Word-Initial Tensification in Korean Loanword Adaptation

Ponghyung Lee

(Daejeon University)

The goal of this work is two-fold: one is to seek a functional account for why Word-Initial Tensification occurs to loanwords mostly hosted from English; the other is to explain how the drift in laryngeal feature at the left word edge comes to take place in a formal way. For the purposes, our primary contention is that Word-Initial Tensification occurring during Korean loanword adaptation is motivated to convey speakers' attitude to make explicit their intimacy to the referents. We would say that it is a kind of phonological empathy. To reach out to the sound patterning, it is essential to meet two prior conditions: First, a certain threshold of frequency with concerned words should be passed over; second, the semantic features geared to the emphatic effects are compatible with the connotative properties of the concerned words. With respect to laryngeal feature specification, it is claimed that every fortis consonant involved with the concerned data is specified in feature [spread glottis] while all laryngeal features are null in the case of lenis consonants. This idea makes it possible to capture why aspiration of the fortis consonants in the source languages is allowable, while they strongly resist tensification. This type of account rules out the existing explication based on the orthographic intervention from the soirce languages. Thus Korean Word-Initial Tensification can be conceived as a process of adding paralinguistic meaning to ordinary linguistic meaning as in the case with emphatic or contrastive stress, loudness given to specific words in other languages.

1. Introduction

For the most part, discussion on the Korean tensification has concerned the operations arising in ideophones (Martin 1962, J.S. Lee 1992) and at the medial positions of prosaic native words, e.g., Post-Obstruent Tensification (Kim-Renaud 1974, J.R. Oh 1987). Instead, this study will focus on the Word-Initial Tensification happening at the word-initial position of loanwords as surface variations of the borrowed lexical items. `

Our concern in this paper is somewhat unique in that we are going to achieve hybrid goals for the laryngeal drift taking place at the specific position of those words hosted from foreign languages. First of all, we will try to seek a functional rationale for the sound patterning. In other words, we are going to disclose the functional factors which are going to play a role to trigger the consonant alternations. In this sense, we are interested in frequency of concerned lexical items, semantic association of a word,

paralinguistic or extra aspects employed for the sake of efficient conveyance of speakers' attitude towards what they are referring to. Second of all, we are concerned to model the modification of laryngeal properties by providing a proper phonological analysis in a formal way.

This work unfolds as follows: Section 2 tries to present the fundamentals to Korean Word-Initial Tensification: Data survey, introduction of the percept "empathy" originated by Kuno et al. (1977) will be done. Additionally, the almost unilateral allowance in favor of tensification rather than aspiration, and the intermittent nature of tensification in loanword sound patterning will be discussed as preliminaries to the analysis in the next section. In section 3, we try to provide a hybrid model for Korean word-Initial Tensification. First of all, we are going to give a formal analysis employing the laryngeal feature specification framework of Iverson and Salmons (1995) as well as a functional explanation in terms of phonological empathy and frequent effects of lexical items. As an addendum, section 4 discusses why Word-Initial Tensification has missed our attention in Korean phonological analysis and orthographical convention. Section 5 summarizes our discussion and draw implications of our suggestions to the structure of Korean lexical strafication.

2. Preliminaries

2.1. Data

Let us look at the emergence of tense consonants at the left edge of the following lexical items loaned from English:

(1) [p□n□]   ~   [p'ana]   'burner'

  [kolp^h□]   ~   [k'olp^{h}u]   'golf'

  [t□b□l]   ~   [t'abul]   'double'

  [ʃjo]   ~   [ʃ'jo]   'show'

For the empirical evidence, a questionnaire survey to Korean speakers was administrated. The subjects consists of 31 (10 male and 21 female), mostly in their early and mid twenties and come from central part of Korea. The test items consist of 51 loanwords from English, which initiate with plain obstruents (lenis consonants in the source language). They were paid and had a practice session before getting started into the test session. Some tips for the test were given to the subjects: Considering that tensification is facilitated in the casual speech, a suggestion is given to them to figure out a "quite comfortably natural situation like conversing with a close friend" and to imagine to say themselves the words in a frame sentence "ige mueongahamyeon_____iya (This is _____, I would say). They are provided three choices: plain, tense and both. The final suggestion is to ignore the spelling in the test sheets as far as possible. The test took 15 minutes or so. The test results are: Among 1,581 (51x31) tokens, we obtained 1,088 tokens for plain consonants (68.8%), 308 tokens for exclusively tense consonants (19.5%), and 218

tokens for marking both (13.8%). The combination of tense-only and plain-tense-both amounts to 33.2%. In this paper, aside from the statistical significance of the percentage of tensification, the phonological operation applied to loanwords will be considered. It is reminiscent of the similar operations attested in the wide varieties of Korean lexical strata, as demonstrated below:

(2) Consonant Mutation
a. Native Korean
   i. Ideophones

plain	*tense*	*aspirated*	
[pants'ak]	[p'ants'ak]	----	'twinkling'
[palt'ak]	[p'alt'ak]	[pʰaltʰak]	'a jerky movement'
[t□kul]	[t'□kul]	----	'rolling'
[tsalluk]	[ts'alluk]	----	'slim-waisted'

   ii. Prosaic Words
Gradable Adjective[1]

