word in meaning. After the new word and the existing word are used together for a long period, they are specialized in usage and meaning. For example, matam from French and hosit^hesi are used only for the manageress of a saloon or a tea room, and a bar maid respectively. The meaning of pilla is raised to indicate a good and expensive house.

2.4. The Phonological Aspect

The phonological problem of loan words is related to the manner in which a speaker perceives and reproduces the sounds of the source language (SL) in terms of the target language (TL). First of all, when a speaker uses a loan word in the context of his mother tongue, he reproduces it according to the phonological system of his native language in order to speak fluently and naturally, unless he concentrates consciously on the word. In fact, his

attempt to pronounce it "correctly" in terms of the SL may mar the stream of his speech and make it abrupt.

Secondly, the fact that a speaker of the TL identifies a phoneme of the SL with one in the TL and, in reproducing it, subjects it to the phonological system of the TL must be regarded as a natural process of borrowing. Weinreich (1968) lists four basic types of interference that a bilingual has in learning a second language: under-differentiation of phonemes, over-differentiation of phonemes, reinterpretation of distinctions, and actual phone substitution.⁵ As he states, under-differentiation of phonemes and reinterpretation of distinctions are difficult problem areas that learners must overcome in a second language learning situation. Not only phonemes but also sequences of phonemes which occur in the vocabulary of a language constitute an additional field of interference. The existence or absence of similar sequences in the TL may, respectively, eliminate or instigate malfunction in the SL (pp. 18-23). In this thesis, sound substitution and differences of sequences of phonemes, especially in the syllable structure, will be treated in detail.

NOTES

1. s.m. represents a subjective marker and o.m. an objective marker. + indicates a morpheme boundary. p^hɪlo 'pro' is a clipped word for 'program' in Korean.
2. kəm (k'əm in his transcription) is borrowed through Japanese according to the dictionary written by Pae (1970).
3. In Korean, kɪ has been used to refer to a third person singular masculine and feminine. These days, there is a tendency to use kɪnyə (Sino-Korean nyə means female) for a woman and kɪ for a man.
4. "kukmin" and "kukmintɪl" are collected from the weekly periodical Cukancoseon (Sept. 6, 1987). p.m. refers to a plural marker.
5. Under-differentiation of phonemes occurs when two sounds of the SL whose counterparts are not distinguished in the TL are not distinguished. Over-differentiation of phonemes involves using phonemic distinctions from the TL on the sounds of the SL, where they are not required. Reinterpretation of distinctions occurs when the bilingual distinguishes phonemes of the SL by features which are not essential in that language, but which are relevant in his TL. Finally, actual phone substitution applies to phonemes that are identically defined in two languages but whose normal pronunciation differs (Weinreich, 1968).

CHAPTER III

CONSONANT CHANGES IN LOAN WORDS

Borrowings represent the customary features of adaptation of foreign sounds to the native phonological system. Korean phonemes do not exactly coincide with English phonemes; for example, Korean has no phonemic contrast between voiced and voiceless sounds (see figures 1 & 2 for a comparison of the consonant systems). Thus, a speaker can not avoid changing a feature or features of a phoneme, or even the whole phoneme itself. Haugen describes the substitution process as "one in which the speaker substitutes 'the most nearly related sounds' of his native tongue for those of the other language (p. 215)."

In this process some loan words lose their distinctive quality as soon as they begin to be used as koreanized forms. For example, p^heθ's in the two phrases p^heθ pillei 'fair play' and p^heθ sik^heith^hiŋ 'pair skating' will be regarded as the same word, i.e., a word which has the meaning of 'fair' and 'pair'. Even though a competent bilingual speaker introduces a new loan word in native pronunciation, it will change during repetition by other speakers of the TL and, at last, a total substitution will

	Bi.	La.	De.	Al.	P.A.	A.P.	Pa.	Ve.	Gl.
Stop vl	p			t				k	
vd	b			d				g	
Affri. vl						c			h
vd						j			
Frica. vl		f	θ	s	š				
vd		v	ð	z	ž				
nasal	m			n				ŋ	
Approx.	w			l/r				y	

Figure 1. English Consonant Phonemic System

	Bi.	La.	De.	Al.	P.A.	A.P.	Pa.	Ve.	Gl.
Stop asp.	p ^h			t ^h				k ^h	
lenis	p(b)			t(d)				k(g)	
fortis	p'			t'				k'	
Aff. asp.						c ^h			
lenis						c(j)			
fortis						c'			
Fri. lenis				s	(š)				h
fortis				s'	(š')				
Nasal	m			n				ŋ	
Liquid				l(r)					

Figure 2. Korean Consonant Phonemic System

pop music	<u>P</u> ^h ap myucik	p [p ^h] → p ^h
pen	<u>p</u> ^h en	" "
poster	<u>p</u> ^h osit ^h ə	" "
rope	lop <u>p</u> ^h ɨ	p → p ^h
ticket	<u>t</u> ^h ik ^h es	t [t ^h] → t ^h
truck	<u>t</u> ^h ilək	" "
trophy	<u>t</u> ^h ilop ^h i	" "
test	t ^h esit <u>t</u> ^h ɨ	t → t ^h
(coca-) cola	<u>k</u> ^h olla	k [k ^h] → k ^h
cocktail	<u>k</u> ^h akt ^h eil	" "
campus	<u>k</u> ^h ɛmp ^h əsi	" "
whisky	wisik <u>k</u> ^h i	k → k ^h
(3) battery	<u>p</u> ɛt ^h əli	b → p
brand	<u>p</u> ilɛnti	" "
box	<u>p</u> aksi	" "
brooch	<u>p</u> 'uloc ^h i	" → p'
bye-bye	<u>p</u> 'aip'ai (children)"	"
drill	<u>t</u> ilil	d → t
drum	<u>t</u> iləm	" "
dress	<u>t</u> ilesi	" "
dance	<u>t</u> ɛnsi (t'ɛnsi)	" → t/t'
guide	<u>k</u> aiti	g → k
group	<u>k</u> ilup	" "
gown	<u>k</u> aun (k'aun)	g → k/k'
game	<u>k</u> eim (k'eim)	" → "
gum	<u>k</u> əm (k'əm)	" → "

English voiceless stops /p t k/ are transformed into Kore-

an aspirated stops /p^h t^h k^h/; voiced /b d g/ into slightly aspirated /p t k/ or sometimes /p' t' k'/. Therefore, in the substitution process (2), voiceless stops always become aspirated irrespective of their aspiration in the SL. Most voiced stops lose their voicing in Koreanized words, becoming Korean /p t k/.

Here, a probable question is why Korean speakers do not accept English /p t k/ as Korean /p t k/ instead of /p^h t^h k^h/. In order to understand this seemingly unnatural phenomenon, I will look at English stops and Korean stops in greater depth.

Although aspiration is not a distinctive feature to differentiate meaning in English minimal pairs, it appears in the allophonic distribution of stops. English /p t k/ are aspirated word initially, such as 'pie' [p^hai], before a stressed vowel, such as 'computer' [kəm^hyutə], and optionally in word final position, such as 'clap' [klæp^h]. They are unaspirated after /s/ i.e., 'strike' [straik]. Ladefoged (1982) defines aspiration as "a period of voicelessness after the stop articulation and before the start of the voicing for the vowel (p. 47)", giving a rule that voiceless stops are aspirated when they are syllable initial (p. 83). According to him, the major difference between the words (pie, tie, kye) and (buy, die, guy) is not that one has voiceless stops and the other voiced stops. It is that the former has (voiceless) aspirated stops and the latter has (partially voiced) unaspirated

stops (p. 48).

Another fact to be noted is that English /p t k/ are in general forcefully articulated with more muscular energy and a stronger breath effort than /b d g/ and this fortis/lenis difference is the primary mark of the /p t k/ : /b d g/ set of contrasts (Gimson, 1962; Lisker and Abramson, 1964).

In summary, English /p t k/ are fortis and aspirated in syllable initial position (but not after /s/).

The investigation of voice onset time¹ by C-W Kim (1965) reveals the difference among the 3 series of Korean stops: for the glottalized stops /p' t' k'/, the onset time of vocal cord vibrations starts 12 msec (mean value) after the stop release; for the slightly aspirated stop, i.e., [p], it is 35msec; and for the heavily aspirated stops [p^h] it is 93 msec (p. 346).

In the perception of Korean stops, the timing of voice onset (or aspiration) apparently serves to distinguish the heavily aspirated stops from the other stops by a considerable lag. This, however, is a necessary but not sufficient condition for differentiating the other two stops because a slight overlap was found between them (C-W Kim, 1965; Han and Weitzman, 1970).

Another primary feature to differentiate Korean stops is intensity (C-W Kim uses the term "tensity"). The Korean stops /p' t' k'/' have a much stronger air-pressure during the occlusion than the Korean stops /p t k/. Thus,

Korean /p t k/ are opposed against both /p' t' k'/ and /p^h t^h k^h/, not in voicing, but in intensity, explaining the fact that the intensity feature in Korean stops is independent of voicing and aspiration (pp. 356-357).² Hence intensity plays a significant role in differentiating fortis /p' t' k'/ from lenis /p t k/. On the other hand, the intensity in English usually coincides with aspiration and voicing; aspiration produces high intensity and, as already mentioned, English /p t k/ are regarded as fortis and /b d g/ as lenis.

In summary, Korean /p^h t^h k^h/ in its main character is tense (fortis) and heavily aspirated; /p t k/ is slightly aspirated and lenis (weak); and /p' t' k'/ is called unaspirated and glottalized fortis (tense, strong). All Korean stops are voiceless.

The proposed problem of the replacement of English /p t k/ with Korean /p^h t^h k^h/, not with Korean /p t k/, is explained by the following facts.

First, the Korean speaker's attempt to substitute the closest sound catches unconsciously the fact that aspiration serves to differentiate voiceless stops from voiced stops in syllable initial English words as a main force. This is not difficult to Korean speakers because aspiration is a distinctive feature of Korean phonemes.

Secondly, in the intensity feature Korean lenis stops /p t k/ correspond not to English fortis /p t k/ but to lenis /b d g/. So it is rather natural that Korean speak-

ers substitute Korean /p^h t^h k^h/ for English /p t k/ and Korean /p t k/ for English /b d g/.

Another problem is the translation of English /p t k/ after /s/. Let us look at the loan words.

(4)	English	Loan word	phoneme change
	sports	sip ^h oc ^h i	p → p ^h
	spin	sip ^h in	" "
	steam	sit ^h im	t → t ^h
	strike	sit ^h ilaik ^h i	" "
	skirt	sik ^h ət ^h i	k → k ^h
	skate	sik ^h eit ^h i	" "

English stops /p t k/ after /s/, which are unaspirated, are translated into /p^h t^h k^h/ in Korean loan words. In fact, they are different from the Korean heavily aspirated stops but closer to the unaspirated stops in the aspect of aspiration. Already mentioned is that Korean /p' t' k'/ are unaspirated and strong; in English, while stops after /s/ are tense, they are not aspirated in words with a stressed syllable (Hoard, 1971, p. 136). In the comparison of VOT, /p/ after /s/ is the closest to /p'/ and the farthest from /p^h/ when English and Korean stops are arranged in a continuum (Lee et al. 1984, p. 43). If the borrowing of the example words followed the rule of the closest sound substitution, these sounds should be substituted for by the unaspirated tense stops /p' t' k'/.

