VOWEL HARMONY IN UKWUANI
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Abstract
This paper looks at vowel harmony system in Ukwuani (an Igboid language spoken in the Northern part of Delta State). Applying the descriptive and autosegmental approaches, the paper looks at the type of vowel harmony system that operates in the language showing the co-occurrence restrictions and peculiarities. Data were collected from competent native speaker collaborators using the Ibadan four hundred word list from which generalizations were made. The study reveals that Ukwuani has a nine vowel system which is neatly divided into two mutually exclusive sets: [+ATR] (Advance Tongue Root) and [-ATR] (Retracted Tongue Root) with /a/ partly neutral since it can co-occur with both sets, though more with the [-ATR] vowels. The infinitive, the past tense marker, gerund and the noun agent are formed by prefixing or suffixing either the [+ATR] or [-ATR] vowel based on the root vowel. /i/ or /ɪ/ is attached to the root of the infinitive and past tense marker, while /o/ or /ɔ/ is attached to the gerund and the noun agent. We can thus say that the language operates a root control vowel harmony system since the feature of the root vowel spreads over to the prefix and suffix vowels. It was also found out that the domain of harmony in the language is limited to monosyllabic and disyllabic words. In polysyllabic words, the harmony seems to break down since each root word has a mixture of vowels from the two harmonizing sets. From the analysis, we conclude that, Ukwuani operates a partial vowel harmony system because there are cases of co-occurrence from both sets. This work is significant because it fills the gap in the Ukwuani vowel harmony literature since much of the emphasis has been on the Standard Igbo language and its varieties.

Keywords: vowel harmony, retracted, advance tongue root, partial harmony, mutually exclusive, Ukwuani

Introduction
Vowel harmony is a common phenomenon in African languages that restricts the occurrences of the sets of vowels that can occur in a string of utterance. The occurrence of one vowel excludes the possibilities of the other from occurring. Most languages group their vowels based on the activities of the tongue root. While for some sets of vowel, the tongue root is retracted, for others, it is not. Lindau (1975) divides them into [+Retracted] and [-Retracted]. Emenanjo (1978:6) however, classifies them into narrow and wide sets. These classifications often involve the root of the tongue being advanced ( [+ATR] ) or retracted ( [-ATR] ) and the larynx raised or lowered.

Like most African languages, the vowels of Ukwuani are divided into two sets based on the principle of vowel harmony. This principle places restrictions on the co-occurrence of vowels, permitting or forbidding some vowels from co-occurring within a word or at morpheme boundary. Ukwuani is a harmony language. It operates a nine vowel system. Both Williamson (1968) and Armstrong (1967) agree to this existing number. The feature [ATR] divides Ukwuani vowels into two mutually exclusive sets: /i e o u/ are [+ATR] while, /ɪ ɜ ɔ ʊ / are [-ATR], [a] is neutral hence, can co-occur with both sets but is closely connected to the non expanded vowels as shall be shown in the discussion. The neutral quality of this vowel according to Donwa (1982:24), may have resulted from the disappearance of a tenth vowel [ə] originally belonging to the [+ATR] sets. According to Williamson (1968), the [+ATR] vowels are the set 1 vowels. These vowels are articulated without tongue root retraction while the [-ATR] vowels are the set 2 vowels produced by the retraction of the tongue.

Ukwuani is unlike standard Igbo that has eight vowel system divided neatly into two harmonic groups with the exclusion of the vowel /ɛ/. Although this sound occur in some variants of Igbo but as an allophonic vowel and it is restricted to itself, that is, it can only co-occur with itself. In this paper, we investigate the peculiarities of vowel harmony as it occurs in Ukwuani.
1.1 The Ukwuani People and the Language

Ukwuani is an Igbooid language spoken in the Northern part of Delta State. They are located in the Ukwuani, Ndokwa East, and Ndokwa West Local Government Areas. Divergent views have been given on the historical background of the people. According to oral traditions, there are basically two schools of thoughts. The first school of thought shares the view that the Ukwuani people descended from the Bini kingdom. This view is based on the proximity between the Ukwuani main lands and Bini villages. The second school of thought holds the view that the Ukwuani nation, migrated from the Igbo across the River Niger. Although the first view claimed to have descended from Edo, they speak a language that can be described as Igbooid and share similarities in culture such as: marriages, festivals and belief systems (Okolugbo 1982; Utì and Ilo 1989:4).

