Tonal Patterns and Accent in Taegu Dialect

Jung In-gyo & Kim Eun-il

1. Introduction

Since the advent of autosegmental phonology, there has been fruitful research on tone and accent system. Especially there has been debate on the nature of accent in the autosegmental framework, which has been developed by Goldsmith (1976a, 1981, 1982), Haraguchi (1977), and Clements and Ford (1979). The first view proposed by Goldsmith (1976a) is that tone is represented on a separate autosegmental tier, while accent is represented by placing an abstract mark (*) on the accent bearing unit. Haraguchi (1977) assumes that in an accentual system a simple word can be specified in the lexicon with at most one star. However, Hyman (1981) indicates that the assignment of a single accent per word is economical and hence preferred in the absence of evidence to the contrary. In his Kimatumbi analysis, Odden (1985) argues for the “free accent hypothesis”, which states that once the “one
—per—morpheme” restrictions are satisfied, a language will be analyzed accentually. And he maintains this principle as the minimum (and maximum)\(^1\) condition necessary for an accentual analysis.

Most researches which deal with an accentual behavior are devoted to African languages, although Haraguchi(1977) uses Japanese data to argue for his accentual approach to the pitch–accent language. Goldsmith(1984) suggests that we need comparative work to see a clear picture of how a tonal system can evolve into an accentual one. In this paper, therefore, we will consider just such data, namely the Taegu dialect of Korean (TD).

The purpose of this paper is two–fold. One is to show that the tonal patterns of TD can be analyzed most appropriately in an accen
tual approach (Sections 2–5). The other one, which is more theoretical, is to claim that the “one–per–morpheme” principle can not be maintained in Korean tonology and, consequently, the principle can not be the maximum condition necessary for an accentual analysis proposed as by Odden(1985) (Section 6).

2. Tonal Patterns

In a typical two tone language, the number of surface tonal possibil
ities of n tonal units comes close to 2\(^n\). In an accent language, howev-

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1) We can not understand exactly what the parenthesis means. As far as we understand, the parenthesis may mean that he does not have an empirical evidence for the possibility of the maximum condition necessary for an accentual analysis. In this paper, however, we claim that the principle can not be the maximum condition, although it can be the minimum condition.
er, the number of surface tonal possibilities of n tonal units is no more than n+1 (Odden 1985). In TD, a pitch–accent language, a morpheme of n tonal units may have n+1 possibilities of surface tone. For example, the number of surface tonal possibilities of 2 tonal units is 3. And if the tonal units are 3, then the tonal possibilities are 4. And again, if the tonal units are 4, then the possibilities are 5. But if the tonal units are more than 5, then the possibilities are always 5. Moreover, if the tonal unit is 1, then the possibility is also 1. Thus, the following shows the possibilities of surface tonal patterns.

(1) HHH LHH LHL HHL LLL HLL HLH LHHL LHLL LLLL LLLH LHHL LHLL LHLL LLLL LHHHL LHHHL

3. Underlying Representation

Underlying Representation of a word in TD is systematically determined through a test. One can tell whether a morpheme has underly-

2) In this study, we follow Chung's(1980a) analysis, where he argues that monosyllables show no difference in pitch when they are in citation, although Huh(1965) and I. G. Jung(1987) indicate that monosyllables may have three tonal possibilities: H, M, L. Chung further argues that we need only two distinct pitch levels (H and L), not three, for there are no such word patterns like HL and LH to contrast with HM and LM, respectively, and no HH or LL to contrast with MM. However, for an non-linear analysis of TD using three tones, see I. G. Jung(1987).

3) Chung(1980) does not include this tonal pattern. However, we find words with this tonal pattern, as in taekukoting(LHHH).
ing accent or not, only when it is followed by an unaccented suffix (Chung 1981). For example, we know the underlying accent of nouns when they are followed by a subject case marker (i.e. -ka or -i), which is an unaccented suffix. And the underlying accent of adjectives and verbs can be determined when they are followed by a declarative ending marker (i.e. -ta), another unaccented suffix.

