

Phonological Processes in Ukwuani

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Abstract

This paper investigates the phonological processes in Ukwuani, an Igboid language spoken in Delta State, Nigeria. Using the generative phonology theoretical framework, the study examines the changes which segments undergo that result in the surface representation of the underlying forms and the phonological rules that link the underlying to the surface forms. Data were collected from competent collaborators using a 718-word item compiled by Emenanjo and Ogbonna (unpublished) from which generalizations were made. The study reveals among others that, the processes of assimilation, contraction, glide formation, deletion and insertion occur. The processes of assimilation and contraction apply between vowels on either sides of a morpheme boundary. Identical vowels formed by the process of assimilation are contracted into one. Glide formation occurs within and across morpheme boundaries when the structural conditions are met. Within words, it applies to close vowels in an opening sequence, across morpheme boundaries; it applies when there is a close vowel at the end of a boundary, followed by a non-identical vowel. Vowel Insertion takes place to break off consonant clusters and to avoid consonant-final syllables in loan words so as to match the syllable structure patterns which do not allow a CCV or CVC. When two identical consonants occur in loan words, the first consonant is deleted during fast speech. The phonological rules are stated at the end of every process. The study thus, enriches the understanding on how segments interact that leads to the various realization of the segments. The findings are relevant because they inform the language learners how the underlying form can be diverged from the surface forms due to sound interaction. This is useful to further researchers who may want to draw from the findings, the necessary knowledge on Ukwuani phonological processes. It is hoped that such provision of original data would be a useful complementary material.

Keywords: *Phonological processes, phonological rules, underlying representation, surface representation, Ukwuani*

Introduction

When sounds are placed adjacent to other segments, they undergo certain changes caused by the environment in which they occur. These changes lead to different realizations of the sounds. According to Yul-Ifode (2007:144), phonological processes are those changes which segments undergo that result in the various phonetic realizations of the underlying phonological segments. She stresses that these processes are the reasons why the systematic phonemic representation (underlying representation) of a segment is often different from its systematic phonetic representation (surface phonetic representation).

Oyebade (2008:61) notes that phonological processes are sound modifications motivated by the need to maintain euphony in a language or to rectify violations of well-formedness constrains in the production of an utterance.

According to Osisanwo (2012:117), phonological processes are the various modifications that speech sounds are subjected to in order to make them more similar to their neighbours. Phonological processes ensure that sounds are smoothly produced in utterances to make it pleasing to the ear. This implies that the surface phonetic form which is the actual speech produced, represents the realization in speech of the phonological or abstract underlying form. The underlying representations of words in phonology are thought to be stored in the memory and transferred to the surface form according to the

phonological rules that delete, add or change the sounds of the language. These changes may be effected by the phonetic environment in which the sound occurs or by adjacent segments. When segments interact, certain alternations take place in order for speech to flow. These processes are accounted for in the language by phonological rules (P-Rules). Phonological rules state those generalizations that could be made about the phonetic as well as the phonological properties of utterance (Yul-Ifode 2007:171).

Phonological rules are rules that convert phonological representations into phonetic ones. According to Hyman (1975:12), these rules, which reveal linguistically significant generalizations in phonology, are either optional or obligatory. He notes that the segment to the left of the arrow is to be read as the input to be changed by the rule; the segment to the right of the arrow represents the changes, while the information to the right of the environment indicates the grammatical or phonetic context in which the rule takes place.

Sommerstein (1977:115) says that phonological rules apply, changing the values of features and inserting or deleting segments to convert this representation into systematic phonetic representation of a degree of narrowness such that at the very least, any two sounds that are distinguished in any language are differently represented

Yul-Ifode(2007:171) in line with Hyman (1975) notes that the phonological rules in any language relate (map) the abstract phonemic representation (that is the underlying phonological representation) to the more concrete phonetic representation. Thus, phonological rules express linguistically significant generalizations about phonological processes. The rules tell us how to pronounce the same item differently in different contexts. They make predictions about the pronunciations of certain sounds.

The Ukwuani People and Language

According to Uti and Ilo (1988:4), the Ukwuani people are those who live in the Southern part of Delta State. They are located in the Ukwuani, Ndokwa East and Ndokwa West Local Government Areas. The name 'Ukwuani' refers to both the language and the native speakers. According to Okolugbo (1982:2), the Ukwuani people are geographically bounded by the Edo to the north, the Ijaw to the south, the River Niger on the east, the Isoko and Urhobo to the west, the Ika and Aniocha by the North East and on the south-east by the Ikwerre. They have a population of about 545,000 people (cf. Okolugbo 1982).

