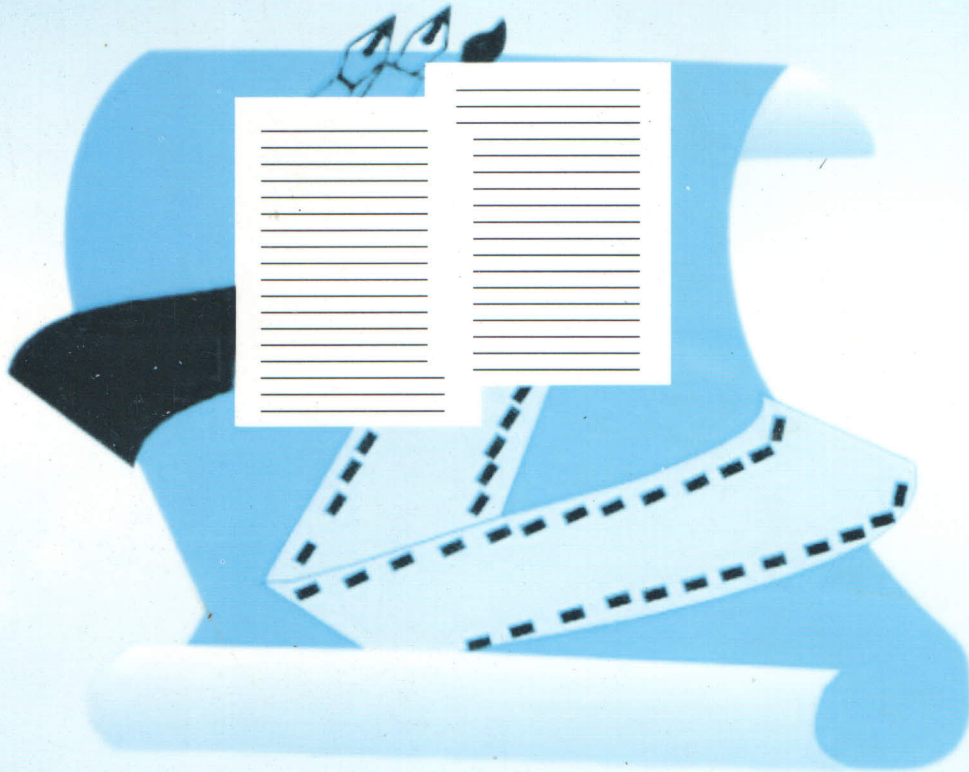


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## **An ASP Analysis of Abstractable Phonological Features of Yàgbà Dialect of Yoruba**

*I.O. Sanusi, I. E. Adeagbo & K. A. Rafiu,*

### **Abstract**

This paper discusses the phonology of Yàgbà, a dialect of Yorùbá spoken in Kogi State, Nigeria. Attention is principally paid to the phonological processes operating in the dialect such as assimilation, insertion, nasalization and coalescence. These phonological phenomena are accounted for within the framework of Autosegmental Phonology. This theory is employed to analyse some abstractable phonological features of Yàgbà, which ASP is designed for. This is what segmental phonology is unable to account for. In the light of this, this work, further found out that any feature that is abstractable is better handled using ASP as these features are better represented on a separate tiers. The Universal left-to-right application of ASP rules is echoed in this study. The data obtained for this study were generated through Ibadan 400 wordlist of basic items as well as a designed frame technique. In view of the analysis presented in this study, it is recommended that subsequent researches on Yàgbà phonological structure should be researched into namely, vowel harmony; tone and other areas not covered in this study, using this study as a reference material.

**Keywords:** autosegmental, tiers, well-formedness condition, abstractable feature, suprasegments.

### **Introduction**

This study discusses the phonology of Yàgbà, a dialect of Yorùbá spoken in Kogi State, North-central Nigeria. Particular attention is paid to the abstractable phonological features in the dialect; hence the adoption of the Autosegmental theory (henceforth, ASP) as our tool of analysis. ASP is an approach in phonology that views phonological representations as multi-dimensional having several tiers. This theory has proved effective in handling phonological phenomena. It is possible to maintain that all segments on each tier are fully specified for all features. Our belief in this work is that ASP will be effective in handling phonological processes in Yàgbà, by representing the features on separate strings.