[tsak□n]	[ts'ak-□n]	'small'
[p□lk□n]	[p'alkan]	'red'
[k□m□n]	[k'aman]	'black'

   Others

[kotsʰu]	[k'otsʰu]	'pepper'
[ko.˙ts'a]	[k'o.˙ts'a].	'free of charge'
[tsoktsebi]	[ts'oktsebi]	'weasel'
[takt'a]	[t'akt'a]	'to wipe'

b. Sino-Korean

[kwa] 科	[k'wa]	'department'
[ki] 氣	[k'i]	'talent'

At first glance, it is almost certain that the tensification targeting word-initial position is observed regardless of lexical substrata: ideophones (2ai) and ordinary words (2aii). Among the prosaic words, it is more commonly attested to semantically gradable adjectives, but more often than not we easily witness

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[1] It is noteworthy that the tensification in this case is usually accompanied by vowel harmony, which is another means of sound symbolism utilized in Korean, e.g. [kamgam] ~ [k'amk'am] ~ [k'□mk'□m] 'dark,' [k□m□n] ~ [k'□m□n] ~ [k'aman] 'black.'

the process at other categories. Although it is extremely rare, Word-Initial Tensification takes place to Sino-Korean words as well, as shown in (2b). Probably, the mono-syllabic Sino-Korean words are so significantly nativized that it tends to be recognized as native Korean vocabulary. The quasi-nativity is also observed in the words like [kaba.·˙] 'bag, from Dutch *kabas*,' [p'a.·˙]; bread, from Portugese *pão,*' and so forth.

2.2. Parallelism with Syntactic Empathy (Kuno et al. 1977)

Kuno et al.'s (1977) seminal work on the role of syntactic empathy has enlightened us regarding the speaker's attitude toward discourse. Empathy is 'the speaker's identification, with varying degrees (ranging from degree 0 to 1), with a person who participates in the event that he describes in a sentence.' (p. 627) For example, the content of a sentence can be delivered in diversified forms:

(3)   a. John hit Mary.

      b. John hit his wife.

      c. Mary's husband hit her.

      d. Mary was hit by John

In (9a) the speaker is neutral toward the event, and in (9b) he identifies himself with John more than Mary, while in (9c) merely the opposite, and in (9d) Mary is all the more identified with the speaker. Passivization is used to highlight the referent rather than the subject. This is the nutshell of syntactic empathy introduced by Kuno et al. *(ibid)*. What I would like to claim here is that Korean Word-Initial Tensification takes place to make explicit empathy of the speaker in a phonological sense. In other words, speakers imagine some objects as sharing their feelings like a movie or play actors tend to show   their empathy with the characters they are cast to play a role of. For the purpose, it is likely that they make use of not merely sentential structure, but also phonological patterning. Depending upon empathetic strategies at hand, the content of a word or sentence gives different impressions to listeners. Let us take an example. Forms [p□k] and [p'□k] 'back' are used in totally different contexts. The former is used in an ordinary context, and means 'rear, again' e.g. *back number[2], come back*. On the other hand, the form [p'□k] has pejorative or derogatory meaning 'illegal background, power.' We have tensification to Sino-Koreans as well: e.g., in a minimal pair [kwa] ~ [k'wa] 'department,' the latter form implies 'our department to the exclusion of others,' while the former is neutral. To break down the connotation conveyed by neutral and empathetic meaning, the following polarity table can be drawn in a quite sketchy manner:[3]

Neutral	Empathetic

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[2] It stands for a 'jersey number' of athletic uniforms.
[3] Semantic primitives constituting empathy do not confine to the enumerated six features. The list can extended to some extent.

-SUBJECTIVE	+SUBJECTIVE
-ENDEARING	+ENDEARING
-DEROGATORY	+DEROGATORY
-EXCITING	+EXCITING
-PRIVATE	+PRIVATE

<Table 1>   Phonological Empathy

We assume that every word, nominal in particular, is equipped with connotative meaning of their own and the values of each semantic features are at variance: +, -, and blank. Thus, the conflict between connotative meanings with empathetic meaning results in blocking of employment of empathetic instantiation. This issue will be discussed in the next section in detail.

2.3. Why just Tensification?

As to the tensification at the left-edge of lexical items, Martin (1962) proposes that the laryngeal features serve the semantic function to connote the degree of intensity on top of the denotative meaning of a word. In this sense, he employs ternary degree of intensity: [PLAIN] for plain series, [INTENSE] for tense series, and [PARAINTENSE] for aspirated series. The independent nature of feature-size morpheme is not something new and well-documented by Zoll (1996). Criticizing the ternary scale of intensity in Korean sound symbolism, J.S. Lee (1992) tries to rectify the intensity relation between tense and aspirated series and introduces a revised model: Each laryngeal feature has distinct semantic connotation to the effect that the single-feature morpheme {spread glottis} is decomposed into series of semantic primitives [DENSE, COMPACT, SOLID, TOUCH, HEAVY, SLOW…] and {constricted glottis} into [AIRY, CRISPY, SPARSE, LIGHT, SWIFT…].   Her idea is tantamount to say that phonological features [spread glottis] and [constricted glottis] exhibit independent semantic properties of their own right, denying hierarchical relationship between the phonologically antagonistic features. As we will see in the later, this idea has some welcome consequences.