Let us take a look at the following nouns:

(3) a. pae (pear) b. pae (stomach)
   |
   H

The words in (3), when they are in isolation, are ambiguous to the native speakers of TD. That is, they do not distinguish (3a) from (3b). The words turn out to have different tonal patterns, when they precede the subject case marker, as in (4) below: (4a) has HL while (4b) has HH.

(4) a. pae-ka (pear-subj) b. pae-ka (stomach-subj)
   |   |   |   |
   H L H H

According to Chung (1980), a word has basic accent (*) if its unaccented suffix is realized as "L", as in (4a), while a word does not have basic accent (*) if its unaccented suffix is realized as "H", as in (4b).

4) -ka is used when it follows an open syllable, while -i is used when it follows a closed syllable.
5) Native speakers can not differentiate one from the other, although there are apparent acoustic distinctions in actual sonograms of those words. For a more detail, see Chung (1980).
Similarly, kal in (5a) has an underlying accent, for its unaccented declarative ending marker has the low tone, while kal in (5b) does not, for its suffix has the high tone.

\[
\begin{array}{c|c}
\text{5a.} & \text{kal-ta (change-decl)} \\
\hline
\text{H} & \text{L} \\
\end{array}
\quad \begin{array}{c|c}
\text{5b.} & \text{kal-ta (grind-decl)} \\
\hline
\text{H} & \text{L} \\
\end{array}
\]

It is not always straightforward such as in (4) and (5), however, to determine the underlying accent, especially when considering words with two or more syllables. In (6), for example, there is no way to test what underlying accent ma has, since ma is not directly followed by the unaccented suffix; the second syllable (i) of the word is automatically determined by the following “L” suffix, as shown in (6b).

\[
\begin{array}{c|c}
\text{6a.} & \text{mail (village)} \\
\hline
\text{LH} \\
\end{array}
\quad \begin{array}{c|c}
\text{6b.} & \text{mail-i (village-subj)} \\
\hline
\text{LH} & \text{L} \\
\end{array}
\]

There are two possibilities concerning the underlying accent of the first syllable (ma): ma may or may not have the underlying accent (*). Here we propose that ma have the underlying accent(*), providing two plausible motivations. First, our analysis is diachronically motivated. The so-called pyung-pyung tone pattern in the 15th century has changed into LH in the present TD. (Pyung tone is equivalent to

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6) Chung(1981) considers ma unaccented, which seems to be one of the reasons why he needs complex rules to account for TD data in his segmental approach.
H in TD. See Huh(1965). What is important here is to notice that the LH pattern in TD is diachronically developed from the supposed HH tonal pattern in the Middle Korean.

The other motivation is synchronic. In TD, tonal behavior of simple words are exactly the same as that of compound words. Therefore, the underlying accent of simple words with two or more syllables can be determined by analyzing compound words with the same number of syllables: (7a, b) show that both nouns are underlyingly accented and the underlying accent does not change even in the compound word in (7c), although the surface tonal pattern is “LH”. Thus, words (whether simple or compound) with the surface tonal pattern LH can be said to have the underlying accent on each syllable. This analysis is also motivated by simplicity: simple and compound words are treated in the same way.

$$\begin{align*}
&\star \\
(7) \text{ a. su}-i \ (\text{rum}-\text{subj}) & \star \\
&\quad | \quad | \\
&H \quad L \\
&\text{ b. ci}-i \ (\text{house}-\text{subj}) & \quad | \quad | \\
&\quad \quad H \quad L \\
&\star \ \star \\
&\text{ c. su}-\text{ci}-p \ (\text{rum}-\text{house: tavern}) \\
&\quad | \quad | \\
&L \quad H
\end{align*}$$

The fact that a simple word may have two accents, as in (6), has theoretically and typologically an important consequence. In Japanese, (simple) words have only one accent(Haraguchi 1977). In many Bantu languages, however, words may have more than one accent.