The reason their phonetic aspects are not reflected in borrowing may be that Korean speakers do not catch the

difference of the stops after /s/ because of their restriction in distribution, or that since all English voiceless stops, aspirated and unaspirated, are spelled the same, being contrasted with voiced stops, Korean speakers psychologically divide English stops into just two contrasted ones, ignoring the difference after /s/.

We can not ignore the influence of spelling because many words are borrowed from written English. Sometimes the difference can appear between a loan word borrowed from the written form and one from the spoken form of the same word. "Spelling pronunciations may be suspected wherever the reproduction varies from normal in the direction of a pronunciation traditionally given to a letter in the borrowing language. In any literate community such influence is likely to be present in a number of words which have been brought to the community in writing" (Haugen, p. 223). I conclude that the influence of spelling interferes with the recognition of the difference between aspirated stops and unaspirated stops after /s/, although aspiration is a distinctive feature in Korean.

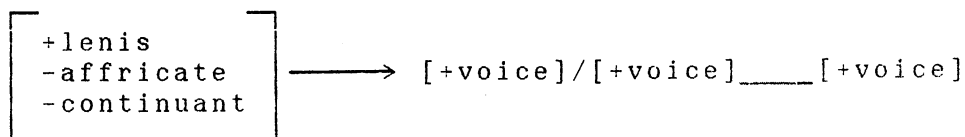
The major characteristic of Korean stops is that all of them are voiceless. Acoustically the distinction of voiced and voiceless stops is easily determined by reference to their spectrographic patterns. In a voiced stop closure, the formantless segment is traversed by a small number of low frequency components. Thus, we can see the vibrations produce only small, regularly spaced lines near

the base line, the so-called "voice bar (Ladefoged, p. 178)." On the other hand, the closure interval for the voiceless stops is blank. The spectrogram of all Korean stops shows the blank interval and no voice bar although [p^h], the heavily aspirated stop, shows a greater distribution of energy (for the spectrogram, see C-W Kim, 1965, p. 348).

In Korean, voiced stops /b d g/ exist only as allophones of voiceless stops /p t k/. It is a well known fact that Korean stops /p t k/ are transformed into voiced stops /b d g/ between voiced sounds. For example,

- (5) /pupu/ [pubu] : husband and wife
 /kito/ [kido] : a prayer
 /koki/ [kogi] : fish
 /pap+i/ [pabi] : boiled rice + s.m.

(6) The Voicing Rule:



As might be expected, the same phenomenon appears in loan words, as follows:

(7)	English	Loan word	phoneme change
	four ball	p ^h opol	b → /p/ [b]
	liberal	lip _ə ləl	" "
	cup+ s.m.	k ^h əp+i	p → /p ^ə / [b]
	video	piteo/pitio	d → /t/ [d]
	gold	kolt _i	" "

cut+ s.m.	k ^h ət+i/k ^h əs	t → "
organ	olɪk <u>an</u> /olkɛn	g → /k/ [g]
program	p ^h ɪlɒk <u>ɪ</u> lɛm	" "
olympic+ s.m.	ollimp ^h ɪk+i	k → "

Therefore, the English stops /b d g/ and even /p t k/ which happen to be between voiced sounds must be translated into voiced sounds in actual Korean pronunciation, although they are transcribed as voiceless stops /p t k/ in loan words.

In summary, in borrowing, the substitutions of Korean /p^h t^h k^h/ and /p t k/ for English /p t k/ and /b d g/, respectively occur. This means that among the English phonetic qualities, distinctive features in Korean (i.e., aspiration, intensity), even though they are not distinctive in English, influence the manner in which English phonemes are replaced by the closest sounds in Korean. That is to say, Korean speakers watch foreign words from their perspective, reinterpret them according to the distinctive features of Korean. The exact replacement (i.e., /b d g/), which is possible in allophonic distribution of Korean, will depend on the context, whether it triggers the phonological rules of Korean.

3.2. Affricates

The borrowing process of affricates is basically the same as that of the stops. English has /c, j/ as phonemes and Korean has /c^h, c', c/⁴, all voiceless. I will call

/c^h/ the (heavily) aspirated affricate, /c/ lenis, and /c'/ fortis.

(8)	English	Loan word	phoneme change
	chain	<u>c</u> ^h ein	c → c ^h
	cheese	<u>c</u> ^h ici	" "
	punch	p ^h ə <u>n</u> c ^h i	" "
	jumper	<u>c</u> ampa/cəmp ^h ə	j → c
	jacket	<u>c</u> ak ^h es	" "
	jungle	<u>c</u> əŋkɪl	" "
	jam	<u>c</u> 'ɛm	j → c'
	jeep(+ car)	<u>c</u> 'ip(+c ^h a)	j → c'

The examples of (8) show that English /c/ has been translated as /c^h/ in loan words and /j/ as Korean /c/ or sometimes /c'/. As with stop substitutions, it is possible to assume that aspiration and intensity play a main role in affricate substitutions, too.

As an allophone, Korean lenis affricate /c/ becomes the voiced affricate /j/ between voiced sounds, such as apəci [abəjɪ] 'father', kaci [kajɪ] 'eggplant' and cacajka [cajajga] 'cradle song'. So the rule of (6) should be reformulated as following:

(9) The Voicing Rule:

$$\left[\begin{array}{l} +\text{lenis} \\ -\text{continuant} \end{array} \right] \longrightarrow [+voice]/[+voice] ______ [+voice]$$

Voicing in intervocalic position is found in loan words so that the voiced affricate located by accident between

voiced sounds in loan words appears as the voiced sound and in other places turns into the lenis affricate.

(10)	English	Loan word	phoneme change
	pajamas	p ^h a <u>a</u> ama	j → c [j]
	schedule	sik ^h e <u>u</u> l	j → c [j]
	engin	e <u>n</u> in	j → c [j]
	zigzag	cik <u>i</u> c <u>u</u> ki	z → c [j]

In summary, there is a correspondence between English /c/ and Korean /c^h/, and between /j/ and /c/ in the phoneme change of loan words. And the /c/ between the voiced sounds is voiced through as /j/ in the actual pronunciation of Korean speakers.

3.3. Fricatives

Among the English fricatives, /f, v, θ, ð, z, ʒ/ do not exist in the Korean phoneme inventory. Being absorbed during Korean lexical borrowing, these phonemes lose their original sounds and go through under-differentiation. Without exception, Korean speakers change qualities of non-existent phonemes in loan words unless they try to concentrate hard on those phonemes. Even in their attempt to speak English, most Korean learners have problems in mastering those sounds (see Chu & Park, 1979; Robson, 1979). The examples below show the phoneme substitutions which occur in loan words in Korean.

(11)	English	Loan word	phoneme change
a.	fiction	p ^h i <u>k</u> syən	f → /p ^h /

	four ball	p ^h opol	"	"
	beef	pip ^h i	"	"
	free kick	p ^h ulik ^h ik	"	"
	freeway	huliwei	"	→ /h/
	fuse	hyuci	"	"
	cover	k ^h əpə	v	→ /p/
	video	piteo	"	"
b.	thrill	s̥ilil	θ	→ /s/
	bath room	pɛs̥ilum (brand)	"	"
	booth	puɕi	"	"
	thrill	t̥ilil	"	/t/
	thrust	t̥iləsit ^h i	"	"
	brother	pulatə (brand)	ʃ	→ /t/
c.	zero	celo	z	→ /c/
	zipper	cip ^h ə	"	"
	zigzag	cikicɛki	"	"
	size	saici	"	"[j]
d.	vision	picyən	ʒ	→ /c/
	leisure	lecə	"	"

Loan words which include /ʃ/ or /ʒ/ are rarely found in Korean, but it is not difficult to assume a probable substitute for them by observing English words used by Korean students. The substitution for the non-existent English phonemes shows somewhat regular patterns, usually coinciding with the principle of the closest phoneme substitution according to place and manner of articulation:

f → /p^h/ (sometimes, /h/)⁵
 v → /p/
 θ → /s/ or /t/
 ʃ → /t/
 z → /c/
 ž → /c/

We can see the correspondence between English voiceless sounds and Korean aspirated sounds, and between English voiced sounds and Korean lenis sounds except /θ/, where the Korean fricative has no aspirated counterpart for /s/. For the phenomenon that /θ/ does not settle completely as /s/, which seems to be the closest, it appears more realistic to say that a language adopts the sound that is 'felt' to be closest to the prototype (Hyman, 1970, p. 11). This means that Korean speakers perceive sometimes /s/ is the closest to /θ/ and sometimes /t/.

Except for the above non-existent phonemes, English has fricatives /s, ʃ, h/ and Korean has voiceless lenis fricative /s/, the fortis /s^h/ and the glottal /h/. By the comparison of fricative phonemes in the two languages and by the non-existence of /s^h/, the expected substitute for /s/ might be Korean /s/.

Observe the phoneme substitution for /s/:

(12)	English	Loan word	Phoneme change
a.	spring	<u>s</u> ip ^h ilŋ	s → /s/
	sports	<u>s</u> ip ^h oc ^h i	" "
	piston	p ^h i <u>s</u> it ^h on	" "

	best seller	pe <u>s</u> it ^h i sellø	"	"
b.	center	<u>s</u> ent ^h ø (s'--)	" →	"[s']
	service	səpisi (s'--)	"	"
	sun glass	sənkilasɨ (s'--)	"	"
	bus	pə <u>s</u> ɨ	"	"
	saloon	s'aləŋ (s'alləŋ)	"	"

Although the words of (12-b) are usually written with /s/, especially in formal writing, their actual pronunciations by Korean speakers are /s'/ in many cases.^e

The palatal fricative /š/ appears in the allophonic distribution of /s/.

- (13) a. socu [soju] 'spirits'; saləŋ [sarəŋ] 'love'
 su [su] 'embroidery'; sɛ [sɛ] 'bird'
 swɛsin [swɛšin] 'innovation'
 səli [səri] 'frost'; sø [sø] 'iron'
- b. swipta [šypt'a] '(be) easy'
 swi [šqi:] 'readily'
- c. sil [šil] 'thread'; sin [šin] 'shoes'
- d. kasyəyo [kašyəyo] 'go, please'

The example (13) shows that [š] appears before [y], [qi], [i], and [y] (13 b-d), although a word beginning with [šyV] is not found in Korean native words (13-d). The following rule (14) will function to predict [š].

(14) The Fricative Palatalization Process

$$\begin{array}{l}
 /s/ \longrightarrow [š]/ \\
 (/s'/) \quad \quad ([š']) \longrightarrow \left[\begin{array}{l} \text{-consonant} \\ \text{+front} \\ \text{+high} \end{array} \right]^7
 \end{array}$$

(/s/ is palatalized before [y], [qi], /i/ and /y/.)

The interesting s-palatalization process is found in the borrowing of the English words with /š/.