   Above all, her analysis is likely to shed light on some serious difficulties encountered in Martin's model. In other words, if laryngeal features are really adopted in Korean to manifest ternary degree of intensity in Korean onomatopoeic or mimetic words, it is hard to explain the gaps encountered, e.g., *pants'ak-p'ants'ak-*p^hants'ak, tsalluk-ts'alluk-*ts^halluck.* The hierarchical model predicts every tensed form has an aspirated counterpart. Conversely, our stance to regard tense and aspirated forms as a means to convey different connotations looks like quite promising to account for the asymmetry between tensification and aspiration in ideophonic alternations.

   Second of all, the legitimacy of the separation of features [c.g] and [s.g.] in the determination of sound symbolism never conflicts with the historical development of the concerned features. It is generally believed that tense and aspirated obstruents did not come into existence extensively until late Middle

Korean (circa 10th through 16th century, cf. K.M. Lee 1998). However, the motivation to add the laryngeal features is far from being identical. According to K.M. Lee's (1959) analysis, the triggering of tensification was motivated by sound symbolism, as exemplified below:

(4) pre-Middle Korean   Middle Korean

    [kᴢzᴢ-]   >   [k'ᴢzᴢ-]   'to pull'

    [kutsits-]   >   [k'utsits-]   'to scold'

    [sip-]   >   [s'ip-]   'to chew'

According to the historical linguistic tradition, plain consonants initiating verbal roots are unaffordable to convey the associative meaning imbued from intensified physical and wild activities in one way or another. A piece of evidence to support this idea is captured in the biased application of tensification to the verbal category, which often demands to properly convey violent, intensified degree of movements or activities.

In contrast, aspiration in the Korean language has a quite different story. To resolve the problem, K.M. Lee tries to account for the application of aspiration by positing of the latent abstract /h/:

(5)   underlying   pre-Middle Korean   Middle Korean

    /ph‿l/   [p‿l]   >   [p^h‿l]   'arm'

    /kho/   [ko]   >   [k^{h}o]   'nose'

    /khal/   [kal]   >   [k^{h}al]   'knife'

Aside from the longstanding controversy on the latent abstract segment since Kiparsky (1973), one thing important to our purpose is that the appearance of aspirated stops has nothing to do with sound symbolism. This fact clearly contrasts with the case of the addition of tensification in the historical development. This fact is quite commensurate with our contention presented later that only feature [constricted glottis] as a feature-size morpheme is in service to convey Korean speaker's attitude associated with concerned English loanwords.

K.M. Lee's (1959) analysis on diachronic development on nominal tensification is misguided in some points. K.M. Lee basically divides the tensification in nominal and verbal cases, and he holds the position that verbal tensification was triggered as part of phonetic sound symbolism. On the other hand, nominal tensification was made available by so-called "sai-sios' operation to the effect that the obstruents at the initial position of the second elements of compounds go through tensification. Since tensed forms are available to speakers, they come to be encoded as newly developed basic forms. However, this idea proves not to work to account for the current loanword adaptation. Aside from the mystery why tensification is eclectic in their application, as confirmed by the blocking of the operation in (7) below, it

is unexpected that they are usually preceded by modifiers as it does in the native word stock. From OT perspective, the different behaviors between nouns and verbs are accounted for in terms of output-output correspondence (Benua 1997): Nominal roots are able to stand alone and thus sensitive to the constraints in charge of controlling the matching between a root morpheme and the corresponding derivatives, while those belonging to other categories never fail to be accompanied by suffixes as an independent lexical item and thus they are out of control of output-output correspondence requirement. The punch line of output-output correspondence is the dominance of the root over its derivative. K. M. Lee's proposal does not accord with the spirit of output-output correspondence framework, considering that he argues the dominance of derivatives over root forms.

In sum, it is clear that unlike Martin (1962), it is proper to separate the addition of features [spread glottis] and [constricted glottis] to make explicit aspiration and tensification, respectively. This idea is borne out by sound symbolism and historical sound change in Korean.

When it comes to asymmetry between tensification and aspiration, as observed in (6), it is not hard to notice that the lack of aspirated forms in loanwords is far more serious than in the case of ideophonic case:

(6) Discrepancy between Tense and Aspirated Equivalents in Loanwords

[ts☐mp^h☐] ～	[ts'☐mp^h☐]	*[ts^h☐mp^h☐]	'jump'
[pon☐s☐] ～	[p'on☐s☐]	*[p^{h}on☐s'☐]	'bonus'
[p☐k] ～	[p'☐k]	*[p^h☐k]	'bag'
[p☐k] ～	[p'☐k]	*[p^h☐k]	'back'
[ts☐dz☐] ～	[ts'☐dz☐]	*[ts^h☐dz☐]	'jazz'
[taun] ～	[t'aun]	*[t^{h}aun]	'down'
[tsip] ～	[ts'ip]	*[ts^{h}ip]	'jeep'
[taibi.˙] ～	[t'aibi.˙]	*[t^{h}aibi.˙]	'diving'
[pat'e☐i] ～	[p'at'e☐i]	*[p^{h}at'e☐i]	'battery'
[p☐s'☐] ～	[p'☐s'☐]	*[p^h☐s'☐]	'bus'
[p☐t] ～	[p'☐t]	*[p^h☐t]	'bat'

The pervasive lack of aspiration in loanwords gives a line of evidence to confirm our idea that tensification has a fundamentally distinct raison d'etre from that of aspiration.