Methodology

This paper adopts the generative phonology framework. Data for the study were collected from three competent native speaker informants using a 718-word item compiled by Emenanjo and Ogbonna (unpublished). The researcher being a competent native speaker of Ukwuani verifies and analyzes the data. Words were used from the wordlist based on the examples needed to show the analyses. The data used in the work are represented using the IPA symbols. In the next section, we examine the phonological processes found in the language and proffer rules to capture the processes.

Assimilation in Ukwuani

Assimilation is the modification of a sound in order to make it more similar to sounds in its neighbourhood. It results in a smoother, effortless and more economical transition from one sound to the other. The sound which causes the change is the conditioning sound while; the one affected by the change is the assimilated sound. The assimilated sound becomes

more like the conditioning sound by assimilating the features of the conditioning sound. The process of assimilation may be progressive, regressive or bi-directional. Assimilation is said to be progressive when the assimilated sound occurs after the conditioning segment or regressive when it occurs before the conditioning segment. Change may affect all or some of the values of the conditioning sound. By this we mean that, the assimilation might be partial or complete. Assimilation is said to be partial if the assimilated sound takes on only a few of the conditioning features but complete when the change affects all the features of the conditioning sounds (Katamba 1989:80, Yul-Ifode 2014:145, 146).

In Ukwuani, assimilation occurs. It could be partial or complete, progressive or regressive. For vowel assimilation as shown in 2.1 below, assimilation is complete and regressive. In this case, the conditioned sounds take on all the features of the conditioning sounds and the assimilated sounds occur before the conditioning sound. In the case of nasalization as represented in 2.2, assimilation is partial and progressive. It is partial because it affects only the nasal quality of the sound and progressive in that the assimilated sounds comes after the conditioning segments. This is shown in the sub sections below:

Vowel Assimilation

This is a process whereby vowels assimilate to other vowels. Ukwuani operates complete regressive vowel assimilation across morpheme boundary. The vowels before the boundary assimilate completely to those after the boundary. It takes the form: V₁ + V₂ where V₁ (vowel before boundary) is the assimilated sound, and V₂ (vowel after the boundary) is the conditioning sound.

- | | | | | | |
|-----|----------------|---|----------------|---|-----------------------|
| | V ₁ | | V ₂ | | |
| 1a. | /onɔ | + | ɔkâ/ | → | [onɔokâ] ‘church’ |
| | ‘house’ | | ‘church’ | | |
| (b) | /éká | + | èkpè/ | → | [ékéékpè] ‘left hand’ |
| | ‘left’ | | ‘hand’ | | |
| c). | /ófé | + | ázu/ | → | [ófáázu] ‘fish soup’ |
| | ‘soup’ | | ‘fish’ | | |

From the examples above, it is observed that in a sequence of two vowels, V₁+V₂, where V₁ is the vowel before the boundary and V₂ is the vowel after the boundary, V₁ assimilates to V₂. For vowel assimilation to take place, V₁ must not be a high vowel as this will result in a glide formation process, while V₂ must not be identical with V₁. Identical vowels are formed after the assimilation of V₁ to V₂. These identical vowels may be contracted to one during fast speech. The process of vowel assimilation is accounted for by the rule below:

Rule 1:

$$\left(\begin{array}{l} + \text{syll} \\ - \text{high} \end{array} \right) \rightarrow \left(\begin{array}{l} \alpha \text{ high} \\ \beta \text{ back} \end{array} \right) / + \text{---}$$

The rule above states that a non-high vowel takes on the feature of the following vowel after morpheme boundary.

2.2 Nasalisation

This is an assimilation process whereby a vowel segment acquires the nasal quality of an adjacent nasal segment. Nasalisation in Ukwuani is restricted to the environment after nasal consonants. This is a partial progressive assimilation as seen in the data below:

2a).	/ínɔ/	→	[ínɔ̃]	‘salt’
b)	/íné/	→	[íné̃]	‘mother’
c).	/ànì/	→	[ànĩ]	‘ground’
d)	/éjà/	→	[éjà̃]	‘eye’
e).	/ímí/	→	[ímĩ]	‘nose’
f)	/ánɔ/	→	[ánɔ̃]	‘meat’
g).	/nɔ/	→:	[nɔ̃]	‘hear’
h)	/émɔ/	→	[émɔ̃]	‘laugh’

The nasalization process in the data above can be accounted for in the phonological rule below:

Rule 2

$$\left(\begin{array}{l} + \text{syll} \\ - \text{cons} \end{array} \right) \rightarrow [+nasal] \left/ \left(\begin{array}{l} + \text{nasal} \\ + \text{cons} \end{array} \right) \right. \text{—————}$$

The P – Rule above states that vowels become nasalized after nasal consonants.

