

A Formalization of Stress Pattern in Standard Korean

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<Abstract>

이 논문의 목적은 표준한국어의 강세유형을 Hayes(1995)의 *Metrical Stress Theory*의 틀내에서 형식화하는 것이다. 표준한국어의 강세 유형에 대해서는 여러 가지 설이 있으나 이 논문에서는 이 현복(1989)의 기술을 분석대상으로 삼았다. 이 현복(1989)에 따르면 한국어의 강세는 단어의 첫 두 음절 중 하나에 온다. 첫 음절이 중음절이면 그 음절에 강세가 오며 그 외의 경우에는 두번째 음절에 강세가 온다. 이와 같은 강세 규칙을 *footing*의 존재 여부, *footing*의 반복성, 그리고 *footing*의 방향을 고려하여 살펴보면 표준한국어의 강세 유형은 “왼쪽 끝에서 시작되는 비반복 *footing*을 보이는 *iamb*”이다.

1. Introduction

This paper aims at a formalization of stress patterns in standard Korean within the framework of Hayes(1995). Stress in standard Korean has been controversial¹⁾. Among others, Lee(1989) showed from an experiment with laryngograph that stress in standard Korean falls on one of the first two syllables: on the first syllable if it is heavy, otherwise on the second. I will present facts and analyses of stress in standard Korean within the framework of Hayes(1995). I will introduce syllable structure relevant to the distribution of stress in standard Korean whenever necessary. I will discuss the distribution of stress in standard Korean, give an analysis of stress in standard Korean on the basis of the distribution of stress, and provide derivations of representative forms. Data are selected from Heo(1983), Lee(1989) and Yoo(1985).

2. Stress in Standard Korean

2. 1. The distribution of stress in standard Korean

I will discuss the distribution of stress in standard Korean here.

Lee(1989) described stress in standard Korean as follows claiming that stress is determined by vowel length and syllable structure.

Stress falls

- 1) on the syllable of a word if it is monosyllabic or
- 2) on the first syllable of a word if the first syllable has long vowel or
- 3) on the first syllable of a word if the first syllable is (C)VC or
- 4) on the second syllable of a word if the first syllable is (C)V

We can make the following generalization about stress in standard Korean reanalyzing the above description.

1) cf. Kim(1994) for a detailed comparison of theories about stress in Korean.

Stress occurs on one of the first two syllables: on the first syllable if it is heavy((C)VVC, (C)VV or (C)VC); or in monosyllables; otherwise, on the second syllable.

In the statement of distribution of stress in standard Korean, I mean by the word “heavy” that a certain syllable has long vowel or is closed by a consonant. It is necessary to specify the cases where syllables have a long vowel and the cases where syllables are closed by a consonant.

There is underlyingly vowel length distinction in standard Korean. We can see the contrast in the following minimal pairs.

nún	“eye”	núun	“snow”
sagwá	“apple”	sáagwa	“apology”
pudónp ^h jo	“fixed vote”	púudonp ^h jo	“floating vote”

And closed syllables are heavy. The first syllables in the examples listed below are closed by a consonant. They are considered as heavy regardless of vowel length in standard Korean.

sáksuɕʌŋi	“mason”
áksu	“hand-shaking”
ɕʌənhwa	“telephone”
sáənsu	“player”
áamsal	“assassination”
sáənmul	“gift”

I will examine the distribution of stress, firstly, when stress falls on heavy syllable, secondly, when stress falls on monosyllabic word, and, finally, when stress falls on the second syllable. Each set of examples which will be given are illustrated in three columns: word, syllable weight, and glosses. H stands for Heavy syllable; L, light

syllable; bold-faced letter, the syllable on which stress falls.

Let's examine the following examples. Stress falls on the first syllable if it is heavy.

<i>Word</i>	<i>Syllable Weight</i>	<i>Gloss</i>
sáagwa	HL	“apology”
áksu	HL	“hand-shaking”
áamsal	HH	“assassination”
ǰǰánsəl	HH	“legend”
púudoŋp ^h jo	HHL	“floating vote”
ǰǰíndallɛ	HHL	“azalea”
póoŋsuŋa	HLL	“touch-me-not”
póksuŋa	HLL	“peach”
sóksagida	HLLL	“whisper”
wéensonǰgabi	HHLL	“southpaw”
sóoŋgusurəpt'a	HLLHL	“be sorry”
kəəǰinmalǰǰaŋi	HHHLL	“liar”

All of the words listed above show that the first two syllables have a sequence of HL or HH and stress falls on the first syllable irrespective of whether the second syllable is light or heavy. The first syllable of the words either has a long vowel or is closed by a consonant. For example *sáagwa*, *áamsal*, and *sáənmul* have a long vowel in the first syllable. The first syllable of *ǰǰánsəl*, *ǰǰíndallɛ*, and *póksuŋa* are closed. We can observe that stress never falls on the second or any heavy syllable thereafter.

Let's examine the next set of examples. Stress falls on the monosyllabic word.