2.4. Tensification as On-and-Off Process

In above sections, we observed that tensification is a favorite to convey speakers' attitude towards what they are referring to. Another important issue to be incorporated in the discussion of Korean loanword phonology is that the concerned Word-Initial tensification is not applicable to relevant items across the

board. As we compare the data in (1) and (6) with those in (7) below, it is easy to notice the difference:

(7) Forbidden Tensification

[p⬜bul]	~	*[p⬜bul]	'bubble'
[peikʰon]	~	*[p'eikʰon]	'bacon'
[tin⬜]	~	*[t'in⬜]	'dinner'
[teitʰa]	~	*[t'eitʰa]	'data'
[kei]	~	*[k'ei]	'gay'
[k⬜g‿]	~	*[k⬜g‿]	'gag'

We are going to discuss what is intervening factors to intercept the potential process of tensification in (7) in the next section.

3. Discussion

3.1. Laryngeal Feature Specifications

With respect to laryngeal feature representation of Korean Word-Initial Tensification, let us take over the presumption taken by Iverson and Salmons (1995), Iverson and A.R. Lee (2006).

	p	pʰ	p'	b
Germanic except Dutch		[s. g.]		[ ]
Romance, Slave, Japanese	[ ]			[voice]
Korean	[ ]	[s. g.]	[c. g.]	

[s. g.]=spread glottis, [c.g.]=constricted glottis

<Table 2> Laryngeal Feature Representation

Militating against traditional views on Germanic languages including English, the feature model above claims that unmarked laryngeal feature in English is [voice] rather than [voiceless]. In the meanwhile, Korean obstruents have ternary system and plain consonants are null and aspirated and tense consonants have [s.g.] and [c.g.], respectively. The specification of Romance, Slave languages is deployed to demonstrate the variety of laryngeal feature specification different from English and Korean. This idea leads us to believe that alternations related to feature [voice] in English is a process of feature filling rather than feature changing. The devoicing of initial and final lenis obstruents in English is well known, e.g. *Bob, did, gig*. This can be understood that the underlying empty slot at the word-edge position to remain intact at the surface level. The voicing realization is at the mercy of individual speakers. Accordingly, the fully voiced obstruents in English can be observed merely in the intervoiced context, e.g.

abandon, adore, again. Here let us assume the stand on the controversial issue of the input identification in loanword adaptation that the underlying feature structure of the source language is transferred as input, as LaCharite and Paradis (2005) claim. Another thing is that considering that English obstruents are not easy to jam into the straitjacket of voicing and voiceless, replacement of fortis and lenis, instead of voiced and voiceless distinction, is adopted in our analysis. So revising the model given in <Table 2>, we assume that all the fortis obstrunts of English are specified in feature [s.g.] underlyingly, while lenis obstruents are null in terms of laryngeal features, as shown in (8):[4]

(8) Representation of English Laryngeal Features at the Surface

    a. Fortis   b. Lenis

      p   b

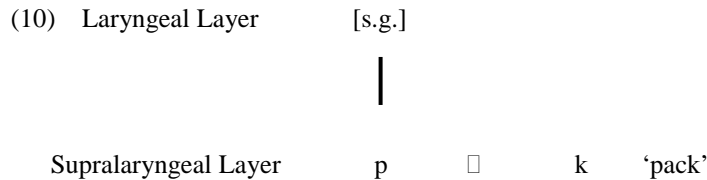 |

    [s.g]   [   ]

3.2. Option for Feature Filling

Now, we are well prepared to give an account for the tensification occurring in Korean loanword adaptation. As depicted in (8), laryngeal features involved with the lenis obstruents in English are empty while the concerned lexical items are transferring to Korean lexicon. Under the conceptualization, we can readily answer the prime question on Korean Word-Initial Tensification: Why does the process apply to merely plain consonants?: The answer is that the empty laryngeal nodes involved with plain consonants come to be filled by feature [constricted glottis], which is believed in our analysis that as a single featured morpheme and plays a role to convey the speaker's attitude towards the referring objects of the concerned words. On the contrary, in the case of fortis obstruents, relevant laryngeal features are already specified and for this reason, if we want to realize feature [c. g.], it need a process of feature replacement rather than feature filling. However, it is obvious that the process requiring feature replacement is more marked than a simple process of feature filling. The feature replacement is a composite of feature removal plus feature filling. As a means of phonological empathy, latter type of tensification is seldom opted for, as depicted below of the example 'back':

(9)   Laryngeal Layer   [c.g.]

                                ⋮

    Supralaryngeal Layer   p   □   k   'back'

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[4] For the notion of fortis and lenis, we rely upon the phonetic tradition ever since Lisker and Abramson (1964): fortis sounds are produced with a greater force in articulation, whereas the opposite situation happens to lenis consonants.