Homorganic Nasal Assimilation

Homorganic nasal assimilation is a regressive partial assimilation process whereby a nasal consonant takes on the place of articulation as the following consonant. In Ukwuani, NC sequences (where N represents a nasal that is always syllabic and C, a consonant) occur. In the phonetic sequence, the N is always homorganic with the following consonant. This is exemplified in (3) below:

3a).	/Nne/	→	[nné]	‘mother’
b)	/Nti/	→	[nti]	‘ear’
c)	/Nmá/	→	[nmá]	‘good’
d)	/Nkɔ/	→	[ŋkɔ]	‘firewood’
e)	/Nkwa/	→	[ŋkwa]	‘covenant’
f)	/Nkpi/	→	[mkpi]	‘he-goat’

In the analysis above, the archiphoneme /N/ represents the nasal sound in the underlying form. The underlying nasal segment takes on the place feature of the following consonant. Hence, the following consonant determines what the nasal would be. This process can be formalized in a rule 3 below.

Rule 3

$$\begin{array}{c} C \\ [+nasal] \end{array} \rightarrow \left(\begin{array}{l} \alpha \text{ anterior} \\ \beta \text{ coronal} \\ \gamma \text{ high} \\ \varepsilon \text{ back} \end{array} \right) / \left(\begin{array}{l} \alpha \text{ anterior} \\ \beta \text{ coronal} \\ \gamma \text{ high} \\ \varepsilon \text{ back} \end{array} \right)$$

Contraction

Contraction occurs to identical vowels formed after the elision of the boundary between V₁ and V₂. When vowels before the boundary assimilate to vowels after the boundary, contraction may take place during fast speech. Thus, contraction takes place only after assimilation has taken place.

- 4a). /*ʊnɔ + ɛkɔkwɔ*/ → [ʊnɛɛkɔkw] → [ʊnɛkɔkw] ‘school’
‘house’ ‘book’
- (b) /*ʊnɔ + ɔkâ*/ → [ʊnɔɔkâ] → [ʊnɔkâ] ‘church’
‘house’ ‘church’
- (c) /*tʃɔ + ifê*/ → [tʃifê] → [tʃifê] ‘look for something’
‘look’ ‘something’
- (d) /*éká + èkpè*/ → [ékéékpè] → [ékéékpè] ‘left hand’
‘hand’ ‘left’
- (e) /*ófé + ázu*/ → [ófáázu] → [ófáázu] ‘fish soup’
‘soup’ ‘fish’

The analysis above can be formalized in a rule which says that two adjacent vowels are contracted to one.

Rule 4

$$\left(\begin{array}{l} - \text{Cons} \\ + \text{syll} \\ 1 \end{array} \right) \left(\begin{array}{l} - \text{cons} \\ + \text{syll} \\ 2 \end{array} \right) \rightarrow \left(\begin{array}{l} - \text{cons} \\ + \text{syll} \end{array} \right)$$

Glide Formation within Boundary

Glide formation process occurs in Ukwuani within words and across boundaries. Glide formation operate within words when a closed vowel occurs between a consonant and another vowel. It takes the form:

- 5a) /*CiV*/ → [CjV], /*CuV*/ → [CwV].
- b) /*ɛbɔɔ*/ → [ɛbwɔ] ‘two’
- b) /*bíá*/ → [bjá] ‘come’
- c) /*áfíà*/ → [áfjá] ‘market’

We can formalize this in a rule below:

Rule 5

$$\left(\begin{array}{l} + \text{syll} \\ + \text{high} \\ + \text{son} \end{array} \right) \rightarrow \left(\begin{array}{l} - \text{syll} \\ - \text{cons} \end{array} \right) / [+cons] \text{ — } \left(\begin{array}{l} + \text{syll} \\ - \text{high} \end{array} \right)$$

This means that a close vowel becomes a glide in the environment between a consonant and a non-close vowel.

Glide Formation across Boundary

When two vowels are juxtaposed at a boundary, the vowel before the boundary, (V₁) which is a close vowel becomes a glide if the vowel after the boundary, (V₂) is not identical with (V₁). Glide formation is blocked when V₂ is also a closed vowel.