7) It goes beyond the scope of this paper to see exactly what pyung tone is. For discussions on tones in Middle Korean, see Y. C. Jung(1977), W. J. Kim(1982) and Y. M. Kim(1986).
According to Goldsmith, some languages have word-level restrictions on multiple accents, while others have restrictions only on morpheme-internal accents. In TD, however, neither restrictions can be maintained, since a simple word which consists of only one morpheme like (6) may have two accents. In other words, the "one-per-morpheme" hypothesis can not be validated in TD. (Section 6 will discuss the reason why the hypothesis can not be maintained.)

4. Basic Tone Melody Association

Basic tone melody association rule consists of two kinds of association rules in pitch-accent languages (cf. Haraguchi 1976 and Goldsmith 1982). One is the Accent Association Rule, by which Basic Accent Association Melodies are inserted. From that point on, the Well-formedness Condition (WFC), the other type of association rule, comes into effect, inserting association lines as necessary. We will see what the accent association rule looks like in Section 4.1 and how WFC works in TD in Section 4.2. Let us suppose provisionally that HHL is Basic Tone Melody for TD, which will be justified in Section 4.3.

4.1. Accent Association Rule

Typologically speaking, there are two kinds of Accent Association Rule. One inserts one copy of Basic Accent Association Melody per derived accent. Goldsmith(1984) shows the case in Tonga, where a High-Low (HL) melody is assigned with one copy per derived accent
at the Underlying Tone Level. The other is to insert one copy of Basic Accent Association Melody per tonologically distinctive unit, whose boundary is any convenient pause,\(^8\) regardless of the number of accents. TD is of the latter type. The Accent Association Rule for TD is as follows:

(8) Accent Association Rule (AAR):
Associate H(*) of the basic tone melody with all V(*) within a tonologically distinct unit. (If the unit does not have the accent(*), the association does not occur. Instead, WFC comes into effect.)

Before going into a further discussion, it is necessary to introduce one accent rule, as in (9), which operates iteratively from left to right just before the Basic Tone Melody Association.

\[ * \quad (9) \quad V \rightarrow V / V \text{ Co} \]

To see how (9) works, consider (10), where a closed line represents association line by Accent Association Rule (8) above, while a dotted line represents association line by Well-formedness Condition, which will be dealt with in the next section.

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\(^8\) Clements(1979) cites Jones & Plaatje(1916: X X X) : 'In very long sentences containing many downstepped high tones, it is sometimes necessary to raise the pitch in the middle; otherwise the average pitch is apt to get so low that the tones cannot easily be distinguished. Such raising may take place after any convenient pause...' It seems to us that tonologically distinct unit is a unit between any convenient paus-es that is what Jones & Plaatje mean.
(10) a. paechu-pallaε 'cabbage—bug; one who likes cabbage much'
   H H L (HHLL)
   *  *  *  *  *  

b. taeku-cunghak 'Taegu—Middle school; Middle schools in Taegu city'
   H H L (HLLL)
   *  *  *  *  *  

   c. khong-namul 'bean—herbs; bean sprouts'
   H H L (*HHH → LHH)

In (10a), Accent Association Rule (8) can not apply at all because the accent association rule (9) deletes the accent on the third syllable before (8) comes into effect. So, WFC only applies, producing "HHLL" surface tonal pattern. In (10b), the accent deletion rule (9) deletes the accent on the third syllable before the application of (8), which associates the accented H with the first syllable with an accent, producing "HLLL" surface tonal pattern. In (10c), only (8) applies, producing "HHH" tonal pattern, which must undergo Initial Lowering Rule (11), a tone rule, to derive the correct surface tonal pattern "LHH".

(11) Initial Lowering Rule.

\[
\begin{array}{c}
(\ast) & (\ast) \\
V & Co & V & V & Co & V \\
\downarrow & & \downarrow & & \downarrow \\
(\ast) & H & L & H & \text{/ Co}
\end{array}
\]
(The Initial Lowering Rule (11) will be dealt with in detail in Section 5.2.)

