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ON THE IRREGULARITY AND THE TREATMENT OF P-FINAL FORM*

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0.

There are so-called irregular inflectible⁽¹⁾ words that consist of verbs and adjectives in Korean. They are called “p,s,t,l” irregular inflection respectively, because these segments undergo phonological changes after some suffixes. Among them, p-inflection has been discussed by some scholars, for example, C-W. Kim (5), B-G. Lee (8), Y-K. Kim (6) and K-H. Moon (9). They try to account for the inflection of this group of words systematically within the framework of the generative phonology. Generally speaking, the stem final segment /p/⁽²⁾ changes into [u or w] before vowels of suffixes. So we can see such alternation [p]→[w]→[u] as a phonetic representation.

In this paper, we first examine previous analyses and indicate that their approaches have inadequacy, failure and misunderstanding from the theoretical point of view. They all try to account for this alternation by postulating abstract underlying segments to apply a phonological rule in one case, but not in the other. In this paper, we don't want to propose any new treatment of the alternation shown in p-inflection, but to present some possible ways to solve this problem. Fundamentally I consider p-inflection not to be irregular because the inflectible words with stem-final /p/ are almost all conditioned by a rule that derives [u] from underlying /p/. Now for the purpose of our discussion, we give some relevant examples in (1).

- | | | | | | | | |
|---------|-----|-----------|-----------|-----|------|-----------|-----------|
| (1) a . | 눅다 | /nup+ta/ | [nup'tta] | b . | 꿍다 | /kop+ta/ | [kop'tta] |
| | 누워 | /nup+ə/ | [nuwə] | | kow | /kop+ə/ | [kowə] |
| | 누우니 | /nup+ini/ | [nuuni] | | kow니 | /kop+ini/ | [kouni] |

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but c . 입다 /ip+ta/ [ip'tta]	d . 줍다 /cop+ta/ [cop'tta]
입어서 /ip+əsə/ [ibəsə]	줍아서 /cop+əsə/ [cobasə]
입으니 /ip+t̃ni/ [ib̃ni]	줍으니 /cop+̃ni/ [cob̃ni]

In addition to these examples, adjectives formed by suffixes such as $-p+ta$, $-lop+ta$ and $-s̃əp+ta$ belong to the p-inflection adjective group.

1.

1.1

We first consider C-W. Kim's proposal which is one of the most interesting discussions about p-final verbs and adjectives (henceforth we call p-final form). He (5) posits/w/ for the stem final segment of the p-inflection form traditionally called irregular forms. So he can distinguish /kuw+/from/kup+/ in underlying representation. However, his analysis has serious problems in that Korean doesn't have [W] as an off-glide and that in Korean regressive change does not occur in the direction of $[-\text{sonorant}]$ on a sonority scale in general, that is, $[w] \rightarrow [p]$ in this case. (Hirano (3)).

Kim (5) assumes that a principle of "close articulation" governs the manner of articulation in this language. He insists that this principle can account for the deletion of the consonant in consonant cluster occurred in stem final and before a consonant. However, as Moon (9) points out, there are some cases that resist Kim's explanation. Another of his principle relevant to our discussion is the implosion rule that in Korean all consonants before another consonant or pause become implosives. According to these two principle, he sets up/w/for p-inflection forms. He claims that if the underlying/w/is changed to the surface [p] before a consonant, the phonological process of /w/ to [p] conforms to the principle of close articulation and attains a significant generalisation as well as simplicity. However, one can hardly predict that a segment with high sonority changes into a stop consonant before another consonant in the regressive process in Korean phonology. Furthermore, /l,m,n,g/, the only sonorants except glides /w,y/ in Korean don't follow the implosion principle. In addition, the rule that derives the forms attached to vowel initial suffixes reflects the historical phonological change $/p/ \rightarrow /β/ \rightarrow /u/ (/w/)$. Kim's solution completely ignores this important fact. As far as /w/ is postulated as an underlying segment for p-inflectional forms, it is necessary to rely on an ad hoc rule to convert /w/ to [p]. In some sense, implosion principle and close articulation assumption play a part in Korean phonology, but in this case, these principles have no relation with the derivation of the forms. On the contrary, the process of /w/

changing to [p] should be said to be inconsistent with other general phonological phenomena existing in this language.