Until the 1970s, it was assumed that segments form a single layer of structure, a single string of feature matrices. Carlos & Haike (2011) explain that the linear conception of segmental structure, in which every segment is a self-contained list of features, makes it impossible to represent aspects of pronunciation that characterize more than one segment as a single feature. However, languages frequently treat particular aspects of pronunciation, notably tone, nasality and tongue root features, as if they belong to whole sequences of segments. Autosegmental Phonology develops an approach to phonological representation which assigns a separate tier to the suprasegment. In this work, we explore the value of the ASP on the phonological processes attested in Yàgbà. We examine how the data of Yàgbà can be well handled using ASP as the theoretical model. In this regard, the phonological processes examined are insertion, assimilation, nasalization and coalescence. The work is divided into three broad sections. In section one, we present the theoretical framework of the study, highlighting some principles, application and effectiveness of ASP. We also establish our reason for the choice of this framework. Section two, which is the core of this work, presents data on some the phonological processes and their analyses. Section three summarizes the findings and concludes the work.



### **Yàgbà People**

According to Otitoju (2002, p.3), Okun confederation has always been referred to as a collection of different units who live independently of each other with its own social organization, though within bonding similarities. In effect, each of these people has a separate history of origin and each group has its peculiar experiences. It should be noted that Owé, Ìyàgbà, Ìjùmù, Bùnù and wór people are referred to as the Okun people. Okun, which is a form of greeting, has become the common identity of the people who largely share some history and linguistic affinity. Based on oral tradition, the term Yàgbà, a dialect of Yorùbá, was coined from the word 'Ìyà-àgbà' meaning "old woman". One account claims that the Yàgbà people were descendants of a famous princess, who in her later life was called Ìyà-àgbà. The other account or version of the origin of the Yàgbà is that they migrated from Ilé-Ifè, which is generally accepted as the source of all Yorùbá people. The unifying factor in the two accounts is that they are descendants of migrant founders. However there are different varieties of Yagba, the variety being worked upon is Èjùkù, spoken in Èjùkù.

### **Theoretical Framework**

The theoretical framework deployed for the analysis of phonological processes in Yàgbà is the ASP. 'ASP is a theory of non-linear approach to phonology that allows abstractable phonological features such as tone, nasality, harmonic features, among others, to be represented on an independent layer' (Goldsmith, 1976). This is a great departure from the traditional linear or segmental approach. ASP treats phonological representations as multi-dimensional having several tiers. Each tier is made up of a linear arrangement of segments. The tiers are linked to each other by association lines that indicate how the segments on each tier are synchronised. Its immediate source of inspiration was found in the works of Williams (1971) and Leben (1973). However, this theoretical breakthrough was brought into limelight by Goldsmith in 1976. McCarthy and Prince (1986) proposed an important development by showing that the derivation of words from consonantal roots in Arabic can be analyzed autosegmentally. Clement (1983) developed a number of influential aspects of the theory involving harmonic processes, especially vowel harmony and nasal harmony.

Prior to the present study, there had been several applications of Autosegmental theory to language data, some of which are: (Bamisaye, 1987; Ihionu, 1984; Oyebola, 2003, Rafiu, 2005) among others. According to Oyeade (2008, p. 139), Generative Phonology characterizes the utterance as bundles of unordered features arranged in linear order. In phonological analysis, it has been observed that there is a level that exceeds the segmental level which is the suprasegmental level. Most of the earlier theories claim that phonological representation exists at a single level. ASP develops an approach to phonological representation which assigns a separate tier to the suprasegment. Pulleyblank (1986, p. 28) says that "... the most important and uncontroversial aspect of ASP is that the phonological representation is broken into a number of parallel tiers...", as shown in (1) hereunder using example in Yàgbà:

- (1) arun 'mouth'

The illustration of 'arun' (mouth) shows the representation of what the phonological representation looks like. The tones are represented on the tonal tier; the nasals are represented on the nasality tier, the skeletal tier is the tier in which the vocalic and consonantal status of the segment is determined while the segments are represented on the segmental tier. The representations are organized under hierarchically superordinate nodes. One level is parallel to the other. However, the units on one level are not uttered separately without the units on the other level in the course of pronunciation. The lines that join one autosegment to the other are called association lines. They are drawn by universal and language-specific principles. They indicate the evidence of co-articulation of the levels.

### **Aims of ASP**

ASP is a theory of non-linear approach to phonology. The aims of Autosegmental phonology, among others are:

1. To investigate the consequences of having structures in phonology more complex, or more articulated than a simply linear string of segments.
2. To deal with the consequence of generative phonology for multi-linear phonological analysis and representation. That is, letting go of the assumption that phonological and phonetic representation consist of a single string, or concatenation of segments.

### **Conventions used in ASP**

These are the devices used in analysing phonological representation into separate tiers.

- (a) A solid association line indicates pre-linking, that is,  
the creation of an association line by means of mapping.
- (b) A broken association line indicates active linking, that  
is, the creation of an association line by means of spreading.
- (c) A cross through association line shows delinking or  
dissociation, that is, the breaking of association line.
- (d) [ ] Brackets show the boundaries of phonological forms.