4.2 Wellformedness Conditions

Van der Hulst & Smith (1982) claim that Wellformedness Condition (WFC) in (12) is both too weak and too strong.

(12) WFC
1. Each tone is associated with at least one segment
2. Each segment is associated with at least one tone
3. Association lines do not cross

Firstly, how is WFC too strong? According to the convention (13. 1), the remaining tones must be associated with the last bearer, as in (13a).

\[
\begin{align*}
(13) & \quad \text{a.} \quad \begin{bmatrix} \text{T} & \text{T} & \text{T} \end{bmatrix} & \quad \text{b.} \quad \begin{bmatrix} \text{T} & \text{T} & \text{H} \end{bmatrix} \\
& \quad \text{v} & \quad \phi
\end{align*}
\]

As a result, the last syllable must have a contour tone, as in (13a), or the last tone must be deleted, as in (13b) if a language does not allow contour tone. In (14), for example, we need a special tone deletion rule in TD grammar to derive the correct surface tonal pattern, since contour tones are not allowed in TD.

\[
(14) \quad \text{pae (pear)}
\]

\[
\begin{array}{c}
\phi \\
\rightarrow \quad \text{H} \quad \text{(H)}
\end{array}
\]
According to Halle & Vergnaud (1982), the association of more than one tone with a single vowel is a marked phenomenon that requires an extra language specific rule if it occurs.\footnote{A similar opinion is noticed in Goldsmith (1982): a constraint that blocks association of more than one toneme per vowel would supersede the WFC.} If such a rule is absent from the grammar, only one tone per vowel will be permitted. In other words, the convention (12.1) is needed to account for only a marked phenomenon. Therefore, TD does not need the convention (12.1), since the marked phenomenon does not occur in TD. Thus, in (15), unaccented H and L do not need to be associated, producing directly the correct surface tonal pattern “H”.

\[
\begin{align*}
(15) & \quad \text{pae (pear)} \\
& \quad * \\
& \quad \text{HHL (H)} 
\end{align*}
\]

Now, how is WFC too weak? It is too weak in that, in some cases, there are several possibilities of satisfying the WFC, as shown in (16).

\[
\begin{align*}
(16) \quad \text{a.} & \quad \begin{bmatrix} V & V & V \\ T & T & T \end{bmatrix} \\
& \quad \text{b.} \quad \begin{bmatrix} V & V & V & V \\ T & T & T & T \end{bmatrix} \\
& \quad \text{c.} \quad \begin{bmatrix} V \; \ldots \; V \; \ldots \\ T & T & T \end{bmatrix} \\
& \quad \text{d.} \quad \begin{bmatrix} V \; \ldots \; V \; \ldots \\ T & T & T \end{bmatrix}
\end{align*}
\]

As in most tone languages, in TD (16b) produces correct tonal patterns, while (16c, d) produce wrong patterns. To deal with the fact that (16b) is preferred in most tone languages, Goldsmith supplements the WFC with a special tone linking rule that has the effect of associ-
ating tones and vowels one to one and from left to right (cf. Halle and Vergnaud 1982).

(17) shows how the modified WFC derives correct tonal patterns in TD.

\[ \text{paechu} - \text{palle (cabbage-bug; a particular insect)} \]
\[ \text{H H L (HHHL \rightarrow LHHL)} \]

In (17), only unstarred tones are free tones since a stared H tone is associated by AAR (8). (The condition under which the star on the vowel is not deleted by the accent deletion rule (9) above will be dealt with in Section 5.1.1.) The modified WFC generates “HHHL”, which changes into “LHHL” by the initial lowering rule (11).