To deliver empathetic meaning to the English loanword 'back', signifying 'illegal background,' the empty space on the laryngeal tier is to be taken by the mono-featural morpheme [c. g.].   By contrast, in the case of 'pack', the word-initial fortis obstruent is already taken by feature [spread glottis] and additional laryngeal feature linking is disallowed:

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(10)   Laryngeal Layer   [s.g.]

                                    |

       Supralaryngeal Layer   p   □   k   'pack'

An important strength of our analysis is that the present model is successful to explain why tensification of fortis stops is usually disallowed in ordinary speech.[5] In Korean loanword phonology, it is usual for fortis input to realize as aspirated consonants rather than other options, as we can see in (14):

(11)   [opʰ□n]   *[op'□n]   'open'

       [s□tʰ□__aikʰ□]   *[s□t'□__aikʰ□]   'strike'

       [s□pʰun]   *[s□p'un]   'spoon'

       [s□kʰi]   *[s□k'i]   'ski'

     To obtain a plausible answer to the question why Korean loanword adaptation prefer aspiration to tensification of fortis obstruents of the source language, the adoption of the input representation on laryngeal features instantiated in (8) is sufficient without further ado: feature [s. g.] is available to control the laryngeal feature manifestation and it is difficult to resort to feature replacement.

     In this regard, the analysis relying on orthographic information, proposed by M.R. Oh (1996) is misguided. As she suggests, if the realization of Korean loanwords from English fortis consonants is really due to the influence of orthography, that is, to substitute Korean aspirated for English fortis regardless positions, it is hard to answer the question: Why not tense consonants rather than aspirated counterparts? It is not fair to attribute the aspiration dominance effect to the orthographic influence. It is equally possible to evoke the tensification of the concerned consonants as aspiration. Under the idea, there is no reason to give a priority to aspiration.

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[5] To my knowledge, forms like [tʰ□.·ˈkʰ□] ~ [t'□.·ˈk'□] 'tank,' [pʰaipʰ□]~[p'aip'□] 'pipe,' [pʰ□ntsʰ□] ~ [p'□nts'□] 'pants,' [pʰ□__intʰ□] ~ [p'□__intʰ□] 'print' represent exceptions to our generalization. Also it is not unusual to find tensified versions like [p'iano] 'piano,' [p'et] 'pet.' found in recent Internet diction. Here I ignore the consciously warped forms of linguistic forms burgeoning lately in Internet blogs and other kinds of sites.

3.3. Feature Incompatibility

As pointed out in section 2.4., there is a subset relation between words compatible with empathy and a loanword as a whole: e.g., [taiamond□]/*[t'aiamond□] diamond', [paind□]/ *['paind□/ 'bind', [pai□]/ *[p'ai□] 'buyer', [kaid□]/*[k'aid□] 'guide', etc. For the explanation, we assume that the empathetic demand is merely applicable to words whose semantic connotation is not in conflict with semantic primitives required to instantiate the empathic meaning to the words at stake. Let us illustrate the case, 'guide.', which disallows Word-Initial Tensification:

(12)   guide

connotations   *empathetic features*

±SUBJECTIVE	+ SUBJECTIVE
-DEROGATORY	+DEROGATORY
±ENDEARING	+ENDEARING
±EXCITING	+EXCITING
±PRIVATE	+PRIVATE

I speculate that the partial incompatibility between inherent and empathetic meaning is enough to prevent superimposing empathetic features. In this case, the multiple-crashes among features lead Korean speakers are reluctant to permit tense forms during loanword adaptation. Conversely, in the case of 'back', signifying 'illegal background', inter-feature crash never occurs and for this reason, tensification is allowed.

(13) back ('illegal background')

connotation   *empathetic features*

+SUBJECTIVE	+ SUBJECTIVE
+DEROGATORY	+DEROGATORY
+ENDEARING	+ENDEARING
+EXCITING	+EXCITING
+PRIVATE	+PRIVATE

3.4. Frequency Effect

Connectionist position would be the most bona fide example of modeling the variable frequency in phonology: Under the intricate network of neural nodes, each node has a numerical activation value and

those associated with high frequent items have low thresholds of activation values. (McCarthy 2001: 59-61). More concretely, according to Bybee (2001), the role of frequency is integral to predict lenition like schwa deletion, e.g., *summary* (frequent: deleted) vs. *summery* (infrequent: retained); coronal stop deletion in the words with double past tense maker, e.g,, *told* (frequent: deleted) vs. *meant* (infrequent: retained).[6]

To prove the connection between the frequency or intimacy of loanwords and the likelihood of tensification, I conducted a pilot investigation employing a small group of arbitrary chosen loanwords having the English sources. The randomly chosen minimal pairs contrasting in light of word-initial tense features were explored at the website http://kr. search.yahoo.com and I gained the ratio between that of the readily tensified words over rarely tensified counterparts. During the Internet examination, the forms with homonymous with native Korean like *down* (다운), *ball* (볼), *gang* (갱) were expelled from our consideration from the outset.