### **Principles of ASP**

The autonomous segments can be linked together through the following principles:

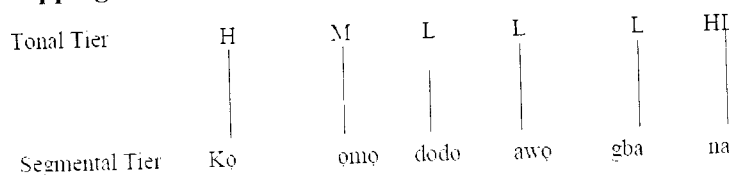
1. Mapping: Associate vowels with tones in a one-to-one fashion from left to right until we run out of tones or vowels.
2. Dumping: If after applying mapping, some tones are still free, link them to the last vowel.
3. Spreading: If after applying mapping some vowels are still free, link them to the last tone on the right.
4. Delinking: Delete an association line as a result of loss segment.
5. Docking: When a tone is stranded between two linked tones, a language-specific requirement decides whether the stranded tone will be linked with the syllable on its left or right or the tone will be erased.

6. Association lines do not cross.

(2) Examples in Yorùbá Language to illustrate the principles:

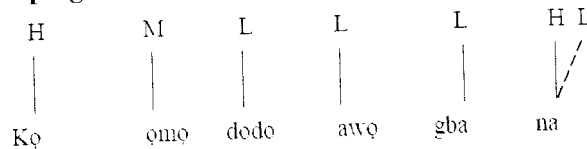
- a. kó 'build'
- b. ọmọ 'child'
- c. gbà 'collect'
- d. wá 'come'
- e. dòdò 'plantain'
- f. adé 'crown'
- g. àw 'colour'
- h. nà 'the' (old orthography)

### Mapping



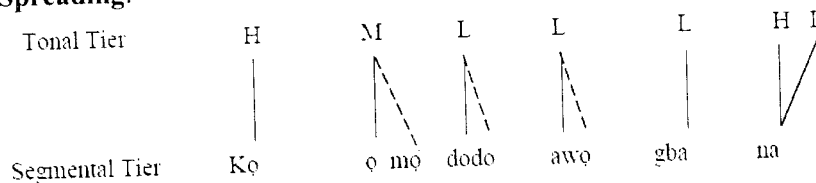
From the representation of mapping, vowels have been associated with tones in a one-to-one fashion from left to right. It is observed that some tones are free and likewise some vowels, the next thing is to apply dumping and spreading respectively.

### Dumping:



From the representation of dumping, it is observed that after dumping, that is, linking the free tone to the last vowel some vowels, are still free. The next thing is to apply spreading.

### Spreading:



From the representation of data spreading, it is observed that the free vowels are linked to the last tones on the right. All the segments and the tones are appropriately linked through mapping, dumping and spreading.

### Well-Formedness Condition (WFC)

- a. All P – autosegments must be associated with at least one P-bearing element.

- b. All P – bearing elements must be associated with at least one P-autosegment.
- c. Association lines do not cross.

Our choice of ASP in this study is because of its problem-solving efficiency. ASP was originally designed to handle tone and later developed to cater for other suprasegmental features of speech like stress and intonation, and other problems which linear phonology was unable to solve. This framework has been extended beyond the issue of tone as it has proved useful in accounting for interesting linguistic phenomena of vowel harmony, nasality and of many features and processes in African and some European languages. This is reflected in Goldsmith's (1979, p.208) submission that the theory "... in general, however... is not meant to deal only with tone...". It is on this basis that we applied this theory to some phonological phenomena like assimilation, nasalization, coalescence and insertion in Yàgbà, a dialect of Yorùbá.

### Data presentation, Analysis and Discussion

In this section, the phonological representation is principally based on the theoretical framework (ASP).

#### 2.1.1 Assimilation

In assimilatory process, a segment takes on the features from a neighbouring segment. According to Oyebade (2008, p.62), 'when two contiguous sounds which have different modes of production become identical in some or all of the features of their production, assimilation has taken place.' Assimilation may be anticipatory, that is, the first segment changes to the second one; or perseverative, that is, when the second sound segment changes to become like the first segment. Assimilation in Yàgbà dialect is both anticipatory and perseverative as shown in (3) and (4):

##### Anticipatory

- (3): a. /ara + oko/ → [arooko] 'farm folk'  
citizen farm
- b. /omɔ + ran / → [om...rã] 'stubborn child'  
child animal
- c. /omɔ + ale / → [omaálè] 'bastard'  
child concubine

##### Perseverative

- (4). a. /èrò + ɔdʒá/ → [éròodʒá] 'market folk'  
folk market
- b. /ewo + ile / → [ewoole] 'house rent'  
money house