(15)	English	Loan Word	phoneme change
a.	schedule	<u>s</u> ik ^h ecul	s → s
b.	shield	<u>s</u> wilti [šyldi]	š → s[š]
	ship	<u>s</u> wip [šyp]	" "
	shopping	<u>s</u> yap ^h iŋ	š → "
	shampoo	<u>s</u> yamp ^h u	" "
	shock	<u>s</u> yok ^h i	" "
	condition	k ^h əntisyən	" "
	show	<u>s</u> yo (s'yo)	" → s[š]
c.	supermarket	<u>s</u> yup ^h əmak ^h es	s → s[š]
	superman	<u>s</u> yup ^h əmɛn	" "

For /s/ to be [š] in loan words, the following vowels are realized as semivowels or y^a (i.e., 15-b) instead of monophthongs (i.e., 15-a). While there is no native Korean word which has /s/ + /y/ in the first syllable of a word, the loan words beginning /s/ + /y/ tend to be established. This phenomenon may evidence the two facts that in the initial establishment of the loan words the closest sounds tend to be substituted and that Korean speakers apply unconsciously their knowledge about the allophonic distribution of Korean [s, š]. In 15-c, we can see the s-palatalization is over-applied to English /s/, though sup^h- [sup^h-] and syup^h- [šyup^h-] appear alternately in investigation.⁹

It goes without saying that the substitute for Eng-

lish /h/ is the same phoneme /h/ which exists in Korean. Loan words such as hol 'hall', hosit^hesi 'hostess' holmon 'hormone' show this substitution.

In summary, each non-existent English phoneme in Korean /f, v, θ, ʃ, z, ʒ/ is replaced by the phoneme that Korean speakers perceive to be the closest. English /s/ is substituted by Korean /s/. And for /s/ to be [š] in loan words, vowels after /s/ tend to be [y] or diphthongized with [y].

That is, Korean speakers perceive vowels as diphthongs because of the palatalization of the preceding consonant. But after being lexicalized, every underlying /s/ is palatalized so long as the environments conform to the rule. Thus, in the surface representation, it may be realized as different from English, i.e., taxi /tæksi/ > t^hesi [t^hɛš'i].

3.4. Nasals

Because both English and Korean have the same nasal phonemes the relationship of nasal exchanges in loan words is very regular and predictable.

(16)	English	Loan word	Phoneme change
a.	member	<u>m</u> empθ	m → m
	music	<u>m</u> yucik	" "
	model	<u>m</u> otel	" "
b.	nymph	<u>n</u> imp ^h i	n → n
	news	<u>n</u> yusi	" "

	New York	<u>nyuyok</u>	" "
c.	ping-pong	p ^h iŋp ^h oŋ	ŋ → ŋ
	wedding cake	wetiŋk ^h eik	" "
	timing	t ^h aimiŋ	" "

As might be expected, there are exchanges between the same phonemes.

In Korean vocabulary, /n/ is somewhat restricted in its distribution; Huh states that it is omitted before /i, y/ and in the initial place of a word. This phenomenon is revealed in many Sino-Korean which was borrowed long ago such as the words below:

- (17) nyǎca > yǎca 'woman'; namnyǎ 'man and woman'
 nikmyǎŋ > ikmyǎŋ 'anonymity'
 nyoto > yoto 'urethra' (p. 268)

This deletion process will be summarized as the following rule:

- (18) The n-Deletion Rule
 /n/ -----> ∅ / # _____ {i, y}

The n-deletion process, however, is not found in the English loan words shown in the examples of (16-b).

In summary, the phoneme substitutions for /m n ŋ/ are very regular, exchanging the same phonemes. The n-deletion process which applied to Sino-Korean is hardly found in the new English borrowings.

3.5. Liquids

English has /l, r/ as liquids in its phoneme inven-

tory,¹⁰ whereas Korean has /l/ as a phoneme and [r] as its allophone.¹¹ It is a well known fact that Korean /l/ becomes [r] in intervocallic position.

- (19) a. sal [sal] 'flesh'; tal [tal] 'moon'
 b. salku [salgu] 'apricot'; kalte [kalt'e] 'reed'
 sanullim [sanullim] 'echo'; kulle [kulle] 'bridle'
 c. uli [uri] 'we'; salam [saram] 'man'

By the observation of the words in (19), we can see [r] occurs only in intervocalic position, as in the following voicing rule:

(20) The Liquid Voicing Rule

/l/ → [r] / [-cons] _____ [-cons]¹²

This phonological rule applies apparently to the loan words when they are used as native ones in contexts like the following :

(21)	English	Loan word	phoneme change
a.	air line	eə <u>l</u> ain	l → l[r]
	head light	het <u>l</u> ait ^h i	" "
	drive	t <u>l</u> aipi	r → "
	pro(gram)	p ^h <u>l</u> o	" "
	drama	t <u>l</u> ama	" "
b.	filter	p ^h il <u>t</u> ^h ə	l → l
	multi-vision	mə <u>l</u> t ^h ipicyən	" "
	rival	laip <u>l</u>	" "
	medal	met <u>l</u>	" "

After English /l/ and /r/ are lexicalized as /l/ in loan words, rule (20) applied in (21-a) but not in (21-b).

Another important fact to be noted is that [l] is able to occur between vowels with the condition of being geminated. In other words, when /l/ is geminated with another /l/, they are realized as [l] (or [ll]) as in (19-b). Otherwise, /l/ alone becomes [r]. Observe how this phonological aspect is realized in the loan words:

(22)	English	Loan word	Phoneme change
a.	nylon	nai <u>l</u> oŋ	l → [r]
	nylon	naillon	" → [l]
	club	kʰi <u>l</u> əp	" → [r]
	club	kʰi <u>ll</u> əp	" → [l]
b.	(coca) cola	kʰo <u>ll</u> a	" → [l]
	dollar	t <u>ll</u> a	" "

Although there are some exceptions, [l] between vowels in English is usually borrowed as the geminated /l/, thereby realizing [l] like the original sound. The words which have two forms in (22-a) can be explained by the difference of the time of borrowing or accidental alternation; we can assume the latter type (the geminated) of the word was borrowed late (i.e., reborrowing of the former type) because the recently borrowed words have a tendency to take the geminated form for [l]. Actually nailoŋ was borrowed through the Japanese language (Pae, 1970).

Finally, an untreated but important discussion is related to aphaeresis because the native Korean language has no words which begin with /l/. Chinese words borrowed went through the l-deletion process.

- (23) lakwən > nakwən 'paradise' cf. k^hɛlak 'pleasure'
 loin > noin 'old man' cf. pulo 'elders'
 liyu > niyu > iyu 'reason'
 lyeiy > nyeiy > yeiy 'courtesy' (Huh, p. 268)

The liquid /l/ was altered into /n/ only when it appeared in word initial position, and again /n/ before [i] or [y] was deleted completely. According to (23), the l-deletion rule is formulated:

- (24) The l-Deletion Rule

/l/ → /n/ / # _____

Huh states that this process (and n-deletion also) is a obligatory and universal condition in Korean (p.268). However, according to the indications of several scholars such as Lee et al. and Pae (1976), this process is weakening in the new loan words as shown in the written forms of lomɛnsi 'romance', loyalt^hi 'royalty', lek^hoti 'record' and losyon 'lotion'. The application of rule (24) appears to be optional to the newly borrowed words so that losyon is pronounced as [losyon] or [nosyon]. Which form is used depends on the degree of the nativization of the loan word and the speaker's intimacy with the foreign language. The weakening of the /l/ alternation process, with the /n/ deletion process, in word initial is a kind of change that takes place in the recipient language as a consequence of the introduction of numerous loans in a fully or partly unassimilated phonic form. In the long run, it is possible to expect the establishment of /l/ in

word initial position due to borrowing of a lot of words beginning with /l/.

There is no research, as far as I know, about whether the word initial /l/ is realized as [l] or [r] in Korean speakers' pronunciation. [l] rather than [r] seems to appear more frequently according to my observation.

To summarize, English /l/ and /r/ are phonemicized as /l/ in the process of borrowing and then the /l/ is realized [r] or [l] in or out of accordance with the liquid voicing rule (20). But by geminating /l/ in loan words the /l/ in English keeps its phonetic value and avoids the rule application. The /l/ to /n/ alternation process which applied obligatorily to Sino-Korean is losing its influence on the new English loan words.

3.6. Fortition and Palatalization

In this section, I would like to discuss the phoneme change problems across one phoneme category dealt with in the above sections.

Until now, I have not discussed the cases when English voiced obstruents become Korean fortis obstruents in loan words. Some words have been established as the fortis forms instead of the lenis counterparts, such as k'asɨ, k'ɔm, t'alla, p'ɔsɨ, s'alon, c'ipcʰa, in actual pronunciation (Nam, 1975) although they appear alternatively with lenis forms (more often) in written materials.

C-W Kim explains that the reason Korean loan words

from English beginning with /b d g/ are transcribed in the Korean orthography with the equivalent of /p' t' k'/ might be that initial and final /b d g/ in English are partially devoiced (1965, p. 344).

However, the situation is a little changed. These days the lenis forms /p t k c/ rather than fortis /p' t' k' c'/ generally tend to be used in the Korean orthography. Thus, many loan words transcribed as the lenis forms (except those familiar words which were borrowed long ago) are assumed to be pronounced as the lenis such as dɨlai < dryer, pica < visa, pitʰo < veto, kəl sikʰus < girl scout and so on. In general the fortis pronunciation is shown on the loan words borrowed long ago.

From this perspective, Kim's explanation does not seem to be appropriate to many loan words, especially new words coming into Korean. I think that English /b d g j/ are accepted generally as the Korean lenis /p t k c/ rather than /p' t' k' c'/, and among them some initial lenis obstruents develop alternate, tense forms; I name this a kind of fortition process.

The other problem that occurs across a phoneme boundary is a palatalization process. Palatalization in dental consonants is a general phenomenon in Korean:

n → ñ, l → ʎ, s → š, and t → c before /i, y/ (C-W Kim, 1968, 1972; Kim-Renaud, 1986, pp. 91-102; Lee et al. 1984).¹³ Among them, the palatalization of /tʰ, t/ to /cʰ, c/ is outstanding because this is a noticeable change

between two phonemes, compared with the others which have allophonic changes within a phoneme and thus are not noticed by Korean speakers. Therefore, I will concentrate on the t-palatalization process in loan words.

t-palatalization, shown in Korean native words, occurs before /i, y/, but the following examples reveal other cases:

- (25) a. pat^h-i [pac^hi] 'field + s.m.'
 sot^h-i [soc^hi] '(iron) pot + s.m.'
- b. kut-i [kuji] 'firmly (derivation)'
 hɛtoti [hɛdoji] 'sunrise (")'
- c. ɔti [ɔdi] 'where'
 nit^hinamu [nit^hinamu] 'zelkova'
 canti [candi] 'grass'

Palatalization applies only to the words in (a) and (b), but not in (c). For the (25-c) examples which do not undergo the palatalization process in the same environment, Kang (1984) reasons that they had different underlying shapes, such as ɔtiy, cantiy, and nit^hinyamu when the palatalization occurred around the eighteenth century (p.221). To explain this, Kim-Renaud limits t-palatalization only across a morpheme boundary (1986, p.93), as shown in the above examples. According to her, "by the end of the eighteenth century, in Seoul dialect at least all dentals seem to have assimilated to the following i or y regardless of the presence or absence of the morpheme boundary within a phrase....The end result obviously was

no dental stop before i or y in the underlying representation of any morpheme and only the stem final dentals could undergo palatalization (p. 96)." The morpheme internal tiy sequence, which was not palatalized, appears as ti due to the sequence iy merging with i.