2. Review of Literature

Vowel harmony constitutes a fascinating phenomenon in phonological representations. According to Hyman (1975:233-235), all vowels within a specified unit must agree in certain phonetic features. The common features that are often assimilated are the front-backness, the tense-laxness or roundness. In line with Welmers (1973), Hyman distinguishes between complete and partial harmony, where complete vowel harmony is seen as a kind of reduplication. In this case, the vowel of a morpheme completely assimilates to another vowel while in a partial harmony; vowel assimilates in certain features to another vowel. The feature ‘tense-laxness’ is treated as advanced vs retracted tongue root as seen in the Igbo vowel harmony system (Stewart 1967). In constructing words in a language, all vowels found within word boundaries are chosen from one of these sets. Thus words such as /é ‘gó/ ‘money’ and /á ‘gú/ ‘leopard’ but not */é ‘gó/ and */á ‘gó/. The verbal noun prefix is pronounced as [e] before the stem vowels [e o u] and [a] before the stem vowels [i o u]. According to Emenanje (1978:6), the eight vowels divide fairly neatly into harmonic groups in such a way that within any single (non compound) word, only vowels of one group may occur.

Other authors such as (Ringen 1979, Smolek 2011, Nweke 2012) compared the vowel harmony system of Igbo and other languages. They all agree that Igbo has eight vowels with a high harmony indexes and that the vowels of the root determines the harmonic quality of the affix vowels.

This present investigation is a modest attempt to contribute to the discussion by underlying boundary in /gá # fè/
He however, notes that if the boundary weakens to a morpheme boundary, then harmony may penetrate hence we have such words as /búté/ ‘bring’.

In line with Hyman, Katamba (1989:211) notes that vowels within certain designated domain, usually the word, are required to share one or more phonological properties. The vowels of a language are divided into two mutually exclusive sets and all vowels within a stipulated domain must come from the same set.

2.1 Review of Vowel Harmony in Igbo Languages.

The area of vowel harmony is not a virgin one in Igbooid language study. Extensive research has been done in this area. Welmers (1973: 34) states that in Igbo, vowels belong to either set A which is [+ATR] or set B which is [-ATR]. He stresses that all vowels used in a word come from just one of the two sets as exemplified below:

Example 2

Set A [i e o u] Set B [ɪ a ɔ ʊ]
ó riri ‘he ate’ ɔ piri ‘he carved’
ó mere ‘he did’ õ sàrà ‘he washed’

Following this same classification, Hyman (1975:234) quoting Stewart (1967), agrees that two sets of four vowels are found. He notes that in constructing words in Igbo, all vowels found within word boundaries are chosen from one of these sets. Thus words such as /é ‘gó/ ‘money’ and /á ‘gú/ ‘leopard’ but not */é ‘gó/ and */á ‘gó/. The verbal noun prefix is pronounced as [e] before the stem vowels [i o u] and [a] before the stem vowels [i o u].
highlighting features that are peculiar to Ukwuani. It is hoped that such provision of original data would be a useful complementary material in the analysis of Ukwuani vowels in particular and Igboid vowel harmony system in general. This work is significant because it fills the gap in the Ukwuani vowel harmony literature since much of the emphasis has been on the Standard Igbo language and its varieties.

2.2 Vowel harmony in Ukwuani

Unlike in other Igboid languages that have eight vowels, Ukwuani has a nine vowel system. According to (Armstrong 1967:10, Williamson 1968:2, Okumo 2015), Ukwuani differs from other Igboid languages in having nine vowels which divides into two harmonic sets as set 1, /i e o u/ and set 11, /ɪ ɛ ɔ ʊ / with /a/ partly neutral but closely related to set two vowels. This is why the language operates a partial harmony system. This is in line with Welmers (1973), who states languages that operate a partial harmony system could have vowels that occur in both sets. The domain of vowel harmony in this language is within words and across morpheme boundaries. For multisyllabic words and across morpheme boundaries, the harmony is broken down.

3. Methodology

This paper employs a descriptive and autosegmental approaches in the analysis of the data. The data were collected from competent native speaker informants using words drawn from the Ibadan four hundred word list. The IPA symbols were used to represent the data. Words are tone marked for easy readership.

4. Data Presentation and Discussion

There are nine vowels in Ukwuani divided into two harmonic sets with /a/ neutral. The [+ ATR] set are /i e o u/ and [- ATR] are /ɪ ɛ ɔ ʊ / . The vowels in a word must belong to either of the sets except for /a/ that can co-occur with both sets.

The examples below show the co-occurrence restriction of each set within words.