No	Rarely Tensified (A)	Frequency	ReadilyTensified (B)	Frequency	B/A (%)
1	gold	3,470,000	game	50,700,000	1461%
2	disk	4,690,000	diving	632,000	13%
3	gag	5,530,000	gas	5,210,000	94%
4	dinner	184,000	dance	7,030,000	3821%
5	bubble	2,450,000	band	3,070,000	125%
6	gay	878,000	gang	257,000	29%
7	bowling	439,000	boxing	1,220,000	278%
8	drive	2,590,000	dam	1,010,000	39%
9	bacon	412,000	bonus	2,380,000	578%
10	guide	9,170,000	gown	940,800	10%
11	Gypsy	171,000	jazz	2,200,000	1287%
12	gesture	275,000	jump	2,030,000	738%
13	zipper	385,000	jam	1,780,000	462%
mean					687%

<Table 3> Ratio of the Frequency of Tensified over the Lenis

The frequency mean value calculated from the ratio of the tense forms over plain forms amounts to 687%. Certainly it is necessary to take into account the haphazardness of variables intervening in examining the

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[6] Morphological, it is well known that in the historical development of word stocks, words essential to the daily necessities are rarely subject to change. For instance, in English, lion's share of native vocabulary inherited from Old English is the stuff of commonly used everyday conversations like *die, eat, live, love, fire, fear*. It is the case with Korean as well. Notice that the resistence of vocabulary employed in everyday conversations is a matter of replacement of native vocabulary through hosting foreign words. Instead, we are concerned with phonological aspects of the available words

internet data during the calculation: e.g., individual tastes of site constructors, frequency of the terminology typical to specific fields, and so forth. Nonetheless, the percentage over 600% is somewhat meaning to us. The overwhelming percentage of tense forms in terms of frequency over plain-only forms is unlikely to be nullified by the property of precariousness of the uncontrolled data inherent to the data posted on the internet sites. This means that a certain amount of thresholds of frequency must be passed over to trigger tensification of the concerned words.

4. On the Orthographic Conventions on Laryngeal Features

Orthographically, it is extremely rare to find empathetic forms of loanwords in written documents like dictionaries, textbooks, newspaper. The first reason is that words involving tense consonants are statistically less in number than plain or aspirated words. Notice that almost 70% of Korean word stock consists of Sino-Korean words, in which morphemes started with tensed obstruents take just tiny part, attested in the morphemes like s'i (氏), s'a.ˑ (雙), k'ik (喫). So it would be surmised that Korean lexicographers have consciously or subconsciously avoided tensed forms as regular forms. The situation is the same in the loanword adaptation from English: sibilants are regularly spelled as plain consonants, even though they clearly perceived them as tensed ones in *solo, sofa*, *side, sea, soda, sauna, cycle, psychology, siren,* and so forth. I. have never perceived the plain sibilants in the loanwords listed above, at least in informal and ordinary speech. Nonetheless, it is extremely rare to witness the tense consonants in the written documents.

The second reason to miss tense forms in spelling as delivery of empathetic attitude of speakers is that empathetic meaning is a superimposed meaning on top of regular meaning of a word. The situation is similar to that of prosodic features like stress, pitch accent, tone. To my knowledge, it is usual to omit the predictable prosodic features in the spelling convention of a language. For instance, in English, word stress, which could be arguably predictable, is never orthographically represented, and Spanish indicates merely unpredictable stress on the word by word basis in the lexicography.

The current Korean spelling convention employs an interesting criterion to designate tense feature on the spelling. The overt symbols to designate tense consonants merely turn up when we need to tell apart two native lexical items constituting minimal pairs in terms of laryngeal features. The consonants that matter for minimal pairs are emboldened:

(14) **t**a.ˑˈkida   'to pull'   ilkun   'to be plowed'
      t'a.ˑˈkida   'to be cramped'   il**k**'un 'worker'

      katsa   'let's go'   naltsa   'let's fly'
      ka**ts**'a   'bogus'   nal**ts**'a 'date'

Likewise, for the identification of loanwords from the existing native lexical items, tense forms are reflected in the minimal pairs:

(15) a. **s**auna   'sauna'   b. **s**'ain   'autograph, signature'

          s'auna   'to fight (interrogative)   **s**ain   'cause of death'

In (15a), considering that the existing word *s'auna* initiated with a tense consonant and it is also represented in spelling, tense feature needs not to be noticed in spelling to loan word 'sauna.' By contrast, in (15b), there is no available native word containing tense feature with the same structure, so for the sake of distinction among word stock, the loanword has an orthographical tense feature.

6. Summary and Implications to Korean lexicon

So far we have tried to account for why and how Word-Initial Tensification available in English loanwords to Korean takes place. The upshot is that the consonant mutation is motivated to empathize speaker's personal attitude towards whey are referring to. Considering that Korean lacks prominent word stress or tonal variation, Korean calls for other devices equivalent to the prosodic qualities. To identify the factors involved with the triggering the laryngeal feature drift, we have called for the frequency of the lexical items in Korean lexicon. Another thing is that the allowance of lexical frequency in the determination of the shape of phonological words stands for the interplay of the lexicon and grammar. In other words, two components are not clearly separated as independent modules but they are interconnected to decide a word shape in the loanword adaptation. .