- 6a) /íjĩ + éwú/ → [íj̥jwú] ‘goat head’
 ‘head’ ‘goat’
 b) /óbî + ɔ́má/ → [ób̥jɔ́má] ‘good heart’
 ‘heart’ ‘good’
 c) /àni + ɔ́má/ → [àn̥jɔ́má] ‘goodland’
 ‘land’ ‘good’
 (d) /ónú + ɔ́má/ → [ón̥wɔ́má] ‘good voice’
 ‘neck’ ‘good’

We can summarise this phonological process in a rule as:

Rule 6

$$\left(\begin{array}{l} + \text{syll} \\ + \text{high} \end{array} \right) \rightarrow \left(\begin{array}{l} - \text{syll} \\ - \text{cons} \\ + \text{son} \end{array} \right) \# / \text{---} \left(\begin{array}{l} + \text{syll} \\ - \text{high} \end{array} \right)$$

The above rule implies that a high vowel becomes a glide at word boundary when followed by a non-high vowel.

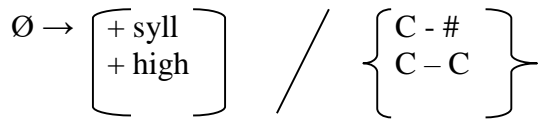
Insertion

Insertion is a phonological process that adds a vowel or consonant segment to a certain environment. Ukwuani, like most African languages, operates an open syllable structure where a final consonant is not permitted to occur. When loan words from other languages to these languages end with consonants or have consonant clusters, epenthetic vowels are inserted to break the clusters and at word final position to give a preferred syllable structure. Insertion in these languages occur word medially and finally and never initially.

- 7a. /blu:/ → [bùɹú] ‘blue’
 b. /sku:l/ → [sùkúɹù] ‘school’
 c. /fæn/ → [fáɹɪ] ‘fan’
 d. /bɔ:l/ → [bɔɹɔ] ‘ball’

In the examples above, notice that high vowels are always inserted at the final position. At the initial position, they insert vowels that are predictable from the environment, that is, vowels that are identical in feature with the neighbouring vowels. The examples above are summarized in the rule below which states that a high vowel is inserted at word boundary or between two consonants:

Rule 7



Consonant Deletion

Consonants can be deleted in fast speech in Ukwuani between two identical consonants, C₁ and C₂. The first consonant, C₁ is usually the one affected.

- 8a). /ékɔkwɔ/ → [ɛɔkwɔ] ‘book’
- b). /ékɔkwɔ/ → [ékɔkwɔ] ‘leaf’
- c). /óííí/ → [óíí] ‘leaf’
- d). /afɔfa/ → [aɔfa] ‘garden egg’

Following the examples above, it is clear that there are cases of consonant deletion. The structure of the above examples: V-C₁V-C₂V becomes VVC₂. The first vowel is identical with the second and so, the first vowel is deleted. The rule below captures this process.

Rule 8

$$\left[\begin{array}{c} + \text{cons} \\ 1 \end{array} \right] \rightarrow \emptyset / \left[\begin{array}{c} + \text{cons} \\ 2 \end{array} \right]$$

This rule states that a consonant is deleted before an identical consonant.

From the foregoing analysis, it is shown that the processes of assimilation and contraction apply between vowels on either sides of a boundary. Identical vowels formed by the process of assimilation are contracted into one. Glide formation occurs within and across morpheme boundaries when the structural conditions are met. Within words, it applies to close vowels in an opening sequence, across morpheme boundaries; it applies when there is a close vowel at the end of a boundary, followed by a non-identical vowel. Insertion takes place to break off clusters in loan words so as to match the syllable structure patterns which do not allow a CCV or CVC. When two identical consonants occur, the first consonant is deleted during fast speech.

Conclusion

This research is an attempt to contribute to the discussion on phonological processes using a generative approach. It shows the particular processes that occur in Ukwuani using empirical data. From the findings presented above, the study reveals that Ukwuani speakers like every other language speaker; apply some phonological processes in speech production. This is because, sounds get influenced by the environment for the ease of articulation. The processes of assimilation, contraction, glide formation insertion and deletion occurs to achieve fluency. These patterns are consistent with similar studies in phonological processes (Clark, Yallop and Fetcher 2007, Osisanwo 2012, Yul-Ifode 2007 and others) who agree that when segments interact in speech, certain alternations take place in order for speech to flow. These changes may be triggered by the environment or the neighbouring sounds.

The study thus, enriches the understanding on how segments interact that leads to the various realization of the segments. It further proffers phonological rules used to

capture the changes that occur. This specifically adds to the existing literature in Ukwuani phonology. The findings are relevant because they inform the language learners how the underlying form can be diverged from the surface forms due to sound interaction. This is useful to further researchers who may want to draw from the findings, the necessary knowledge on Ukwuani phonological processes. It is hoped that such provision of original data would be a useful complementary material.

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