Example 3

<table>
<thead>
<tr>
<th>[+ ATR]</th>
<th>[-ATR]</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) /ífé/ ‘thing’</td>
<td>/ífá/ ‘hoe’</td>
</tr>
<tr>
<td>ii) /éfí/ ‘cow’</td>
<td>/éfí/ ‘stomach’</td>
</tr>
<tr>
<td>iii) /úté/ ‘mat’</td>
<td>/ótá/ ‘arrow’</td>
</tr>
<tr>
<td>iv) /ófé/ ‘soup’</td>
<td>/ókó/ ‘fire’</td>
</tr>
</tbody>
</table>

Example 4

<table>
<thead>
<tr>
<th>[+ATR]</th>
<th>[-ATR]</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) /ákòdì/ ‘kite’</td>
<td>/éká/ ‘hand’</td>
</tr>
<tr>
<td>b) /ákinù/ ‘bitter colla’</td>
<td>/áfá/ ‘beard’</td>
</tr>
<tr>
<td>c) /tíwá/ ‘break’</td>
<td>/ólá/ ‘sleep’</td>
</tr>
</tbody>
</table>

The data above illustrate how vowels from each set co-occur to the exclusion of vowels from the other sets. Observe also, that the vowel /a/ occurs with both sets as in (example 4).

From the examples of the nouns above, the root cannot be separated from the affix since the vowel harmony is within a morpheme. It is not very clear what controls the other or whether one feature assimilates to the other. However, the verb root vowel controls the feature specification of the prefix and suffix vowels. This is what Katamba (1989: 215) calls ‘spreading’. The dominant vowels are restricted to the roots. The infinitive, the past tense marker, gerund and the noun agent are formed by prefixing or suffixing either the [+ATR] or the [-ATR] vowel based on the root vowel. While /i/ or /í/ is attached to the root of the infinitive and past tense marker, /o/ or /ò/ is attached to the gerund and the noun agent as shown in example 5 below:
### Example 5

<table>
<thead>
<tr>
<th>Nos.</th>
<th>Root</th>
<th>Infinitive</th>
<th>Past tense</th>
</tr>
</thead>
<tbody>
<tr>
<td>i)</td>
<td>-gʊ-</td>
<td>‘read’</td>
<td>ınd – gʊ</td>
</tr>
<tr>
<td></td>
<td>read</td>
<td>Vb. Root</td>
<td>to read INF.PREF – root</td>
</tr>
<tr>
<td></td>
<td>ii)</td>
<td>‘steal’</td>
<td>ı – zʊ</td>
</tr>
<tr>
<td></td>
<td>steal</td>
<td>Vb. Root</td>
<td>INF.PREF – root</td>
</tr>
</tbody>
</table>

### Example 6

- **(a)**
  
  \[
  \begin{array}{c}
  [-\text{ATR}] \\
  \tilde{g} \text{- ni}
  \end{array}
  \]
  
  vowel harmony tier
  
  segmental tier
  
  ‘read’

- **(b)**
  
  \[
  \begin{array}{c}
  [-\text{ATR}] \\
  \tilde{\delta} \text{- } g \tilde{\delta}
  \end{array}
  \]
  
  vowel harmony tier
  
  segmental tier
  
  ‘to read’

From the example above, we see how the root vowels determine the feature specification of the affix vowels. If the root vowel is a [+ATR], it is obvious that the affix vowel would be a [+ATR] vowel. Same goes for the [-ATR] set. For the infinitive and past tense, the root vowels are /ʊ/ and /u/. Thus, the prefix in the infinitive and suffix in the past tense in (5i above), copy the feature of /ʊ/ with regards to the retraction of the tongue, that is, the [-ATR] feature. For the root word /zʊ/ ‘steal’, the root vowel /u/ is a [+ATR] vowel, hence the affix copies the [+ATR] feature. Observe the same pattern also in the gerund and noun agent.

At the tonal level, the tone root vowel in isolation is a high tone but in context, it becomes a falling tone irrespective of the preceding tone whether high or low (cf. infinitive and noun agent). However, the rule has an exceptional implication in terms of reduplication. It is observed that whenever the stem is reduplicated, the basic tone of the stem is maintained regardless of the preceding tone. All high tone roots are realized as low before a following low tone. (cf. Past tense). Example 5 above can be represented autosegmentally below:
In example 6(a) the [-ATR] feature of the root vowel spreads rightward to the suffix vowel. Similarly, the [+ATR] feature of the root vowel in example 6(d) spreads to the suffix vowel. This shows that the language is a root controlled vowel harmony system and the spread is bidirectional.

Exceptions to Vowel Harmony in Ukwuani

Apart from the examples above that show complete harmony, there are some exceptions to these.