1.2

Next we consider B-G Lee's analysis for p-inflection forms. Lee (B) posits /b/ as the underlying stem final consonant for them. In some sense this proposal is based on the historical sound change of these forms. But we can easily point out that Korean phonology must have an extra and unnecessary rule if the /b/ is set up as the underlying segment. Moreover, this creates a difficult problem to be solved why /b/ must be assumed though it is not a distinctive segment on the phonological level ⁽³⁾. In other words, the feature [voice] is insignificant or does not serve as a distinctive feature in Korean.

Thus the voiced segment adds useless complication to the underlying representation for consonants.

Now we discuss the problem about the extra rule found in Lee's analysis. It is called the "devoicing rule" and is necessary to change the voiced stem final stop /b/ of p-inflection forms into [p] before a suffixal consonant. By this rule we can derive a phonetic form [tap'tta] from the underlying /tab+ta/. However, there is no devoicing process in Korean though a voicing one is found at the level of phonetic rules. Thus the devoicing rule is necessary to derive [p] from /b/ only in the p-inflection forms. This kind of rule not only contributes to complicating the Korean phonological system, but also gives a false implication to the general process of voicing.

1.3

We have another analysis of p-inflection forms again within the framework of generative phonology. This time Y-K. Kim (6) does not rely on the underlying segment in order to distinguish p-inflection forms from other p-final forms that don't undergo [p]—[w] alternation. Instead Kim examines the environment surrounding the consonant to find possible phonetic motivation. Kim considers the preceding long vowel to /p/ functions as a trigger of the change of /p/ to [w]. This means that the sonority of the long vowel causes sonorization or an extreme weakening of /p/ to [w]. This analysis also has some inadequacies.

Can vowel length be regarded as a distinctive feature in Korea? This distinction is shown in the first syllable eminently but below the second syllable the distinction is not maintained so strictly. Thus some scholars claim that vowel length does not play any distinctive role in Korean. See examples in (2):

- (2) a. 눈 [nun] "eye" c. 굴 [kul] "oyster"
 눈 [nu:n] "snow" 굴 [ku:l] "cave"
 말 [mal] "horse" 밤 [pam] "night"
 말 [ma:l] "word" 밤 [pa:m] "chestnut"
- e. 간다 [kanda] "go"
 간다 [ka:nda] "cultivate"

There are comparatively few words belonging to this group. Here we will not discuss whether vowel length is a distinctive feature or not any more. Even if vowel length does serve as a distinctive feature, positing underlying vowel length for p-inflection form cannot be justified as discussed later. Korean has p-inflection forms shown in (3) that have short vowels and yet undergo an extreme weakening process proposed by her.

- (3) 구덥다 접다
 무겁다 곱다
 다습다 춥다
 뉘웁다 눅다

If we postulate that these forms have long vowels in underlying representation, we can get a correct output for each form. But this is a highly tentative assumption and a grammar that allows us to set up such an underlying segment must be said to be too powerful. In addition, in this case we need a rule that can apply to the underlying long vowel and get a surface short vowel corresponding to it. But we cannot find any phonetic evidence for this rule, though Korean has a rule that is known as compensatory lengthening.

1.4

In a recent paper, Moon (9) proposed a new approach to the p-inflection forms. This analysis is fundamentally indebted to Y-K Kim's proposal. But Moon's analysis is very insightful and interesting. Moon's discussion is based on the behavior of the /p/ of the morph used for deriving extra-honorific expressions before a suffixal vowel and two surface variants of p-inflection forms. Here we cite the examples illustrated in Moon's paper for discussion as follows:

- (4) A a. *mit-ṭsi-op-ṭni* [miṭṣiṇi] B a. *mit-sa-op-ṭni* [mitsaṇi]
 mit-ṭsi-op-ə [miṭṣiwa] *mit-sa-op-ə* [mitsawa]
 b. *pat-ṭsi-op-ṭni* [paṭṣiṇi] b. *pat-ca-op-ṭni* [patecaṇi]
 pat-ṭsi-op-ə [paṭṣiwa] *pat-ca-op-ə* [patcawa]
 c. *po-ṭsi-op-ṭni* [poṣiṇi]
 po-ṭsi-op-ə [poṣiwa]
 d. *ha-ṭsi-op-ṭni* [haṣiṇi]
 ha-ṭsi-op-ə [haṣiwa]