WFC applies only to free tones; WFC does not apply to bound tones, which are associated by AAR. If WFC does apply to bound tones, then we might get wrong tonal patterns. For example, we might get the following association lines if WFC does apply to bound tones.

\[ \text{paechu} - \text{palle (18)} \]
\[ \text{H H L (HHHL)} \]

That is, if WFC applies to bound tones, we get an ungrammatical surface tone pattern “*HHHL”, since the association lines in (18) do not meet the condition of the initial tone lowering rule (11), unlike (17).

4.3. Basic Tone Melody
We have observed so far how nicely HH(*)L as Basic Tone Melody works in TD. However, there are two plausible alternatives: H(*)L and LH(*)L. In what follows, we will show that neither HL nor LHL is an appropriate Basic Tone Melody for TD. Let us take an example to compare each Basic Tone Melody. (19a) shows that the surface tonal pattern is directly derived from HH(*)L by the modified WFC, since there is no association line by AAR.

(19) a. paechu-cangsa-ka (cabbage-seller-subj; one who sells cabbage)  
\*  
H H L (HHLLL)  
b. paechu-cangsa-ka  
H L (HHLLL)  
c. paechu-cangsa-ka  
L H L (HHLLL)

On the other hand, to derive the correct tonal pattern from H(*)L Basic Tone Melody, an arbitrary rule which pre-associates H with the second V is needed without any motivation, as shown in (19b). Even one more arbitrary pre-association line is needed, as in (19c), to derive the correct surface tonal pattern from LH(*)L.

5. Accent and Tone Rules

This section discusses what kind of Accent and Tone Rules are needed in TD and how these rules are motivated.

20) Chung(1980) analyzes the tonal patterns of TD in terms of a segmental approach, in which he argues against autosegmental approach, positing LH(*)L as Basic Tone Melody.
5.1. Accent Rules

5.1.1. Deaccentuation Rules

We have already observed the accent deletion rule in (9), repeated below.

\[(9) \; V \rightarrow V / V \text{ Co} \]

The accent deletion rule (9) applies iteratively from left to right. Basic Tone Melody Association follows the accent rule.

\[(20) \]

\( \star \rightarrow \phi \)

a. paechu - palle (cabbage - bug; one who likes cabbage much)

\( \star \rightarrow \phi \)

H H L (HHLL)

b. cakin - cip (small - house; a small house)

\( \star \rightarrow \phi \)

H H L (HHL)

c. teaku - cunghak (Taegu - Middle school; middle schools in Taegu City)

\( \star \rightarrow \phi \)

H H L (HLLL)

d. teaku - kotng (Taegu - High school; high schools in Taegu City)

\( \star \rightarrow \phi \)

H H L (HLLL)

In (20a), the accent deletion rule (9) deletes the star in the third syllable, since the preceding syllable does not have an accent. AAR (8) can not apply to (20a), since the word loses its accent by the accent deletion rule (9). Only WFC comes into effect, producing "HHLL". The accent deletion rule also applies to the word in (20b). The only
difference between (20a) and (20b) is that (20a) is a compound word which consists of two nouns, while (20b) is a compound word which consists of adjective and noun.

In (20c), the accent on the third syllable is deleted by the accent deletion rule (9), since the preceding syllable does not have an accent. The accent on the first syllable, however, is not deleted by the rule (9), since there is no preceding (unaccented) syllable. The accented "H" tone of the Basic Tone Melody is associated with the first syllable. And other free tones are associated by WFC, producing "HLLL" surface tonal pattern. In (20d), the accent on the first syllable is not deleted by rule (9), as there is no preceding (unaccented) syllable. The star on the third syllable is deleted by the rule (9), since there is a preceding unaccented syllable. After the star on the third syllable is deleted, the accent deletion rule (9) deletes the star on the fourth syllable, since the rule operates iteratively from left to right. Therefore, the accented "H" of the Basic Tone Melody is associated with only the first syllable. After AAR (8) applies, WFC comes into effect, producing "HLLL".