Let us examine the implications obtained from our analysis to the structure of Korean lexical strata. First of all, the separation of tense and aspirated forms of Korean ideophones in a functional sense proves to be effective to account for the asymmetric distribution concerning Korean tense and aspirated obstruents. The functional independency of two laryngeal features is further supported by another asymmetry between them: It is extremely rare to find aspirated counterparts of tense forms from English as a source language.[7] By contrast, the aspirated forms are not so sparse in Korean onomatopoeic or mimetic words, as exemplified below:

(16)   *plain*   *tense*   *aspirated*

        pi.˙   p'i.˙   pʰi.˙   'turning round'

        kamkam   k'amk'am   kʰamkʰam   'dark'

        tantan   t'ant'an   tʰantʰan   'hard'

Thus, the parallelism between ideophonic words and loanwords should be given up at this point. They are separate in their allowance of aspirated forms corresponding to plain forms. Thus the following model of Korean lexicon, analogous to Japanese counterpart provided by Ito and Mester (1995), can be depicted:

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[7] Aside from the single exception [kitʰa] ~ [kʰitʰa] 'guitar,' the aspirated equivalents of lax obstruents in loanwords are unavailable.
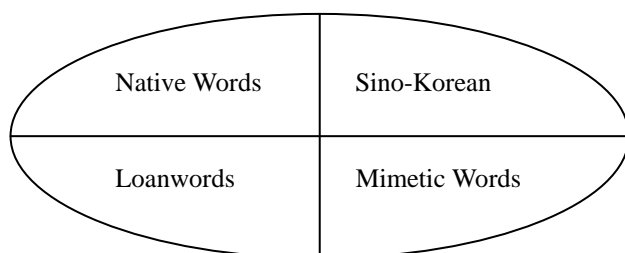
Figure 1. Korean Lexicon

The separation of native and Sino-Korean words is supported by the distant gap between them in light of the rate of Word-Initial Tensification, as already exemplified in (1) in section 1. On the other hand, both native and Sino-Korean words hardly lose their laryngeal features at the non-initial position, unlike in ideophones or loanwords, as noted by P.H. Lee (2005: 61). From the viewpoint of susceptibility to loss, let us arrange the pros and cons obtained from the proposed four subsectors of Korean lexicon:

(8)   Loss of aspiration   Examples

Native   NAY   [pat^{h}a.$\cdot$]   'base'

Sino-Korean   NAY   [kits^{h}o]   'base'

Ideophones   AYE   [t^{h}a-ta-.$\cdot$]   'bang-bang'

Loanwords   AYE   [ped‿ro]   'Peter' (Biblical)

Ideophones and loanwords are identical in their generous allowance of laryngeal feature alteration in exquisite contrast to native and Sino-Korean. In this sense, partitioning Korean lexicon Figure 1 is supported from the viewpoint of processes involving to laryngeal features.[8] To recapitulate, from the standpoint of laryngeal features, the substrata of Korean lexicon postulated in Figure 1 prove to have discernable asymmetry among them, as tabulated below:

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[8]   The core-periphery model of Ito and Mester (1995a,b,) among lexical stratification does not affect our proposal based on the parallelism among the subsumed lexical compartments.

	aspiration		tensification	
	loss	gain	loss	gain
Native words	no	no	no	yes
Sino-Korean	no	no	no	no
loanwords	yes	no	indeterminate[9]	yes
ideophones	yes	yes	yes	yes

Sino-Korean lexical items turn out to be the most resistant to the laryngeal alterations, while the ideophones are the most lenient to the changes. Loanwords from English belong to the second most generous group to laryngeal feature alternations. Native Korean words just allow newly generated tense features to the exclusion of other options.

References

Benua, Raura. 1997. *Transderivational Identity: Phonological Relations between Words*. Doctoral Dissertation. University of Massachusetts, Amherst.

Bybee, Joan. 2002. Word Frequency and Context of Use in the lexical Diffusion of Phonetically Conditioned Sound Change. *Language Variation and Change* 14.3: 261-290.

Davis, Stuart and M—Hui Cho. 2003. The Distribution as Aspirated Stops and /h/ in American English and Korean: an Alignment Approach with Typological Implications. *Linguistics* 41. 607-652.

Ito, Junko and Armin Mester. 1995a. Japanese Phonology. In J. Goldsmith (ed.) *Handbook of Phonology*. 817-838. Cambridge, MA: Basil Blackwell.

Ito, Junko and Armin Mester. 1995b. The Core-Periphery Structure of Lexicon and Costraints on Ranking. *UMass Working Papers in Linguistics*. 181-209.

Iverson, Gregory and Ahrong Lee. 2006. Perception of Contrast in Korean Loanword Adaptation. Korean Linguistics. *Journal of International Circle of Korean Linguistics* 13. 49-88.

Iverson, Gregory and Joseph C. Salmons. 1995. Aspiration and Laryngeal Representation in Germanic. *Phonology* 12. 369-396.

Kang, Yoonjung. 2003. Perceptual Similarity in Loanwod Adaptation: English Postvocalic Word-Final Stops in Korean. *Phonology* 20. 219-273.

Kenstowicz, Michael and Atiwong Suchato. 2005. Issues in Loanword Adaptation: A Case Study from

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[9] Considering that we are concerned with borrowing from English and it is hard to find the input possessing tense consonants, we leave the issue inderminate.

Thai. *Lingua*.

Kim, Chin-Wu. 1970. Theory of Aspiration. *Phonetica* 21. 107-116.