The problem is whether the diachronic process t-palatalization occurs on loan words at present. C-W Kim indicates palatalization on loan words such as tube [cu: bi], radio [najio], tulip [c^hu:ripi] (1972, p. 158). On the other hand, Pae (1975) points out that the word racio was borrowed through Japanese so that we cannot explain palatalization with it.

However, t-palatalization is found in the words borrowed directly from English, as follows:

- (26) nik^hoc^hin/nik^hot^hin < nicotine
 k^hanc^huli¹⁴ k^hil^lθp < country club
 amac^huθ < amateur
 k^hilisi^{masi} c^huli < Christmas tree

The above words are used very often in Korean every day life. Therefore, I assume that t-palatalization occurs optionally even within a morpheme in the case of loan words and its application is higher in the frequently used colloquial forms.

NOTES

1. VOT (Voice Onset Time) is defined as "the moment at which the voicing starts relative to the release of a closure" and it is a good measure combining aspiration and voicing (Ladefoged, p.130). A voiceless stop is one in which voicing follows the stop release (voicing lag) and a voiced stop is one in which voicing precedes the stop release.

2. Han and Weitzman explain that the order of the intensity is strong /p' t' k'/, aspirated /p^h t^h k^h/ and weak /p t k/ (p. 114) and that the significant cue in distinguishing weak stops from strong stops is the quality of voice onset, namely the onset value of the fundamental frequency and intensity build-up (p. 126).

3. The examples in (7) that English /p/ (or, /t/, /k/) becomes Korean /p/ (or, /t/, /k/) seem to be counter-examples to the above explanation that English /p t k/ become Korean /p^h t^h k^h/. However, it should be noted that these phenomena occur only in syllable final position. This will be treated in Chapter 5.

4. For convenience, instead of /tʃ dz/ and /tʃ^h tʃ' tʃ/ I will use /c j/ and /c^h c' c/.

5. The substitution of /h/ for /f/ is not found frequently; the same word, except with /p^h/ instead of /h/, co-occurs as p^hyuci 'fuse'. My investigation of A Dictionary of Loanwords in Korean tells that many of the loans which substitute /h/ for /f/ were borrowed through Japanese.

6. When Korean speakers listen carefully to English /s/, it is closer to Korean /s'/ than simple /s/ in most cases. The correspondence between English /s/ and Korean /s/, not /s'/, in loan words seems to be affected by the spelling system and a tendency to avoid writing /s'/.
There is no data about whether the loan words including /s/ are realized [s] or [s'] in actual pronunciation as far as I know. For the analysis, I use Pae's dictionary, which uses /s'/ when pronounced as [s'], and my own observation. The general tendency is that /s/ in word initial becomes /s'/ except before /i/, and /s/+/i/ in word final syllable are always realized as [s'i].

The tendency to be fortis is less apparent in the [š] sound of loan words (except the case of s'yo 'show') in that most /s/'s before /y/ or /y/ don't change into /s'/. There are some loans which are pronounced as [s'] before /i/ in spite of the written form /s/: sinema 'cinema', sin 'single', sin 'scene' and s'il, all pronounced as [s'], exactly [š']. According to Huh, the palatalization process happens in /s'/, too.

7. Huh divides Korean allophones of /s/ into three: [s], [š] and [ç], such as sypta [š], sil [ç], salam [s] ([š] before {y, qi}, [ç] before {i, y} and otherwise [s]) (p. 41, 160). However, since the actual phonetic difference between [š] and [ç] is not enough to differentiate each other clearly and since [ç] does not exist in English, I will not divide them.

8. Despite the fact that according to rule (14) [i] itself plays a role in changing [s] to [š], only [y] and [y], not [i], are used in loan words. This may be explained by the above statement, namely the exact [š] is realized before [y], which is quite close to [i], but in the case of [y] the way to be the closest to [š] is to be [ç].

9. C-W Kim states that in Korean, [y] generally does not occur after a palatal consonant (c c^h c' š) (1968, p. 520). This does not seem to be applied to [š] because examples of [y] after [š] are abundant in loan words.

10. English is usually said to have /l, w, r, y/ as approximants. However, in Korean /w, y/ function only to compose the diphthongs as semi-vowels (glides); I will include them in Chapter 4 "vowels".

11. The palatalization process occurs here in liquids (and in nasals, optionally in word initial, too). Before /i/ or /y/, the geminated /l/ is articulated with the front of the tongue approaching or touching the hard palate rather than the alveolar ridge, and is realized as [l̥]. In order to be brief, I will not discuss this phenomenon in liquids and nasals.

12. Like #10, [-cons] (-consonantal, or 'vowel') here includes semi-vowels, for example, c^hilyo 'medical treatment' is realized as [c^hiryɔ].

13. Each author's approach varies slightly.

14. /y/ is deleted after palatal affricate consonants, as we can see the alternative forms amat^hyuθ, t^hyupi.

CHAPTER IV

VOWEL CHANGES IN LOAN WORDS

The substitution phenomenon of English vowels in the process of nativization appears more complex than that of consonants. A variety of pronunciations are shown between speakers for vowels of a loan word and even the same speaker employs different vowels on different occasions for the same word. Since the lexicalized forms found in newspapers or articles are not settled, it is difficult to represent a regular pattern of vowel borrowing.

In this chapter, I will observe several substitutions and summarize them. Then, some plausible explanations for vowel changes will be proposed, but it should be remembered that they do not cover all the cases of loan words.

4.1. The Vowel Phonemic Systems of English and Korean

The basic English vowel system to which I refer is illustrated in figure 3. Because English is a stress-timed language, the unstressed vowels are weakened to [ə] or [ɪ] in a sentence when a native speaker of English speaks naturally. Thus, the value of a vowel is supposed to change in a context or a sentence. In borrowing,

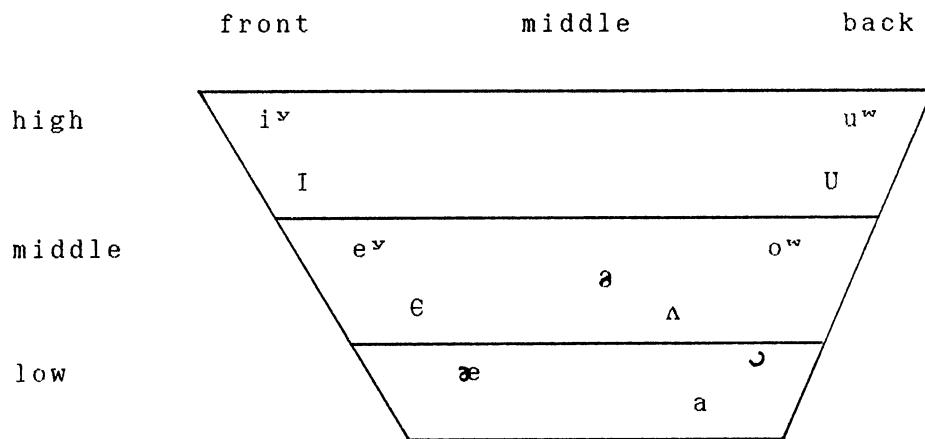
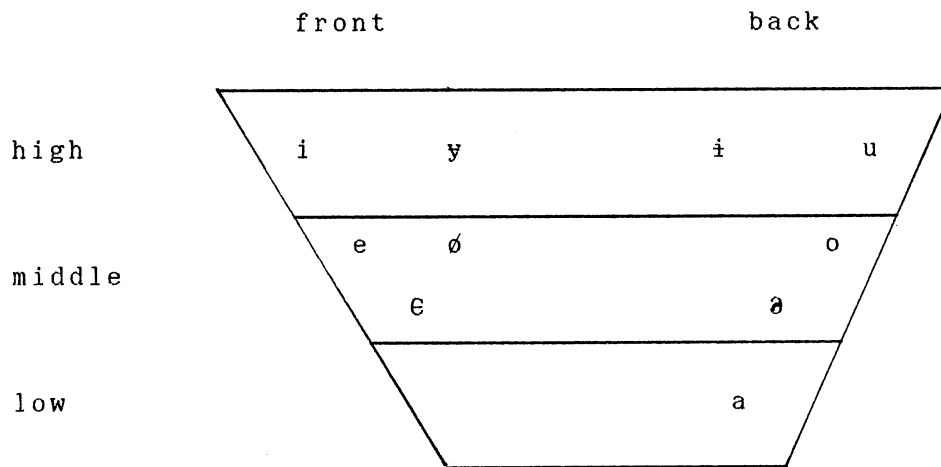


Figure 3. English Vowel Phonemic System



Diphthongs: we wɛ wə wa wi([ɥi])
 ye yɛ yə ya yu yo ɨy

Figure 4. Korean Vowel Phonemic System

however, each word separated from context becomes the target of borrowing and lexicalization in a target language. Therefore, a separate word form is assumed the prototype of a loan word.

In the Korean vowel system, there are some disagreements between scholars about the establishment of the basic vowels of Korean. For the analysis of vowel substitution, I will basically set up 10 monophthongs¹ and 12 diphthongs formed by 2 glides (see figure 4).

English has the diphthongs [aI], [aU], [ɔI], etc; these vowel combinations are actually glides. English diphthongs are not two vowels as much as they are glides from one sound to another (Bronstein, p. 187). On the other hand, Korean diphthongs always consist of the glides /w, y/ plus a vowel. The glides in Korean are restricted in their distribution only as on-glides except [ɨy], functioning as "some sort of subsegmental elements of vowels" such as [+palatal] and [+rounded] (C-W Kim, 1968, pp.516-517).

4.2. Vowel Substitutions

Every word for the analysis of vowel substitution is checked through the dictionary² in order to exclude the influence of the vowel system of Japanese, which has only 5 vowels /i e a o u/.