TD has another accent deletion rule, as in (21), which says that accent is deleted when there is a following unaccented syllable, which in turn precedes an accented syllable.

\[
(21) \ V \rightarrow V / \ _{Co} V \ Co \ V
\]

These two deaccentuation rules apply mutually exclusively. The rule (9) is an unmarked rule, but the rule (22) is a marked rule in a sense that it applies to a few words which, otherwise, would be neutralized by the unmarked rule (9). For example, (22a, b, c, d) have the same segmental forms as (20a, b, c, d) above, respectively. There-
Therefore, if the rule (9) applies to both (22) and (20), we would get the same phonetic forms (i.e. homonym). In TD, however, there is a difference in surface tonal patterns between (20a, b, c, d) and (22a, b, c, d), respectively, despite the same segmental forms. The words to which the rule (21) applies are semantically inalienable, as in (22). For example, the word in (22b) means a younger brother's house; the word can be used to refer to a big house in size. On the other hand, the word in (20b) can not be used to refer to a big house in size.

(22) a. paechu-pallae (cabbage-bug; a cabbage bug (a particular kind of insect))

\[
\begin{array}{c}
* \steal {HHHL} \\
H H L (\text{*HHHL} \rightarrow \text{LHHL}) \end{array}
\]

b. cakin-cip (small-house; a younger brother's house)

\[
\begin{array}{c}
* \steal {HHH} \\
H H L (\text{*HHH} \rightarrow \text{LHH}) \end{array}
\]

c. taeku-cunghak (Taegu-Middle school; The Taegu Middle School (a particular middle school))

\[
\begin{array}{c}
* \steal {HHHL} \\
H H L (\text{*HHHL} \rightarrow \text{LHHL}) \end{array}
\]

d. taeku-koting (Taegu-High school; The Taegu High School (a particular high school))

\[
\begin{array}{c}
* \steal {HHHH} \\
H H L (\text{*HHHH} \rightarrow \text{LHHH}) \end{array}
\]

In (22a), the rule (21) can not apply, since there is no environment that satisfies the condition. The accented "H" of the Basic Tone Melody is associated with the star on the third syllable by AAR (8). After AAR, WFC comes into effect to associate free tones with unassociated syllables, producing the tonal pattern "*HHHL". The tonal pattern "*HHHL" changes into the surface tonal pattern "LHHL" by the initial
lowering rule (11). In (22c), the accent on the first syllable is deleted by the accent deletion rule. The accented "H" of the Basic Tone Melody is associated with the third syllable. And then WFC associates free tones with unaccented syllables, producing the tonal pattern "*HHHL", which again changes into the surface tonal pattern "LHHL" by the initial lowering rule. In (22d), the star on the first syllable is deleted by the accent deletion rule. AAR (8) associates the accented "H" of the Basic Tone Melody with third and fourth syllable, which still have accents after the rule (22) being applied. And then WFC associates free tones with unaccented syllables, producing the tonal pattern "*HHHH", which again changes into the surface tonal pattern "LHHH" by the initial lowering rule.

5.1.2 Accent Assignment Rule

(23) is an accent assignment rule in TD.

(23) * − assignment rule

\[ V \rightarrow V / \underline{\_} \ _{\_} \text{Co} \ _{-li} \]

This rule means that accent (*) must be assigned to an unaccented V followed by the morphemes, either \( \underline{li(*)} \) or \( \_li \). The morpheme \( \underline{li(*)} \) is a passive suffix while \( _li \) is a causative suffix.\(^{11}\) That is, despite their same segmental forms,\(^{12}\) they have different underlying accents.

In (24), \( _ul \) is underlyingly an unaccented morpheme. A circled * is a newly assigned accent by (23).

\(^{11}\) For a claim that these tonal differences code a semantic attribute, viz. agentivity of so-called unmarked voice subject, see E. Kim(1992).