- (5) a b
 [təpta] ↔ [təupta]
 [topta] ↔ [toupta]
 [kopta] ↔ [koupta]
 [nollapta] ↔ [nollaupta]
 [arimɔapta] ↔ [arimɔdaupta]
 [higgyəpta] ↔ [higgyəupta]

(Examples in (4) and (5) cited from Moon(9))

As can be noticed, the examples in (4) show the behavior of the morpheme /-op-/ and two forms in (5) are alternants of the p-inflection form. From these examples, /p/ is deleted before a suffixal vowel and the forms in (5b) have [u] immediately before a stem final consonant [p]. Thus Moon claims that we need to set up /toup+ta/ as underlying representation for phonetic forms [top'tta or toup'tta] and a p-Extreme Weakening rule in order to derive p-inflection forms and the deletion of /p/ before a suffixal vowel in the infix /-op-/.

The deletion of /p/ in this case cannot be explained by any analysis proposed in the past, since sonorisation or deconsonantisation rules derive [w] from /p/ and there is no rule that deletes the derived /w/. This means that at least one additional rule will be required in the course of the derivation.

Though Moon's account can be considered to be the best solution of all existing proposals, a weak point can be pointed out about Moon's analysis itself.

Do p-inflection forms have [u] before [p]? Do not all the other p-final forms have the [u]? Even if the answers to these questions are "yes", a question arises why almost all dictionaries don't give such a significant pronunciation of the form if it is so prevalent. We must apply an ad hoc /u/ deletion rule to the derived form /toup+ta/ to get he

phonetic form [top'tta]. From this derivation, the latter form can be regarded as a phonetic variant of the former.

Moreover, [u] or [w] occurring before a suffixal vowel should be considered to be derived from underlying /p/.

Next, we must note that Korean must have a glide formation rule which is applied the tosyllabic sequence of /i/ or /u/ + vowel and this rule could be expected to have comparatively earlier ordering. In the case of /kiup+ta/, the Glide formation Rule must apply after a Major Class Feature Change Rule to avoid the incorrect form. Consider the following derivations:

- | | | |
|-----------------|---------------------|---------------|
| (6) a. /kiup+ə/ | | b. /kiup+ɪni/ |
| /kiu+ə/ | p-Extreme Weakening | /kin+ɪni/ |
| /kju+ə/ | Glide Formation | /kju+ɪni/ |
| /kɰw+ə/ | MCFCR | /kɰw+ɪni/ |
| | Vowel Harmony | |
| | Other Rules | /kɰw+ni/ |
| *[kɰwə] | | *[kɰwni] |
| | | |
| c. /kiup+ə/ | | |
| /kiu+ə/ | p-Extreme weakening | |
| /kiw+ə/ | MCFCR | |
| | Glide formation | |
| | VH | |
| | Other Rules | |
| [kiwə] | | |

From our observations, the p-inflection form should be reconsidered. We can try to show all relevant data for the analysis. In next section some facts and ideas will be shown that are considered to be useful for the solution of the problem.

2.0

First of all we would like consider how p-inflection verbs and adjectives are irregular. Korean has many regularly conjugated verbs and adjectives that do not undergo any sound change through suffixation. The p-inflection form is called an irregular form due to the alternation of a stem final consonant before suffixal vowels. However, almost all p-final

forms, especially adjectives belong to a class of p-inflection forms. From this viewpoint, p-inflection should be regarded as regular inflection for p-final forms. According to this idea, small number of so-called regular forms among p-final forms might be given a rule feature [— Extreme Weakening or Sonorization] as the result of which the rule cannot be applied to these forms. If this device is adopted, we may be required /p/ Deletion Rule for the correct derivation of /-op-/ auxiliary stem. But, this is not the case as we will see later.