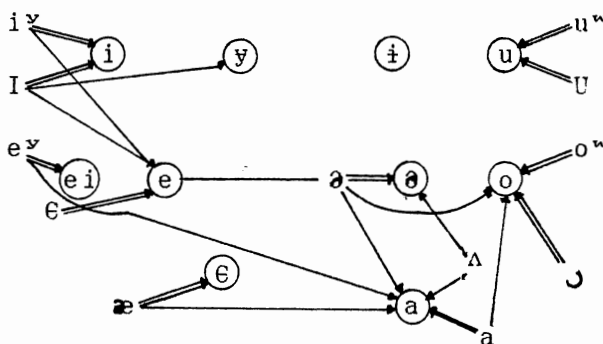
(1)	English	Loan word	phoneme change
a.	taxi	t ^h ɛks <u>i</u>	i ^ɰ → i

cookie	k ^h uk ^h <u>i</u>	i ^v → i
video	pite <u>o</u> /pit <u>i</u> o	" → e/i
image	<u>i</u> mici	I → i
camping	k ^h Emp <u>i</u> ŋ	" → "
ticket	t ^h ik ^h <u>e</u> s	" → e
message	mes <u>e</u> ci/mes <u>i</u> ci	" → "/i
ship	sw <u>i</u> p[š <u>y</u> p]	" → y
play	p ^h il <u>l</u> ei	e ^v → ei
container	k ^h ont ^h <u>e</u> inø	" → "
range	l <u>e</u> nci	" → e
label	l <u>a</u> pel	" → a
energy	<u>e</u> nøci	ε → e
duet	ty <u>e</u> s	" → "
hand bag	hEntip <u>ε</u> k	æ → ε
campus	k ^h Emp ^h <u>ə</u> sɨ	" → "
Santa Claus	s <u>a</u> nt ^h a k ^h ilosɨ	" → a
shampoo	sy <u>a</u> mp ^h u	" → ya
b. campus	k ^h Emp ^h <u>ə</u> sɨ	ə → ə
color	k ^h alla/k ^h øll <u>ə</u>	" → a/ə
cracker	k ^h il <u>ε</u> k ^h <u>a</u>	" → a
collection	k ^h oll <u>e</u> ksyən	" → o
camera	k ^h am <u>e</u> ra	" → e/a
pop music	p ^h ap <u>a</u> myucik	a → a
collar	k ^h <u>a</u> lla	" → "
boxer	p <u>o</u> ksø	" → o
boycott	poik ^h <u>o</u> s	" → o
c. pool	p ^h <u>u</u> l	u ^w → u

group	kɨlup	u ^w → u
New York	nyuyok	(y)u → (y)u
football	p ^h uspol	U → u
book	puk	" → "
bravo	pulapo(brand)	o ^w → o
boat	pot ^h i	" → "
pose	poci	" → "
tunnel	t ^h ənəl	ʌ → ə
color	k ^h alla/k ^h əllə	" → a/ə
bust	pasit ^h i	" → a
boy	pɔi	ɔ → o
sausage	sɔseci	" → "

The change made in the borrowing process is listed in the right most column. And it may be illustrated as:

(2) The vowel change diagram^a



As the illustration shows, the closest sound substitution principle does not always control the vowel movement. So each vowel usually has other forms in addition to the assumed closest vowel (the first in each list being the most usual).

One characteristic shown is that English /i^v/ and /I/ (also, /u^w/ and /U/) are combined into Korean /i/ (/u/) in many words, thereby losing their diphthongal quality.

English /i^v, e^v, u^w, o^w/ are usually described as long tense vowels. In American English, they are commonly made as diphthongs, especially noticeable when the sound is stressed and prolonged (Bronstein, 1960). On the other hand, it is well known that vowel length in Korean is a distinctive feature: pam [pam] 'night', pa:m [pa:m] 'chestnut'; nun [nun] 'eyes', nu:n [nu:n] 'snow'; mal [mal] 'horse', ma:l [ma:l] 'language'.⁴ However, the difference of vowel length is not indicated in Korean typography. In the same way, borrowed /i^v/ and /I/ are lexicalized as the same phoneme, i.e., [i], even if a Korean speaker noticed the difference in the aspect of length. Sometimes, vowel length is indicated by repeating the phoneme /i/, /u/, or /o/ in loan words but those words are usually rejected by speakers due to inconvenience; for example, the loan word nyuuyook^h±, in which the length is indicated by u and o, is not used any more, being replaced by nyuyok.

While the diphthongal quality of /o^w/ is not reflected in loan words, that of /e^v/ is realized by two vowels, such as /ei/. The fact to keep in mind is that the sequence /ei/ is not a diphthong in Korean; it is a combination of 2 pure vowels. In other words, the lexicalized /ei/ forms 2 syllabics, not glides, with each vowel being a syllable. In the same manner, all English

diphthongs are settled in the nativization process as the below examples.

- (3) nait^hi geim < night game; p^hai < pie
 p^haunti < pound; p^haul < foul
 poi < boy; coint^hi < joint

Secondly, English back vowels in (1-c) show some regular changes but middle vowels, especially /ə/, turn into a variety of vowels in Korean. There are general correspondences between English /e^v/ and Korean /ei/, /ɛ/ and /e/, and /æ/ and /ɛ/ in the front vowel changes (1-a); each English vowel is raised a little in Korean. But raising does not explain the change /æ/ --> /a/. Although it is difficult to find an internal consistency in the vowel changing pattern, speakers try to impose one to one correspondence between the English vowel system and the Korean vowel system.

One possible explanation for this complexity of the vowel change may come from the innate quality of the vowel itself.

Ladefoged explains the problem of describing vowels (pp. 72-75). Because there are no distinct boundaries between one type of vowel and another, even the terms we are using for vowel qualities are not absolute descriptions of the position of the body of the tongue. They are simply indicators of the way one vowel sounds relative to another. When we think of this in respect of the transition from one language to another, it is not difficult to

understand the difficulty of finding an identical vowel in another language. A continuum that a vowel sound forms in the SL certainly does not coincide with that of a similar vowel in the TL; for example, Korean /ø/ is described as closer to /ʌ/ (H-B Lee, 1979, p. 44). A vowel may extend between two or more vowels or may be halfway between the two.

Also, orthographic influence cannot be excluded. One who cannot trust one's ears may depend on the eyes. This tendency is found in words such as c^hamela, piteo, t^hik^he etc; each vowel (e.g., /a/) is phonemicized by regarding each spelling (e.g., a) as a phonetic symbol.

Finally, another explanation depends on the morpheme structure condition of Korean. When a loan word is completely koreanized, its vowel also changes similarly in accordance with the structure of native words.

According to Yu (1984), Korean has a characteristic ending in structure for each part of speech. Because loans usually are nouns, he presents the statistics for the native noun endings:

i > ɛ > u > e > a > o > ʌ > ø: > m....
|<-- most frequent ending

In general, then, Korean speakers have a tendency to use the word which coincides with a more frequent form: for instance, tilamø > tilama; ok^hisit^hilø > ok^hesit^hila; mit^hø > met^ha (p.18).

This may also be true of unstable words, which have two forms like k^høllø/ k^halla; we can assume that the

latter will be preferred and settled according to the general noun ending and that it is the more Koreanized and assimilated one. The structure of the morpheme ending plays a part in changing the noun ending.

However, there is a question as to the strength of this tendency. Even though the ending /ə/ in Korean makes the word look like an adverb, this morpheme structure is being accepted in Korean. Furthermore, there have been a lot of loans (and Sino-Korean words) which take /ə/ or /i/ in word endings, such as p^hilotyusə, tɛnsə, pəsi etc. Thus, it is not impossible to assume that /ə/ and /i/ are finally accepted as the noun ending in Korean.

4.3. The Epenthetic Vowels

An important vowel remaining is /ɨ/, the epenthetic vowel. Here I will treat only the kinds of epenthetic vowels.

In addition to /ɨ/, epenthetic vowels found in loans are /i/ and /u/ when the syllable structure of English does not fit into that of Korean.

(4) a. sɨt^hɨlaik^hɨ < strike ; sɨp^hoc^hɨ < sports

b. k^hoc^hɨ < coach ; imicɨ < image

ɨŋkɨllisɨ < English

c. pulapo (brand) < bravo ; pulausɨ < blouse

puleik^hɨ/ pɨleik^hɨ < brake

pullucin < blue jean ; syap^hu/ syap^hɨ < sharp

The kind of the vowel inserted depends on the preced-

ing consonant: /ɨ/ is generally used except after palatal affricates and fricatives such as [c, c^h, j, ʃ] and /u/ is used after bilabials. In fact, since /u/ and /ɨ/ are neutralized into /u/ after bilabials /p^h, p, p', m/ in a morpheme (Huh, p.217), /u/ can be sorted with /ɨ/. So we can observe many loans taking /ɨ/ after bilabials; in the Korean speaker's pronunciation, however, they are not distinctive. I do not designate this even in narrow transcriptions in order to simplify matters.

When Koreans listen to English, they accept the silence between consonants as /ɨ/. Why are /ɨ/ and /i/ chosen? /ɨ/ is regarded as "the least sonorous of all vowels in Korean" so that it is "easily devoiced between certain consonants, assimilated to the neighboring sounds, and deleted when it comes into contact with another vowel or between certain consonants (Kim-Renaud, 1986, p. 103). Thus, in the situation where nothing appears between consonants, Korean speakers 'listen' to /ɨ/ and give lexicalization. The appearance of /ɨ/ is also observed in the connection of a morpheme and an affix of pure Korean words where undesirable consonants meet; it is inserted for the stable syllable structure (Kang, 1984).

On the other hand, the use of the epenthetic vowel /i/ is understood by the fact that Korean /s/ is palatalized into [ʃ] before /i/; speakers insert /i/ in an attempt to pronounce the palatals [ʃ c j] correctly.

To summarize, there are irregular renderings of the

vowel change because of the relative quality of vowels, of the influence of spelling, and of the Korean morpheme structure. The vowels are inserted between consonant clusters which are not pronounceable and the choice of epenthetic vowel is understood by the relationship with the Korean phonological system.

NOTES

1. Sometimes [ø] and [y] are excluded from the list of monophthongs. But I think they should be a part of monophthongs because monophthong [y] and diphthong [i], which is phonemicized as /wi/, are distinguished from each other and because, as Huh indicates, there is a tendency to monophthongize today. Their distribution will be analyzed as:

/w/ ---> [ɰ] / _____ i
[ɰi] ---> [y] / C _____ short V

(e.g.) /wihəm/ [ɰihəm] 'danger', /cwi/ [cy] 'mouse',
/swi/ [šɰi:] 'Hush', /swi/ [sy] 'eggs of a fly'

based on the data given by Huh.

I will use [ɰ] instead of [w], the unrounded high back vowel, for typographical convenience.

2. Pae's dictionary (1970) is used to check the source language (English) of the words I collected.

3. In the diagram, I omit [ya] and [y] because their vowel changes are affected by the consonant sounds for palatalization (see section 3.3). Korean phonetic symbols are circled. = refers to the most usual substitution.

4. Several scholars (Huh, Lee et al.) indicated, however, that the phonemic feature of vowel length is weakening so that young speakers do not recognize the difference clearly. This is the reason I do not differentiate Korean [ø:] when lengthened, from Korean [ʌ] when shortened. Both are phonemicized as /ø/ ([ø]).

CHAPTER V

SYLLABLE STRUCTURE OF LOAN WORDS

To this point, I have focused on each phoneme rather than on sequences of phonemes. Some changes that loan words undergo can never be explained when we focus only on each component or phoneme of a loan word.

In this chapter, I will analyze from a broader view the phenomena that take place in the Koreanization process of a foreign word; that is, the "syllable" as it is related to a word. Since Korean is a syllable-timed language, in which each syllable occurs at regular intervals of time, what is the most outstanding change in loan words must be the change of the syllable structure.

5.1. Recognition of Syllable

The significance of the syllable has been recognized for a relatively short time. In a physical aspect, the syllable was defined in various terms: vocalic sonority (Jespersen, 1913), degree of aperture (Saussure, 1916 [1959]), the movement of chest pulses (Stetson, 1951) and so on. As Ladefoged points out, however, none of these theories is entirely satisfactory (p.224).