\(^{12}\) In Standard Korean, which has lost the tone system, its speakers can not tell the difference between the causative form \( _li \) and the passive form \( _li \) by the verb form by itself.
In (24a), the correct surface tonal pattern “HLL” is derived through the application of the rule (23); otherwise, a wrong pattern “HHL” is derived, as shown in (25a). In (24b), the correct tonal pattern “LHL” is derived through the application of (24) and (12); otherwise, a wrong pattern “HHL” is derived, as shown in (25b).

It is also important to notice that, if the rule (23) does not apply to (24), the surface tonal patterns of (24a, b) will be neutralized, as in (25). In other words, the words in (25a) and (25b) have the same surface tonal patterns “*HHL”. It can be said that the *-assignment rule is not arbitrary, but well motivated: the rule (23) functions to get rid of ambiguity between causative and passive form.

5.2 Tone Rule
There is one Tone Rule in TD. We call the tone rule "Initial Lowering Rule" (11), repeated below.

(11) Initial Lowering Rule

\[
\begin{array}{c}
\ast \\
V \ Co \ V \\
\downarrow \\
\ast \\
H \\
\end{array}
\rightarrow
\begin{array}{c}
\ast \\
V \ Co \ V \\
\downarrow \\
\ast \\
L \\
\end{array} / \#Co____
\]

This tone rule also has a functional motivation: It functions to reduce ambiguity. There are three possible surface tonal patterns for two syllable words in TD, viz. HH, HL, and LH. However, only two tonal patterns can be derived by AAR and WFC. Look at (26).

(26) a. \ast V V
   \begin{array}{c}
   \ast \\
   HHL (HL)
   \end{array}

b. V V
   \begin{array}{c}
   \ast \\
   HHL (HH)
   \end{array}

d. V V
   \begin{array}{c}
   \ast \\
   HHL (*HH)
   \end{array}

Three cases in (34b, c, d) are collapsed into one tonal pattern "HH"; there is much ambiguity between them. Furthermore, one possible surface tonal pattern "LH" is not derived by AAR and WFC. One way to reduce ambiguity is to apply the Initial Lowering Rule to (26d).
6. TD Accent and Its Typology

In accentual approaches to pitch–accent languages, there seem to be two opinions as to whether a morpheme can have more than one accent. That is, some (i.e. Haraguchi, Odden) argue that a morpheme (or simple word) should have one accent, while some (i.e. Hyman, Goldsmith) assume that a morpheme does not have to have a single accent in a pitch–accent language.

Haraguchi(1977) assumes that in an accentual system a simple word can be specified in the lexicon with at most one accent. Odden (1985) argues for the “free accent hypothesis”, which states that once the “one accent–per–morpheme” restrictions are satisfied, a language will be analyzed accentually. Furthermore, he maintains this principle as the minimum and maximum condition necessary for an accentual analysis. Meanwhile, Hyman(1981) indicates that the assignment of a single accent per word is economical and hence preferred in the absence of evidence to the contrary. Goldsmith(1984) shows that there can be two accents in a single morpheme.

In this section, we will see whether Odden’s principle can be maintained as the sufficient and necessary condition for an accentual analysis. And we will also observe that the principle can not be the necessary condition and the reason why it can not, although it can be the sufficient condition for an accentual analysis.

Dealing with Bantu languages, Odden(1985) suggests that the first stage towards accentual reanalysis is making such an analysis possible by eliminating the HH/HL contrast, through either the application of spreading or the addition of Meeussen’s rule (27) to the grammar.