<i>Word</i>	<i>Syllable Weight</i>	<i>Gloss</i>
í	L	“tooth”
íi	H	“two”
íl	H	“one”

íil	H	“affair”
pám	H	“night”
páam	H	“nut”
nún	H	“eye”
núnun	H	“snow”

The words *í* and the *î* are open while the others closed. *í* and *î* differ from each other in vowel length. *í* is light in weight while *î* heavy. Stress falls on the syllable itself. What we can observe here is that words consisting of one syllable have stress on the syllable itself regardless of syllable weight.

Let’s examine the next set of examples. Stress falls on the second syllable if the first syllable is light.

<i>Word</i>	<i>Syllable Weight</i>	<i>Gloss</i>
sagwá	LL	“apple”
sadári	LLL	“ladder”
pudóŋp ^h jo	LHL	“fixed vote”
hebáragi	LLLL	“sunflower”
arúmdapt’a	LHHL	“beautiful”
purét’urida	LLLLL	“break”

What is common in the words given above is that the first syllable of each word is light. They neither have a long vowel nor are closed by a consonant. Stress falls on the second syllable in *sa.gwá*. In *sa.gwá*, both of the two syllables are not closed by a consonant. They are light in weight. *sagwá* may seem to be problematic in syllabification. It may be thought to be syllabified into *sag.wá*, but it is natural that it should be syllabified into *sa.gwá*, because it is hard to find crosslinguistically any example where a sequence of consonant plus glide is separated into different syllables. Stress falls on the second syllable also in the words *sadári* and *pudóŋp^hjo*, since the first syllables are light in weight. Similarly in all other examples, stress falls on the second syllable when the first syllable is light.

All the three sets of examples listed above show that stress falls on the first syllable if the first syllable is heavy, on the syllable itself if it is monosyllabic, or on the second syllable when the first syllable is light

2. 2. An analysis of the distribution of stress in standard Korean

I will present here an analysis of the distribution of stress in standard Korean within the framework of Hayes(1995). To analyze stress pattern, we should consider, firstly, whether footing occurs or not, secondly, whether footing, if possible, occurs iteratively or not, and, thirdly, where footing starts: from the right edge or from the left edge. Considering all of them, stress in standard Korean can be analyzed as follows.

Set up an iamb non-iteratively from the left edge.(Closed syllables are heavy)

Let's consider, first, whether footing occurs in standard Korean or not, to examine whether this analysis is right or not. As was seen in 2. 1., stress in standard Korean falls on one of the first two syllables: on the first syllable if it is heavy((C)VVC, (C)VV or (C)VC); or on the syllable itself if it is monosyllabic; otherwise, on the second syllable. All the examples given above in 2. 1. belong to an iamb, which is one in the inventory of foot presented in Hayes(1995. ch. 4). He presented three basic bounded foot types: syllabic trochee, moraic trochee, and iamb. They are canonical foot types. But the only exception from canonical foot type is a monosyllabic word which is light in weight.

Let's analyze the canonical foot. All of the examples where stress falls on the first syllable if it is heavy, may be thought to have syllabic trochee system, because we can say that the first two syllable forms a foot and stress falls on the first syllable within a foot. Those words *wéensonǒzabi* and *sáksudǒari* may be analyzed within syllabic trochee system as follows.

x	x
(x x) x x	(x x) x x
σ σ σ σ	σ σ σ σ
ween son ɕʒa bi	sək su ɕʒa ŋi

But other examples where the first syllable is light cannot be analyzed in this way. For example, *hɕbáragi* cannot be analyzed within syllabic trochee, since stress falls on the second syllable within a given foot, contrary to the explanation in syllabic trochee system.

x	x
(x x) x x	(x x) x x
σ σ σ σ	σ σ σ σ
*hɛ ba ra gi	hɛ ba ra gi

On the other hand, all of the examples where stress falls on the first syllable if it is heavy, may be thought to be accounted for within moraic trochee system, because the first syllable alone forms a foot and stress falls on the first syllable within the foot. Those words *wéensonɕʒabi* and *səkʑsuɕʒaŋi* can be analyzed as follows.

x	x
(x) x x x	(x) x x x
- - ~ ~	- ~ ~ ~
ween son ɕʒa bi	sək su ɕʒa ŋi

But other examples where the first syllable is light in weight cannot be analyzed in this way, since the first light syllable alone cannot form a foot, and furthermore, stress falls not on the first syllable but on the second syllable. The analysis of the example *hɕbáragi* will show that point.

x	x
(x) x x x	(x x) x x
˘ ˘ ˘ ˘	˘ ˘ ˘ ˘
*hɛ ba ra gi	hɛ ba ra gi

Let's consider light monosyllabic words. I have referred to the only exception that stress falls on monosyllabic word which is light in weight. This can be explained by degenerate foot presented in Hayes(1995: ch. 5). According to the definition of weak prohibition on degenerate feet, a foot is allowed when dominated by another grid mark, so that light monosyllabic words can have stress.

Consequently, an iambic system should be preferred to syllabic trochee or moraic trochee system in standard Korean, and all the Korean words can be explained within the iambic system.

The next consideration of stress must be the direction of footing. Both the terminology of "ultimate", "penultimate", "antepenultimate" and the "first", "second", and "third" syllables used in the statement of the distribution of stress are related to direction of stress parsing.