Recently the significance and reality of the syllable

have been approached from a different aspect; the syllable as a phonological and operational unit is regarded and explained by its segments and boundaries (Pulgram, 1970; Hooper, 1972; Vennemann, 1974; Kahn, 1980).

The validity of the syllable as the basic element of a linguistic structure is evidenced by the fact that some of children's linguistic stages demand recognition of the syllable as a distinct element (Fudge, 1969 p. 264).

The importance of the syllable is further strengthened by evidence from Spanish, German, and other languages, that a syllable boundary is necessary to designate the domain of certain phonological rules (Hooper, p. 525). By using syllable boundaries, one rule can generate the desired output for all cases. For example, two similar rules which describe the same phenomenon but seem to have a little bit different environments (i.e., after a consonant and a word boundary) are able to be collapsed by using "syllable". Thus, linguistic facts can be explained more naturally and generally.

Vennemann also agrees on this trend but states that the proper domain of phonological constraints is the syllable in its relation to the word, i. e., the syllable together with information about its position in the word (p. 355). Loan words must be a good basis for analysis.

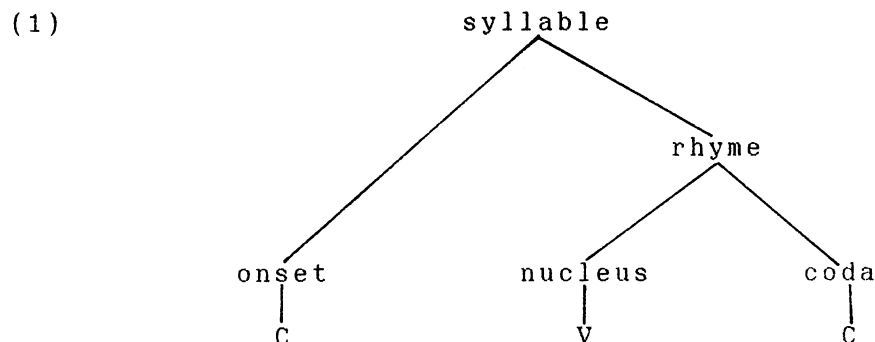
Korean speakers with or without linguistic knowledge usually agree on the number of syllables in a word and show their recognition in syllable by syllable speech.

This psychological reality of the syllable is found in borrowing, too. New words coming into Korean always obey the Korean syllable structure (KSS). When the syllable structure of a word conflicts with that of Korean, native speakers intuitively reject or make it conform to the KSS.

In the next sections, the syllable as a linguistic unit will be defined in terms of sequences of segments and its boundaries in English and in Korean, respectively.

5.2. The Syllable Structure of English

A syllable is usually described as consisting of three parts: the nucleus (or peak), the onset and the coda.



In the syllabic structure (1), the nucleus contains the syllabic segment which is the most prominent part of the syllable (Fudge, 1969; Sloat et al., 1978).

In English a vowel alone can compose a syllable. A syllabic vowel may have marginal consonants. When two vowels occur in succession, they comprise a nucleus, being a diphthong in most cases. Otherwise, they become two syllables as in naive /nai^vv/. In English certain con-

sonants (syllabic consonants) occur alone to form a syllable; the nasal and the lateral in the words tunnel /tʌnəl/ and button /bʌtʌn/ are syllabics.

English can have consonant clusters in both syllable initial and final position:

- (2) dream [driːm] ; attempt [ətɛmpt]
 spring [sprɪŋ] ; twelfth [twɛlfθ]
 strength [strɛŋkθ]; sixths [sɪksθs]

The above examples show that the maximum number of onsets is three and that of codas is four. These onset and coda clusters have some restrictions in their distribution. For example, in three onset clusters, the first consonant must be an s; the second, a voiceless stop (/p t k/); and the third, a liquid or a glide such as /l r y w/. Hooper (1972) claims a definite hierarchy of segment types suitable for beginning syllables:

- (3) obstruents
 liquids and nasals
 glides

and she assumes the opposite of this hierarchy for the hierarchy of syllable final position (pp. 536-7).

There is no problem in seeing the segments of one-syllable words. However, when we consider a word which contains two or more syllables (i.e., colony, sister) it is quite difficult to determine where the consonants between two syllabics belong.

Hjelmslev (1935) has set up the following rule for

consonants which could belong to either of two syllables: syllable initial or final clusters must not be made up of sequences which do not occur as word initial or final clusters. So due to the absence of a word beginning with nt-, we do not divide e-ntire, but en-tire. But still we have a problem in determining boundaries in the words colony and sister because l, n and st are permissible initially and finally in English words.

For the syllabification of adjacent syllables, Hooper proposes with the hierarchy (3) that "when two or more of the above [(3)] segment types are contiguous between vowels, the \$-boundary [syllable boundary] will occur first before the obstruent; if there is no obstruent, then before the liquid or nasal; finally, in the absence of the first two, before the glide. If there are two segments of the same type, the \$-boundary will usually be between the two (p. 537)." According to her rule, we can syllabify colony /ka-lə-ni/. And with a language specific late rule (p. 535) that in English s plus a voiceless stop are allowed in the onset, sister is syllabified as /sɪ-stə/.

The proposal made by Kahn (1980) explains the English syllable structure more generally without ad hoc rules. In his Rule I, one syllable is associated with each [+syllabic] segment of the input string (Syllabic refers to vowels and syllabic consonants). In Rule II, maximal permissible initial clusters are associated, and then permissible final clusters are added to each syllabic¹

(pp. 39-55). His rules syllabify sister as /sI-stə/: Rule I assigns two syllable nuclei (S_1 & S_2) and Rule II associates s to S_1 and st to S_2 , respectively.

(i.e., $s \ I \ s \ t \ \emptyset$)

In Korean syllable structure, Hooper's suggestion does not fit very well. Since no consonant cluster is allowed in the Korean onset, the hierarchy of syllable initial position should be rearranged or include a late rule for Korean which combines the first two steps (obstruents, and liquids and nasals). So I will use Kahn's approach because the permissible maximal syllable can be composed with language specific characteristics.

5.3. The Syllable Structure of Korean

Compared to the English syllable structure, the Korean syllable structure (KSS) is rather simple and restricted. Although Korean is a phonemic language, each syllable is marked by a unit which consists of the onset, the nucleus, and the coda in writing conventions. Thus, I will postulate underlying syllables according to the forms marked off by syllable boundaries in the lexicon. I will signal syllable boundaries by a hyphen.

Korean can compose a syllable by a vowel alone, or by a vowel with a consonant onset and/or a consonant coda: ɛ 'child', so 'cow', al 'egg', k^hal 'knife', u-yu 'milk', etc.

In English, syllabic consonants can occur in the nuclei, but in Korean only a vowel or a diphthong (a glide /y, w/ plus a vowel) is allowed in the nucleus².

In Korean, all consonants except /ŋ/ are permissible in the onset³. The possible consonants in the coda are limited to [p t k l m n ŋ].

- (4) sup^h [sup] forest ; nyθk^h [yθk] towards
 sap [sap] shovel ; t'θk [t'θk] rice-
 nat^h [nat] piece ; cake
 nat [nat] a grain ; mal [mal] horse
 nas [nat] sickle ; mam< ma-im
 nac^h [nat] face ; [mam] mind
 nac [nat] day ; man [man] only
 nah(ta)[nat] (to)bear; maŋ [maŋ] net
 sθs'-ta [sθtt'a]⁴ a kind of Korean card game

Words in (4) show that all kinds of stops, such as lenis, aspirated, and fortis in the underlying representation, are realized as lenis stops in the codas. Because fricatives and affricates are realized as [t], all obstruents become neutralized to be lenis (unreleased) stops in the coda (coda-obstruent neutralization). But sonorants, nasals, and laterals remain unchanged even in syllable final position.

In the underlying representation, Korean has two-consonant codas although both of them never come out in the coda of the surface representation:

- (5) nθks [nθk] 'soul'

tols [tol] 'the first year birthday'
 talk [tak] 'chicken'
 manh(ta) [man] '(to be) many'
 c'alp(ta) [c'al] '(to be) short'

One of the two consonants is deleted and only one coda appears on the surface level⁵ (termed Consonant Cluster Simplification by Kim and Shibatani, 1976).

In extremely slow speech or syllable-by-syllable speech, the syllabification suggested in the underlying representation (or lexicon) is kept even in sequences of syllables. Thus, we can hear [ak, ə] < /ak-ə/ 'crocodile', [ak, su] < /ak-su/ 'handshake'. However, in normal speech, some of these syllable boundaries shift, producing more natural pronunciation (i.e., [a-kə], [ak-s'u]).

The following examples show natural pronunciation of polysyllable words and words with a suffix or a marker.

- (6) a. sup^h+e [su-p^he] 'at forest'
 sap+ił [sa-bił] 'shovel + o.m.'
 nac-il [na-jil] 'day work'
 nək*s*+i [nək-š'i] 'soul +s.m.'
- b. sup^h-sok [sup-s'ok] 'in forest'
 nac+kwa [nat-k'wa] 'day and'
 nək*s*+kwa [nək-k'wa] 'soul and'
 c'al-ta [c'al-t'a] 'to be short'

Before a consonant, in (6-b), the coda consonants are neutralized and one of the coda consonant clusters is deleted. But before a vowel, these phenomena do not

occur. This means that within a phonological unit, a word or a word and agglutinated suffixes, the coda (or one of codas) is reorganized as the onset when the following onset is empty. In other words, syllables prefer V-CV to VC-V, and the underlying representation as an onset remains intact on the surface.

Kim and Shibatani (1976) propose a Constituent Syllabification Rule according to the grammatical information (compound boundaries, phrase boundaries, utterance boundaries) and Segment Syllabification Rule ($\emptyset \rightarrow \$/ \text{ ————— } (C)(G)V$) within a constituent. They also claim that the Segment Syllabification Rule must follow the syllable ending adjustment rules (i.e., coda-obstruent neutralization and consonant cluster simplification). The syllable-ending adjustment rules and the segment syllabification rule are applied repeatedly until the desirable syllable structure comes out (pp. 93-96).

Therefore, on the surface, the coda consonant clusters get split into different syllables before a syllable without onset, and the consonant between nuclei becomes the onset of the next syllable unless a compound boundary intervenes⁶. After this resyllabification, phonological rules such as the voicing rule or the fortition of an obstruent after another obstruent are applied. The fact to note is that the resyllabified onsets (within a compound boundary) retain the underlying sound value (i.e., aspirated, fricatives etc.) since they do not undergo

coda-consonant neutralization and consonant cluster simplification in syllable initial.

Without referring to syllable boundaries marked off by writing conventions, we can compose syllable boundaries. I will compose generatively syllable assignment rules for underlying syllable boundaries, using maximal syllable structure, and following steps to the surface representation of a sequence of segments in Korean. I will mark syllable boundaries produced by the rules with \$.