(27) Meeussen’s rule (From Halle & Vergnaud 1982)
Odden cites one example in Tonga from Goldsmith (1981): In bisyllabic stems, proto-Bantu had a four-way tonal distinction, but Tonga has through historical change reduced that distinction to a three-way accentual distinction, as in (28). That is, stems of the tonal pattern V’V and V’V’ are merged into a single pattern.

\[
\begin{array}{ccc}
\ast & \circ & \ast \\
V & \rightarrow & V \text{ } / \text{ } VC \\
\end{array}
\]

\[(28)\text{ Proto-Bantu.} \quad \text{Tonga}\]

\[
\begin{array}{ccc}
V & V & \rightarrow & V & V \text{ } (HH) \\
V & V' & \rightarrow & V & V \text{ } (HL) \\
V' & V & \rightarrow & V & V \text{ } (LH) \\
V' & V' & \rightarrow & \ast & \\
\end{array}
\]

The reasonable way to make this merger possible is either spreading or Meeussen’s rule. The collapsed tonal pattern V(\ast)V (i.e. LH in Tonga) is not neutralized with other tonal patterns VV (i.e. HH) and VV(\ast) (i.e. HL): V(\ast)V, VV, and VV(\ast) produce all the possibilities of three-way accentual distinctions—LH, HH, and HL, respectively.

Let us turn our attention to TD. Unlike Tonga or other Bantu languages, in which the tonal patterns V’V and V’V’ are merged into a single pattern, TD has reduced a four-way tonal distinction to a three-way accentual distinction through different historical change. That is, stems of tonal pattern VV and VV’ are merged into a single pattern by the deaccentuation rule (9), repeated below.

\[13\text{) Hyman (1992) indicates that a rule like Meeussen’s rule is sufficient condition for a language to become accentual. In TD, the rule (9) functions to change a language into an accentual language as Meeussen’s rule does. The rule (9) deletes an accent on the syllable which follows unaccented syllable, while the Meeussen’s rule deletes an accent on the syllable which follows accented syllable.} \]
We have already observed that $V(*)V(*)$ (i.e. HH) becomes LH by the initial lowering rule (11), without which $V'V'$ would be neutralized with the merged tonal pattern ($VV$ and $VV'$), producing the tonal pattern “HH”.

It should be noted here that bisyllabic morpheme may have two accents, unlike Tonga or other Bantu languages. To account for this, it is necessary to note which set among four tonal patterns are merged into a single pattern to become a three-way accentual distinction from a four-way tonal distinction. In TD, the tonal pattern $VV$ and $VV'$ are merged into a single pattern “VV” while the tonal pattern $V'V'$ remains unchanged. In Bantu languages, however, bisyllabic morpheme can not have two accents, because the tonal pattern $V'V$ and $V'V'$ are merged into a single pattern “V’V”. From different diachronic development, two accents—per—bisyllabic morpheme are allowed in TD, while only one—per—morpheme is allowed in Bantu accent languages.

What we have observed so far has further implications: If tonal patterns $V'V$ and $V'V'$, or $VV'$ and $V'V'$ are merged into a single pattern “V’V” or “VV’”, a language can not have two accents on a bisyllabic morpheme; if tonal patterns (e.g. $VV$ and $VV'$) are merged
and if the tonal pattern $V'V'$ remains unchanged, a language can have two accents on a bisyllabic morpheme.

Therefore, Odden’s “one-per-morpheme” principle can not be maintained in languages in which tonal patterns other than $V'V$ and $V'V'$, or $VV'$ and $V'V'$ are merged into a single pattern to become an accent languae. In other words, the “one-per-morpheme” principle can not be a necessary condition for an accentual analysis, although it can be a sufficient condition. The principle is maintained in Bantu languages, which have developed historically such a way that the “one-per-morpheme” principle can be necessary condition for an accentual analysis. But the principle can not be maintained in other languages which have developed such a way that $V'V'$ tonal pattern remains unchanged while two other tonal patterns are merged into a single pattern to become an accentual language.

7. Conclusions

We have discussed the tonal patterns of TD in terms of Goldsmith (1982)’s autosegmental framework. TD data could be analyzed most appropriately in an accentual approach with HH(*)L basic tone melody. The accent and tone rules in TD are functionally well motivated: They are needed to disambiguate words such as alienable vs. inalienable nouns and causative vs. passive forms. And Odden(1985)’s “free accent hypothesis” can not be maintained, for TD has two accents on a bisyllabic morpheme through different historical development.
References