It is hard to decide the direction of footing from words consisting of one or two syllables, since we can say about the distribution of stress in either direction. Therefore, it is better to say about direction of footing only after we examine the distribution of stress in words consisting of more than two syllables and under the assumption that every foot consists of one or two syllables. We can say that stress in standard Korean is parsed from the left edge. In other words, Korean stress system does not allow stress parsing from the right edge, as is shown in the following examples.

x	x
x (x x)	(x x) x
- - ˘	- - ˘
*puu doŋ p ^h jo	puu doŋ p ^h jo

x	x
x x (x x)	(x x) x x
˘ ˘ ˘ ˘	˘ ˘ ˘ ˘
*hɛ ba ra gi	hɛ ba ra gi

The final consideration of stress must be the iterativity of footing. We saw above that stress in standard Korean falls only on one of the first two syllables. This implies that footing occurs noniteratively in standard Korean, as is shown in the following examples. If footing is an iamb and stress occurs once in a word, it belongs either to the case where footing occurs noniteratively or to the case where there is end rule. We cannot say that there is end rule in standard Korean, since there is no secondary stress in a word. It means that footing occurs noniteratively

x x	x
(x) (x x)	(x) x x
- - ˘	- - ˘
*puu doŋ p ^h jo	puu doŋ p ^h jo

x x	x
(x x) (x x)	(x x) x x
˘ ˘ ˘ ˘	˘ ˘ ˘ ˘
*hɛ ba ra gi	hɛ ba ra gi

From the discussion given above, we can set up a stress rule in standard Korean: “set up an iamb noniteratively from the left edge.”

2. 3. Derivations of representative forms.

I will provide derivations of representative forms showing the result of our discussion. Surface representations are derived from underlying representations. Footing rule set up above is applied in the course of derivation. Therefore, derivations are

composed of three stages: underlying representations, application of footing rule, and surface representations.

I will present three groups of examples. The first group involves words where the first syllable is heavy and stress falls on the first syllable itself. The second group involves monosyllabic words where the syllable is heavy or light. The third group involves words where the first syllable is light and stress falls on the second syllable.

Let's start with the first group, that is, words where the first syllable is heavy. The examples of the first group are given below.

	x x x	x x x x
URs	puu doŋ p ^h jo	sák su ɟʒa ŋi
	x	x
	(x) x x	(x) x x x
	- - ∪	- ∪ ∪ ∪
FOOT	puu doŋ p ^h jo	sák su ɟʒa ŋi
SRs	[púudoŋp ^h jo]	[sákʌsuɟʒaŋi]

As *púudoŋp^hjo* has a long vowel in the first syllable, the first syllable is heavy. The heavy syllable alone forms a foot noniteratively from the left edge. Stress falls on the first syllable according to stress rule. The other word *sákʌsuɟʒaŋi* has no long vowel in the first syllable, but the first syllable is closed by a consonant. So the syllable is heavy. The first syllable alone forms a foot noniteratively from the left edge. Stress falls on the first syllable according to stress rule.

Let's examine the second group, that is, monosyllabic words. The examples of the second group are given below.

	x	x
URs	i	nuun
	x	x
	(x)	(x)
	˘	-
FOOT	i	nuun
SRs	[i]	[núun]

Both words consist of only one syllable. They make a difference in vowel length. The syllable of the word *í* is light while the syllable of the word *núun* is heavy. Footing is allowed by weak prohibition of degenerate feet and stress falls on the syllable itself while the latter form a foot and stress falls on the syllable itself.

Finally, let's go over words where the first syllable is light.

	x x x	x x x x
URs	pu doŋ p ^h jo	hɛ ba ra gi
	x	x
	(x x) x	(x x) x x
	˘ - ˘	˘ ˘ ˘ ˘
FOOT	pu doŋ p ^h jo	hɛ ba ra gi
SRs	[pudóŋp ^h jo]	[hɛbáragi]

As the first syllable of *pudóŋphjo* neither has a long vowel nor is closed by a consonant, it is light. So the first two syllables form a foot noniteratively from the

left edge. Stress falls on the second syllable according to stress rule in standard Korean. As the first syllable *hɛbʌragi* neither has a long vowel nor is closed by a consonant, it is light. The first two syllables form a foot noniteratively from the left edge. Stress falls on the second syllable according to stress rule in standard Korean.

I have shown derivations of the three groups of Korean words. Each example is well accounted for by stress rule in standard Korean set up within the framework of Hayes(1995).

3. Conclusion

I have given a formal representation of stress pattern in standard Korean within the framework of Hayes(1995). I stated the distribution of stress referring to syllable structure whenever necessary, gave an analysis of stress in standard Korean, and showed derivations of representative forms. Stress in standard Korean is determined by syllable structure. Stress falls on one of the two syllables: on the first syllable, if it is heavy; or on the syllable itself when it is monosyllabic; otherwise, on the second syllable. Stress in standard Korean is formalized within the framework of Hayes(1995) as “set up an iamb noniteratively from the left edge and allow a foot by weak prohibition on degenerate foot.” This works on all the Korean words well.

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