(7) Syllable Assignment and Phonological Rules

I. Underlying syllable boundary assignment:

- 1) Assign one syllable with each [+syllabic] segment (always, vowel) of each phonological unit of the input string.
- 2) Associate maximal permissible initial segments with the adjacent syllable: ((C)(G))
- 3) Associate the remaining segments with each preceding syllable: (C(C)), or (G) (e.g., iy)

II. Coda-adjustment rule application:

coda-obstruent neutralization
 consonant cluster simplification

III. Resyllabification of the input string:

If, VC + V \rightarrow V + CV

IV. Other phonological rules: voicing...

V. Surface representations

Condition: A basic unit for underlying syllable bound-

ary assignment is a phonological unit which I refer to a simple (not compound) word with agglutinative markers and/or suffixes. Thus, for a compound word, each basic unit undergoes steps I and II, and then, the basic units are combined and resyllabified in step III.

For example, the sequence of segments nəksi (nəks + i 'soul + s.m.') is underlyingly syllabified as nəks\$si according to the Rules 1), 2), and 3). Since ks are not permissible initial segments, s alone becomes the onset of the second syllable. nəks\$si does not change by coda-adjustment rules and resyllabification since it already conforms to the requirements. After applications of phonological rules, it is realized as [nəkš'i] on the surface representation. p^hat^hal, which is a compound word of p^hat^h 'red-bean' and al 'grain', should be divided into basic units for underlying syllable assignment. p^hat and al, which are syllabified and go through coda-adjustment rules respectively, become a sequence input for step III. After p^hatal is resyllabified as p^ha\$tal, other rules finally produce [p^hadal]. Without consideration of the basic unit, it is syllabified as p^ha\$t^hal in the underlying representation and realized as [p^hat^hal], which is incorrect.

To summarize, KSS has the following characteristics or conditions (KSSC).

First, the nucleus is composed of only a vowel or a glide plus a vowel (The vowel is always syllabic).

Secondly, although two consonant codas appear underlyingly, consonants on the surface are never clustered in syllable initial or final position. (Of course, two consonant clusters are found between two syllabics.)

Thirdly, the possible consonant codas are restricted to [p t k l m n ŋ] on the surface.

Finally, on the surface, the CV syllable types are preferred rather than VC + V.

5.4. Koreanization and Resyllabification

The KSSC is obviously revealed in the nativization of loan words. With epenthetic vowels, Korean speakers reorganize syllable structures of a new word.

The observation of loan words represents several characteristic changes, which are initiated by the KSSC.

First of all, the maximal syllable structure in Korean is represented by CVC (CGVC) and there is no exception to this condition among loan words found in Korean. The following words take the maximal syllable structure from English as much as possible: nyu-yok 'New York', swe-t^ha/si-we-t^ha 'sweater', syo-t^hi-niŋ 'shortening'. Although two consonant codas exist in the underlying representation of Korean, they never appear in borrowing. This means that loan words obey the KSSC of the surface representation.

Secondly, the restrictions to codas in Korean are reflected in the Koreanization of loan words. A syllable

type CV in English is always accepted as the same CV in Korean, but CVC is allowed only when the coda consonant is one of stops, liquids and nasals: ki-lup 'group', k^hil-ləp 'club', t^hi-k^hes [t^hik^het] 'ticket' ol-lim-p^hik 'olympic' and tɛn-sin 'dancing'. Thus, they are realized as the same (at least similar) phonemes [p t k l m n ŋ].

The other obstruents /f, v, s, z, c, j.../ are taken as onsets being followed by an epenthetic vowel, in order to be realized as the same segments in the SL. For example, the coda /s/ of 'bus' is realized as the same phoneme only when it becomes the onset in the loan word (i.e., /pəsi/). If it consisted of the coda (i.e., /pəs/) the actual pronunciation of /s/ would be the neutralized [t], which is completely different from English.

The substitutions of /p^h p/ for English /p b/ is hardly reflected when /p b/ happen to be syllabified as codas. Since /p^h p/ in the codas are neutralized to /p/ in Korean pronunciation, Korean speakers phonemicize English /p b/ as /p/ in the coda unless they are extremely conscious of English spelling⁷. In many cases, English /t/ is phonemicized as /s/ in the coda of loan words. This tendency seems to follow the writing convention in which t-insertion is marked by /s/ as in c^hacip > c^hascip [c^hatc'ip] 'coffee house', and many words have the coda /s/.

In the resyllabification of (C)VC type, liquids and nasals in the coda of English are always syllabified as

codas in loan words but there is instability in the syllabification of stops. Some words such as k^hθp 'cup', k^hil-lθp 'club' take final stops as codas but some words such as lo-p^hɨ 'rope', la-i-t^hɨ 'light' take them as onsets. Kim-Renaud (1977) explains this two-way syllabification of stops by the syllable-final unreleasing of obstruents in Korean.^a In Korean, obstruents are obligatorily unreleased in syllable-final position. In borrowing, "when the unreleased stop is heard, it is usually analyzed at the surface value.... When both released and unreleased variants are heard in the original language, Koreans analyze them in two ways, i.e., one with an epenthetic ɨ and the other without it (pp. 252)." Thus, when Koreans hear unreleased stops, they produce unreleased stops by way of coda syllabification and vice versa.

In the case that two stops (or, stop + obstruent) are successive in English, the first stop is usually resyllabified as a coda as in 'act' ɛk-t^hɨ and 'foot ball' p^hus-pol. This means that Korean speakers perceive the unreleasedness in the first stop. Sometimes vowels seem to affect the resyllabification of stops. A consonant after a long vowel /i^v ɛ u^w o^w/ or a vowel with r in "r-less"^a has a tendency to be resyllabified as an onset: p^ha-k^hɨ 'park' ... A voiced stop has a stronger tendency to be resyllabified as an onset than a voiceless stop has, as in si-mo-kɨ < smog, kɛ-kɨ < gag vs. kɛp < gap. This tendency

seems to be affected by the length of vowel - the vowel is much shorter before voiceless consonants than it is before voiced consonants. The major difference between such pairs of words (mat vs. mad) is in the vowel length, not in the voicing of the final consonants (Ladefoged pp. 48-49). Also, by being resyllabified as an onset, the voiced stops (phonemicized as voiceless stops in Korean) are realized as voiced stops on the surface representation by the voicing rule.

On the other hand, the coda /t/ in one-syllable English is usually resyllabified as an onset in loan words such as hit > hi-tʰɨ, set > se-tʰɨ, even though the closest reproductions, such as his [hit], ses [set] are possible. These reproductions may be caused by the fact that /t/ is the least frequent among the permissible codas (K-I Kim, 1985, p. 35). The codazation of stops is very complex. Whether stops after a syllabic in English become a coda or not depends on the release of the stop, the length of the vowel in English, and the frequency strength of the stop in Korean.

In fact, this resyllabification seems to be affected most by the way of borrowing: when a word is borrowed orally, releaseness in English is concerned. In borrowing through a written word, speakers may analyze 'cake' into kʰe-i-kʰɨ rather than kʰe-ik by just corresponding substitutions.

Thirdly, consonant clusters in the margins of a

syllable must be resyllabified in order to conform to the KSSC. Loan words show that consonant onsets which are beyond the Korean maximal syllable are resyllabified as having an i following as in strike > /si-t^hi-la-i-k^hi/. Thus, newly produced syllables take the most natural CV type, and at the same time, capture the original sound of onsets in maximum. However, consonant clusters after a syllabic take the CVC (and CV) pattern as much as possible. In the occasion that the second clustered coda (VCC) is a liquid or a nasal, it is resyllabified as a coda, adopting the first consonant into the onset¹⁰: for instance, film > p^hillim, elm > el-lim. English /l/ which is adjacent to a vowel but not in word initial or final position is always ambisyllabified in Korean. Again, the reproduced syllables keep the original pronunciation as much as possible. What to note is that because liquids and nasals are permitted to be unchanged in the coda, they compose a syllable with the preceding consonant without producing another syllable. Thus, consonant clusters are reorganized so that under the KSSC, the stranded consonants are incorporated with less epenthetic vowels in order to keep the original pronunciation.

Finally, as mentioned already, English diphthongs are always split into two syllabics in Korean. English syllabic consonants show their syllabicity in loan words by way of composing a syllable with an inserted vowel as in cotton > k^ho-t^hin, button > p^ho-t^hin. Sometimes, the forms

before syllabic syncope -- when a vowel is lost and its syllabicity is transferred to a consonant (Bell, 1978, p. 168) -- are borrowed, as in tunnel > t^hə-nəl.

Explaining resyllabification of loan words, K. S. Kim (1984) claims the strengths of codas in Koreanization:

the strongest one for /ng/,
 stronger /m, n, l/
 strong /p, t, k/
 weak /b, d, g, f .../
 the weakest /s, z, th .../ (p. 43)

He also suggests Resyllabification Rules (p.43):

a) Initial Consonant Res. : $\emptyset \rightarrow \$ / \#C______C$.

b) Initialized " " :
 $\emptyset \rightarrow \$ / \left(\left\{ \begin{array}{c} C \\ \$ \end{array} \right\} \right) [-son]______ (\#\#)$,

c) Initialized Consonant (preceding sonorant consonant) Res. :
 $\emptyset \rightarrow \$ / \dot{C}______ \left[\begin{array}{c} C \\ +son \end{array} \right] (\#\#)$.

ex) /s\$t\$renj^k\$θ\$s\$/ --> sit^hilEnj^kisisi 'strengths'
 a b b b b (p. 43, 48)

His claim about the strengths of codas catches well the phenomena that occur in the resyllabification of loan words. Resyllabification rules suggested by him, however, produce incorrect words owing to disregard of the nucleus. For example, steam is analyzed as /s\$t\$im/ according to Rule (a) and (b), and is realized /si-t^hi-im/, which is different from the loan word sit^him. Since a rule to form first a syllable with a vowel and adjacent consonants in

English is not established, the inappropriate word si^hiim happens to be produced. He also claims that /w y/ should be regarded as an onset with evidence that 'sway' is resyllabified as si-wei rather than swei (p. 45, 49). But we can find a lot of loan words which take a glide (/w y/) and a consonant onset within a syllable such as swip < ship, myu-cik < music, syo < show, syam-p^hu < shampoo, cyu-si < juice, swi-pul < swivel, etc. Especially /y/ always functions as a part of a vowel (diphthong) in loan words. So it is rather natural to regard such syllabifications as in si-wei, and si-wi-c^hi < switch exceptional¹¹.

I suggest that Resyllabification Rules (RR) for Koreanization of foreign words be based on the establishment of the main nuclei and their margins.