Next we will consider an auxiliary stem or a morph discussed by Moon that is attached to a verb stem and generates the honorific verb corresponding to it. As Moon mentioned, insertion of the morph /-op-/ is not completely productive and general. The morphemes of this kind are called auxiliary stem for honorific expression. We can find the following honorific expressions illustrated below:

- (7) a. $\left\{ \begin{array}{l} \text{옴(으옴)} : \dots\text{가옴나이다.} \\ \text{오(으오)} : \dots\text{가오니.} \\ \text{ㅅ(읍)} : \dots\text{잡니다.} \end{array} \right.$ b. $\left\{ \begin{array}{l} \text{자옴} : \dots\text{받자옴나이다.} \\ \text{자오} : \dots\text{받자오니.} \\ \text{잡} : \dots\text{받잡고.} \end{array} \right.$
- c. $\left\{ \begin{array}{l} \text{사옴} : \dots\text{먹사옴나이다.} \\ \text{사오} : \dots\text{먹사오니.} \\ \text{삼} : \dots\text{먹삼고.} \\ \text{습} : \dots\text{먹습니다.} \end{array} \right.$ d. $\left\{ \begin{array}{l} \text{잡으옴나이다.} \\ \text{잡으오니.} \\ \text{잡읍니다.} \end{array} \right.$

The examples in (7a) suggest that the underlying representation for the morph ought to be /-op-/ instead of /-op-/. Once the /-i:op-/ is set up on the underlying level, we cannot account for the absence of [o] in [kamnida] and [cabimnida]. There seems to be no elegant explanation of the deletion of /o/ after /i/. As we already know, the honorific auxiliary stems were derived from a single form over time. The /p/ was weakened and then disappeared through the historical processes /p/→/β/→/w/→∅ as mentioned in the section O. In this case, the grammar should have the ten auxiliary stems in the lexicon though they are related to each other historically. With this treatment of the stems we can explain that its lower productivity is due to its addition of extra complexity to the grammar and of acquisition difficulty. Generative phonology has a fundamental principle that any rule should not generate an ill-formed string through the history of derivation. In this sense, a tosyllabic sequence VV and somewhat an abstract consonant must be

rejected at the level of underlying representation. It is inconvenient to class the p-inflection forms together with the affixes for honorific expressions.

Now we would like to discuss boundary solution as one of the possible analyses for the p-inflection forms. However, we don't know whether this proposal is one of the best solution or not. Among p-inflection forms, there are adjectives derived by the attachment of suffixes like /+tap+ta/, /+lop+ta/ and /+silop+ta/. In addition to these affixes, there is an interesting suffix /+p+ta/ as a honorific infix. From this fact, it may be possible to set up the suffix /+p+ta/ for all p-inflection forms at the level of underlying representation.

At first glance, this will solve the problems of explaining these forms. It is also possible to treat /+pta/ in p-inflection form as a tosyllabic sequence CCV. On the contrary, /p+ta/ in the other p-final form might be regarded as a sequence of different syllables VC+CV. The difference in syllabic structure conditions the application of the Sonorisation Rule. But this proposal is based on only the existence of the alternation /p/→/u/ or /w/. From a theoretical viewpoint, there is no problem about this analysis. However, we cannot give more evidence to support our analysis. Moreover, our boundary solution may raise other questions for the treatment of p-inflection forms.

Here we could easily predict the alternation if we could postulate a hypothetical consonant in the underlying representations of the stems. However, such a consonant never appears on the surface and requires additional rules in the grammar. For this reason such an analysis seems highly arbitrary. The solution using an archiphoneme postulated as an underlying segment for p-inflectional form must be considered to be inadequate, since an archiphoneme should be set up when segments which are underlyingly distinct lose this distinction on the surface level. In the case of p-inflection forms, we cannot have any reason for relying on this theoretical device. Moreover, there is no universal convention to give unmarked features to the unspecified underlying segment. With a new theoretical framework of generative phonology, this problem could be solved through a more reasonable device. However, we always have to try to discover an important regularity in a given language in such a way that we can get useful generalisation from the viewpoint of linguistic universals.

NOTES

1. We will use the terms "inflectible" and "inflection", since the words belonging to the so-called p-irregular verb group include adjectives and verbs.
2. Throughout this paper, phonetic representations are enclosed within [] and underlying or phonological representation are expressed with / /.
3. As a phonetic rule or a so-called postlexical rule, Korean has a voicing rule that is applied to a consonant between vowels.
4. Moon (9) claims that vowel length plays no distinctive role in Korean on the basis of the evidence that many speakers of Korean cannot distinguish a long vowel from a short vowel in Japanese words and English words. But this evidence does not seem to be strong enough to reject the distinctive role of vowel length analyzed within the framework of traditional phonology.
5. This kind of rule is required for generating lower phonetic forms; for example, forms occurring by slipped tongue, fast speech, dialectal style of pronunciation, etc.

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