Example 7

(a) \( \begin{array}{c} [+\text{ATR}] [-\text{ATR}] \\ e \quad d \quad u \quad kɛ \end{array} \) harmony tier
segmental tier
‘lion’

(b) \( \begin{array}{c} [-\text{ATR}] [+\text{ATR}] \\ ɔ \quad f \quad i \quad g \quad b \quad o \end{array} \) harmony tier
segmental tier
‘oil’

(c) \( \begin{array}{c} [-\text{ATR}] [+\text{ATR}] \\ ɛ \quad kʷ \quad o \end{array} \) harmony tier
segmental tier
‘door’

(d) \( \begin{array}{c} [+\text{ATR}] [-\text{ATR}] \\ ɔ \quad ɔ \quad l \quad o \quad m \quad ɛ \end{array} \) harmony tier
segmental tier
‘orange’
Okumo F.

Other examples include:

Example 8.

a) /ɛpìkè/ ‘axe’  
b) /édùkè/ ‘lion’  
c) /ògbómè/ ‘witch’  
d) /iténènì/ ‘nine’  
e) /úkpè/ ‘light’  
f) /ùgbèbè/ ‘mirror’  
g) /kègbámè/ ‘join’

Example 9

<table>
<thead>
<tr>
<th>Nos.</th>
<th>Demonstrative ‘This’</th>
<th>Demonstrative ‘That’</th>
<th>Negative marker</th>
</tr>
</thead>
</table>
|i) [+ATR] | ifé nè ‘this thing’  
ófè nè ‘this chair’  
ésú nè ‘this bead’ | ifé nù ‘that thing’  
ófè nù ‘that chair’  
ésù nù ‘that bead’ | ó dège nè/nè ‘he/she did not go’  
ó té nè/nè ‘he/she did not dance’  
ó gö nè/nè ‘he/she did not buy’ |
| ii) [-ATR] | ésó nè ‘this body’  
ójì nè ‘this friend’ | ésó nô ‘that body’  
ójì nô ‘that friend’ | ó gô nè ‘he/she did not serve’  
ó tô nè ‘he/she did not contribute’ |

We observe a partial vowel harmony from the examples above. Each root word has a mixture of vowel from the two harmonizing sets in example 7 and 8. There is no conditioning factor to this neither is there any form of spreading. In example 8, we observe that either the [+ATR] or [-ATR] can be affixed to the root. For the negative marker, the suffix vowel /e/ or /ɛ/ can be used for root words with [+ATR] feature while for the roots with [-ATR], only [-ATR] vowels can be suffixed. For the demonstrative ‘this’, both words with [+ATR] and [-ATR] use the affix vowel /ɛ/. By the data above and also based on the fact that the language is a nine vowel system language, we therefore conclude that, Ukwuani operates a partial vowel harmony system. Yul-Ifoode (2003:2) in line with Welmers (1973) notes that, in a fully operative vowel harmony system, the [+ATR] vowels do not normally co-occur with the [-ATR] sets within a phonological word. This is not the case in Ukwuani as vowel harmony is not realized in all words.

**Conclusion**

This paper has attempted to identify the type of harmony that operates in Ukwuani, an Igboioid language in Delta State. The study reveals that Ukwuani unlike the Standard Igbo, has a nine vowel system. Like the Standard Igbo, the vowels divide neatly into two harmonic sets of [+ATR] and [-ATR] with the vowel /a/ partly neutral because it can co-occur with both sets. The infinitive, the past tense marker, gerund and the noun agent are formed by prefixing or suffixing either the [+ATR] or [-ATR] vowel based on the root vowel. /i/ or /ɨ/ is attached to the root of the infinitive and past tense marker, while /o/ or /ɔ/ is attached to the gerund and the noun agent. We can thus say that the language operates a root control vowel harmony system since the feature of the root vowel spreads over to the prefix and
suffix vowels. This is not the case with the demonstrative ‘this’ and the negative marker since the suffix vowel does not copy the root vowel. This scenario however, is not unlikely in a harmony language as observed by Hyman (1975) that vowel harmony can be blocked by a strong grammatical boundary. We also observe that apart from the neutral vowel /a/, sounds from the two harmonizing sets can co-occur in a word. This shows that the language operate partial vowel harmony. This position is in line with Welmers (1973) and Yul-Ifode (2003) who note that, in a fully operative vowel harmony system, the [+ATR] vowels do not normally co-occur with the [-ATR] sets within a phonological word. Unlike the Standard Igbo that has an eight vowel system and operate a complete harmony system, Ukwuani is peculiar in that it has nine vowels and operates a partial harmony.

References