Kim, Hyunsoon. 2005. The Representation of the Three-Way Laryngeal Contrast in Korean Consonants. In M. van Oostendorp et al. (eds.) *The Internal Organization of Phonological Segments*. 287-316. . New York: Mouton de Gruyter.

Kim-Renaud Young-Key. 1974. *Korean Consonantal Phonology*. Doctoral Dissertation. University of Hawaii.

Kiparksy, Paul. 1973. How Abstract is Phonology?. In Osama Fujimura 9ed.) Three Dimensions of Linguistic Theory. 5-56. Tokyo: TEC.

Kuno, Susumo and Etsko Kaburaki. 1977. Empathy and Syntax. *Linguistic Inquiry* 8. 627-672.

Lee, Byung-Gun. 1993. *Haksiriwa Hwaksiri* [*Haksiri and Hwaksiri*]. Seoul: Handzulgi.

Lee, Jin-Seong. 1992. *Phonology and Sound Symbolism of Korean Ideophones*. Doctoral Dissertation. Indiana University, Bloomington.

Lee, Ki-Moon. 1959. A Study of the 16th Century Korean Language. *Papers in Humanities and Sciences* 4. Korea University. (in Korean)

Lee, Ki-Moon. 1998. *Kaejeong Kugeosa Kaeseol*. [*Revised Introduction to the History of the Korean Language*]. Seoul: Thaehaksa.(in Korean)

Lee, Ponghyung. 2005. Searching the OT Constraints Interacting with Korean Phonology and Morphology. In Sang-Oak (ed.) *Chomsky's Minimalist Program and OT Applied to Korean*. 55-79. Seoul: Pagijong.

Lisker, Leigh and Arthur S. Abramson. 1964. A Cross-Language Study of Voicing in Initial Stops: Acoustic Measurements. *Word* 20. 384-422.

McCArthy, John. 2002. *Thematic Guide to Optimality Theory*. Cambridge University Press.

Martin, Samuel. 1962. Phonetic Symbolism in Korean. In Nicholas Poppe (ed.) *American Sudues in Altaic Linguistics* 13. 177-189.

Oh, Jung-Ran. 1987. Fortition within Korean Compound. *Korean Journal of Linguistics* 12-1. 35-53. The Linguistic Society of Korea..

Oh, Mira. 1996. Linguistic Input to Loanword Phonology. *Studies in Phonology, Phonetics, and Morphology* 2. 117-126.

Silverman, Daniel. 1992. Multiple Scansions in Loanword Phonology: Evidence from Cantonese. *Phonology* 9. 289-328.

Zoll, Cheryl. 1996. *Parsing Below the Segment in a Constraint Based Framework*. Doctoral Dissertation. University of California, Berkeley.

Appendix

1. bench   a.벤치   b. 뻬치

2. brocker   a.브로커   b.뿌로커

3. boxing   a.복싱   b.뽁씽

4. burner   a.버너   b.빠나

5. bowling   a.볼링   b.뽈링

6. bonus   a.보너스   b.뽀나스

7. bag   a.백   b.빽

8. bacon   a.베이컨   b.뻬이컨

9. buyer   a. 바이어   b.빠이어

10. banana   a.바나나   b.빠나나

11. bat   a.뱃/배트   b.빼트/빠따

12. boundary   a. 바운더리   b. 빠운더리

13. double   a.더블   b.따불

14. dome   a.돔   b.똠

15. deadline   a.데드라인   b.떼드라인

16. drive   a.드라이브   b.뜨라이브

17. disk   a.디스크   b.띠스크

18. Denmark   a. 덴마크   b. 뗀마크

19. down   a.다운   b.따운

20. desk   a.데스크   b.떼스크

21. diving   a.다이빙   b.따이빙

22. digital   a. 디지털   b. 띠지털

23. dinner   a.디너   b.띠너

24. dance   a.댄스   b.땐스

25. gold   a.골드   b.꼴드

26. guide   a.가이드   b.까이드

27. game   a. 게임   b.께임

28. gurantee   a. 개런티   b. 깨런티/깨런띠

29. gang   a. 갱   b.깽

30. gag   a. 개그   b. 깨그

31. gas   a. 가스   b. 까스

32. gorilla   a. 고릴라   b. 꼬릴라

33. Greece   a.그리스   b. 끄리스

34. goal   a. 골   b.꼴

35. gum   a. 검   b. 껌

36. ghost   a. 고스트   b. 꼬스트

37. gown   a. 가운   b. 까운

38. gallon   a. 갈론   b. 깔론
39. gambling   a. 갬블링   b. 깸블링
40. glove   a. 글러브   b. 끌러브
41. jump   a. 점프   b. 쩜뿌
42. gesture   a. 제스처   b. 쩨스처
43. jazz   a. 재즈   b. 째즈
44. jeep   a. 짚/지프   b. 찦/찌뿌
45. Gypsy   a. 집시   b. 찝시
46. jungle   a. 정글   b. 쩡글
47. jelly   a. 젤리   b. 쩰리
48. job   a. 잡   b. 짭
490. jam   a. 잼   b. 쨈
50. zone   a. 존   b. 쫀
51. zipper   a. 지퍼   b. 찌퍼