(7) Resyllabification Rules for Koreanization

Rule I:

Assign one syllable with each [+syllabic] segment, and with a nasal or a liquid which is following but not adjacent to a vowel in the input word.

i.e., s l I m ; m I d l
 | | |
 S₁ S₁ S₂

Rule II:

Associate a maximal syllable structure of Korean:

(a) first, a preceding glide and a consonant, (marked by dashed lines)

i.e., s l I m ; m I d l
 | | |
 S₁ S₁ S₂

and (b) second, a following consonant. (dashed lines)

i.e., $\begin{array}{c} s \quad l \quad I \quad m \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad S_1 \end{array} ; \begin{array}{c} m \quad I \quad d \quad l \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad S_1 \quad S_2 \end{array}$

Rule III:

With each stranded consonant which does not belong to any syllable, associate a minimal syllable structure and ambisyllabify /l/.

i.e., $\begin{array}{c} s \quad l \quad I \quad m \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad S_2 \quad S_1 \end{array}$

Rule IV:

Substitute Korean phonemes for the corresponding English phonemes and insert an epenthetic vowel into each empty syllabic position.

i.e., $\begin{array}{c} s \quad l \quad I \quad m \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad S_2 \quad S_1 \\ \quad \quad \quad \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ s \quad i \quad ll \quad i \quad m \end{array} ; \begin{array}{c} m \quad I \quad d \quad l \\ \quad \quad \quad \diagdown \quad \diagup \\ \quad \quad \quad S_1 \quad S_2 \\ \quad \quad \quad \diagdown \quad \diagup \quad \diagdown \quad \diagup \\ m \quad i \quad t \quad i \quad l \end{array}$

Conditions

1. The maximal KSS is CVC (or, CGVC) and the KSS needs minimally a V.
2. Among the permissible codas /p t k l m n ɳ/, /p t k/ can be resyllabified as onsets, but before another obstruent, they become codas.
3. /l/ adjacent to a syllabic is always ambisyllabified except in word initial and final position.
4. Substitutions.
(E) p t k c ; (K) p^h t^h k^h c^h

(p t/s k in the coda)

b d g j ; p t k c

s š ; s sy (not before w)

r l m n ŋ ; l l(11) m n ŋ

For the other obstruent and vowel substitutions,
refer to Chapters 3 and 4.

Therefore, resyllabified sil\$lim and mi\$til are produced by the RR. The RR shows that although the reproduction of the original pronunciation is followed as much as possible, the loan words always obey the KSSC in the surface representation, not the syllable structure conditions of the original language, English. Thus, through the RR, a one-syllable word strike is transformed into the five-syllable word si-t^hi-la-i-k^hi.

The resyllabified strings of segments become the underlying representation for the phonological rules of Korean discussed in the previous chapters. In some sense, the degree of nativization of loan words will depend on how many rules are applied. But some rules are productive enough to apply to every loan word. The voicing rules, palatalization, post-obstruent fortition, coda-obstruent neutralization, and unreleasing of coda-obstruent are those rules¹². By the voicing rule, /mitil/ is realized as [midil]; /k^həp+i/ 'cup+ s.m.', [k^həbi]. syo 'show' is palatalized into [šyo]. The coda /s/ of t^hik^hes is neutralized and unreleased in the surface representation as [t]. Obstruents after another obstruent become fortis in

loan words: t^hɛptɛnsɪ [t^hɛpt'ɛns'ɪ] 'tap dance', p^huspol [p^hutp'ol] 'foot ball' t^hɛksi [t^hɛkš'i], etc. In natural context, loan words further assimilate into Korean. For instance, in words p^hapmyucik [p^hammyujik], ollimp^hik+man [ollimp^hɪŋman] 'olympic + only', p and k are nasalized by the influence of the following nasals.

In conclusion, what is the most important and obligatory process in borrowing is the reproduction of a word according to the KSSC. No loan word can be accepted as Korean without being resyllabified by the RR.

NOTES

1. Kahn's rules are five in which I do not include Rules III-V for a normal and rapid speech.

2. There are disagreements on the problem whether the glides /y w/ in Korean are regarded as the onset or the nucleus: Huh and Kim-Renaud (1978) regard them as the nucleus; B-G Lee (1982), as the onset.

I treat glides as the nucleus simply due to their phonetic qualities. Besides, to classify them as an onset seems to allow consonant cluster onsets in Korean, which are restricted just to /y w/.

3. /l/ in the native Korean words is not allowed in the onset of the first syllable but it is frequently found in loan words. See Chapter 3.

4. Korean lenis obstruents /p t k c s/ become fortis when preceded by another obstruent.

Post-Obstruent Fortition Rule:

[-son] → [+tense] / [-son] _____

For more detail, see Kim-Renaud (1977, p. 260), and Kang (p. 219).

5. There is an exception to this phenomenon: the syllable final /h/ is deleted before another syllable. But when the next syllable starts with a stop, the coda /h/, being deleted, causes the lenis stop to become aspirated.

For example, nah-i-ni [naini] 'to get well and'

nah-ta [nat^ha] 'to bear'

6. When a compound boundary intervenes, the resyllabification occurs after the applications of consonant cluster simplification and coda-obstruent neutralization.

For example, /k'oc^h-wi/ 'on the flower'

Constituent Syllabification

\$ k'oc^h \$ wi \$

Syllable Ending Adjustment

\$ k'ot \$ wi \$

Segment Syllabification

\$ k'o \$ twi \$

Other Rules

[k'odwi]

(Kim and Shibatani, pp. 92).

In this case, the resyllabified onset (/t/) has different

sound value from the underlying because of coda-obstruent neutralization.

7. The substitution /p^h/ for English /p/ is occasionally found in the coda, i.e., k^he-ik^h [k^heik]. The actual pronunciation is the same as k^he-ik.

8. Obstruent Unreleasing (Kim-Renaud, 1977 p. 252)

$$\left[\begin{array}{l} +\text{cons} \\ -\text{son} \end{array} \right] \longrightarrow [-\text{release}] / \text{_____} \left\{ \begin{array}{l} \$ \\ [-\text{release}] \end{array} \right\}$$

According to this rule, the exact pronunciations of [p t k] in the coda are [p⁻ t⁻ k⁻]. This is applied to loan words, too.

9. "Most speakers in Eastern New England, New York City, and the Coastal regions of the South delete final and preconsonantal r (Bronstein, p. 119)." This "r-less" phenomenon seems to be reflected in borrowing: for example, car > k^ha, card > k^hati, park > p^hak^hi, horn > hon, etc.

10. See #9. In borrowing, /r/ before a nasal is deleted, too.

11. In the word switch, if it were syllabified as /swi-c^hi/ [ʃɥic^hi], the actual pronunciation of s would be [ʃ] instead of [s] due to s-palatalization. By being syllabified as /si-wi-c^hi/ [siɥic^hi], the original pronunciation s is kept. t^hiwisit^hi is not explained this way, though.

12. For the voicing, palatalization rules, see chapter 3. When t-palatalization occurs, /c/ instead of /t^h/ is lexicalized and become an underlying form. For the post-obstruent fortition and unreleasing of coda-obstruent, refer #4 and #8.

CHAPTER VI

CONCLUSION

In this study, I have attempted to analyze the factors which affect phoneme substitutions and change of word forms in borrowing.

As Hyman analyzes, foreign sounds are perceived as underlying forms, but under the condition that foreign sequences of segments should be resyllabified according to the syllable structure conditions of a native language. Thus, new borrowings are reorganized according to the KSSC and the resyllabified sequences of segments form an underlying representation in Korean. That is, the syllable structure influences the most radical changes that occur in loan words.

In the process of substituting the closest corresponding phonemes for those of English, several factors contribute to the Korean speakers' choice of substitutions.

One factor is distinctive qualities of the TL, Korean. The substitutions of /p^h t^h k^h c^h/ and /p t k c/ for English /p t k c/ and /b d g j/ respectively are caused by distinctive qualities of Korean aspiration and intensity, which usually distinguish the former voiceless set from

the latter voiced set, especially in syllable initial position. On the other hand, the fact that unaspirated consonants after /s/ are not reflected may be due to the influence of spelling and to the restriction of distribution (i.e., only after /s/). This means that distinctive qualities of the TL are sometimes taken from the SL contrastive phonemes and generalized to all cases, and sometimes from phonetic details as in the coda lexicalization of stops.

Sometimes, allophonic distribution of the TL influences the manner in which loan words are phonemicized (or, lexicalized). In Korean, the palatalized /s/ ([š]) appears only before /i, y, wi/, and /l/ is realized as [r] between vowels unless geminated with another [l]. The attempts to reproduce the original pronunciations [l, š] are realized by the gemination of /l/ and the diphthongization of a vowel after palatalized /s/. That is, Korean allophonic distribution is applied if possible.

Once loan words are lexicalized, their realization will depend on the composed environments, which will trigger Korean phonological rules: for instance, English /s/ may be realized as [š] in loan words because it happens to occur before /i/.

Although it is difficult to find an internal consistency to characterize vowel substitutions, there seems to be a psychological correspondence between the English vowel system and the existent Korean vowel system. In

fact, it is almost impossible to compare vowel systems in absolute descriptions. Thus, the lexicalization of vowels is easily affected by many factors: for example, diphthongized vowels occur after s-palatalization; English diphthongs are usually accepted as two vowels by the influence of the KSSC; in assimilation to Korean, vowels seem to change to the forms which occur frequently in Korean morphemes.

Some phoneme substitutions cannot be explained without considerations of the syllable structure of Korean.

Substitutions of English stops depend on their position in the syllable (onset or coda). Since Korean stops are neutralized in the coda, the contrast of English stop sets (/p t k/ vs. /b d g/), which is reflected in the onset of loan words, becomes weak or neutralized when resyllabified as codas. Also, the tendency that the coda /t/ is usually lexicalized as /s/ is explained when we understand that the underlying coda /s/ in Korean is always realized as [t] in the surface representation.

Consonant clusters, which are not permitted in the KSS, are broken up by an epenthetic vowel which is chosen to encompass the original pronunciation of the stranded consonants in maximum. Each stranded consonant is usually resyllabified as an onset because CV is the preferred type in Korean and because obstruents are not transformed in the onset. However, when the stranded consonant is a sonorant, it does not create a new syllable alone, but

forms a syllable with a preceding consonant because sonorants are perfectly allowed unchanged even in the coda. In other words, so long as the KSSC allows, consonant clusters are resyllabified with as few epenthetic vowels as possible in order to keep the original pronunciations.

I suggested Resyllabification Rules for Koreanization for explanations of those phenomena and the mechanism of language borrowing in Korean.

A lot of borrowed words cause a change in the TL, Korean; for example, n-deletion and l-alternation processes are weakening and words such as nyusi < news and lek^hotɨ < record, which do not undergo those rules, are accepted by Korean speakers. However, there is no loan word which violates the KSSC.

In conclusion, the nativization of foreign words may be summarized by saying that loan words are resyllabified and lexicalized according to the KSSC so as to maximize the original pronunciation, and then are subject to the Korean phonological system.

My study has focused on the changing pattern of loan words. We can predict the Koreanized form of a foreign word by Resyllabification Rules for Koreanization. In other words, this analysis may represent some acceptable ways to pronounce the loan words with a target language accent. On the other hand, the more a speaker learns the second language, the more he or she will adopt the rules of the second language, producing a more authentic pronun-

ciation. In the beginning stage of learning or after the critical period, a learner may follow the same process of borrowing in order to pronounce 'unpronounceable' words from the viewpoint of his or her native language. There are several questions which occur here. Is it possible for an adult learner to overcome such nativization process at all? If it is possible partially, what is overcome and how? Does the acquaintance of English loan words before English learning affect the acquisition of English pronunciation? And if so, how much is it affected? I expect that further study will be needed to supply answers for these questions.

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VITA 2

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