From (3) and (4), the following rules suffice:

$$\left[ \begin{array}{c} V1 \\ + \text{syll} \end{array} \right] \longrightarrow \left[ \begin{array}{c} V2 \\ + \text{syll} \end{array} \right] / \text{---} \text{---} \left[ \begin{array}{c} V2 \\ + \text{syll} \end{array} \right]$$



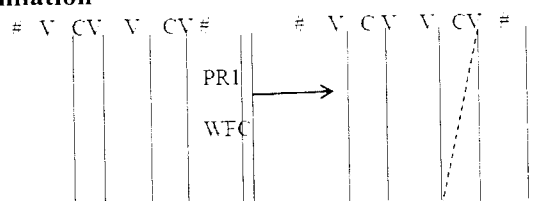
Rule 1: the first of two vowels at morpheme boundary changes to become like the second vowel.

$$\left[ \begin{array}{c} V1 \\ - \text{syll} \end{array} \right] \longrightarrow \left[ \begin{array}{c} V2 \\ + \text{syll} \end{array} \right] / \left[ \begin{array}{c} V1 \\ + \text{syll} \end{array} \right] + \text{---}$$

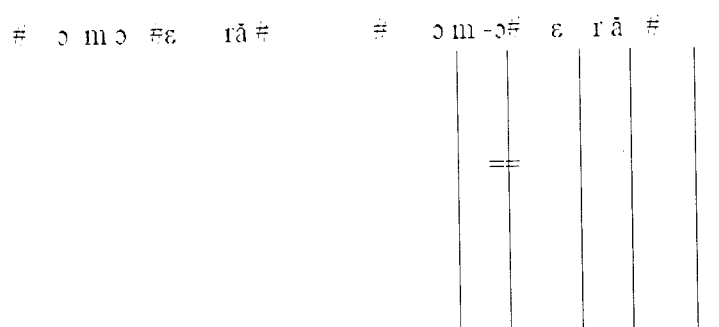
Rule 2: the second of two vowels at morpheme boundary changes to become like the first vowel.

### Anticipatory Assimilation

Skeletal Tier



Segmental Tier



Output

# ɔ m ɛ ɛ r ɔ #

/ɔmɛɛrɔ/ 'stubborn child'

The analysis above shows how vowels at morpheme boundary can influence each other. Thus, once the affected vowel changes to become like its contiguous counterpart, it is indicated as spreading of feature in the autosegmental representation. In terms of directionality, it is observed that the spread of feature is from right to left as in (3) whereas, it is from right to left in perseverative assimilation as shown in (4)

### Nasality and Nasalization

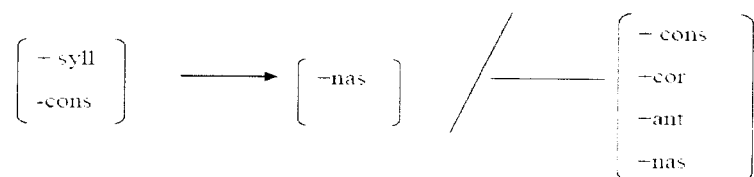
#### Nasality

Nasality is conceived as an abstractable feature that is capable of operating on another tier. Rafiu (2005) likens nasality to a unified process of spread of a feature over a given scope or domain. The autosegmentalised phonetic feature identified for nasality is [N]. The presence or absence of this feature is indicated by [+N] or [-N] value. Nasality works regressively when analyzing the underlyingly nasal vowels, i.e. nasality spreads from nasal consonant to a preceding vowel, which is immediately followed by deletion of the nasal consonant. Observe the items in (5):

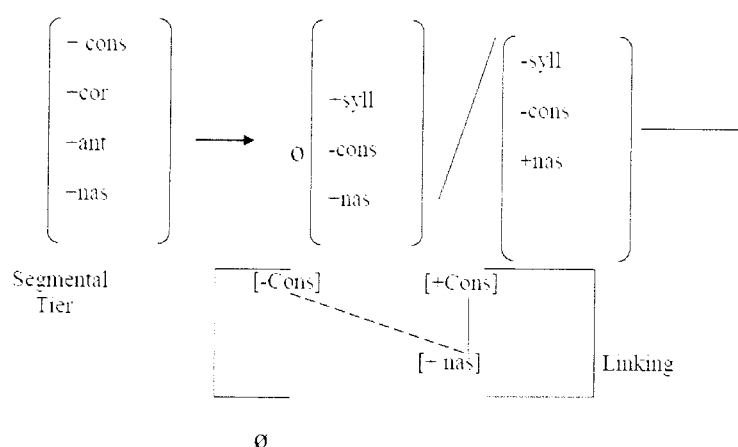
- (5): (a) /arun/ → [arũ] 'mouth'  
 (b) /irun/ → [irũ] 'hair'  
 (c) /irungbòn/ → [irũgbɔ] 'beard'  
 (d) /owurànsɔ/ → [owurãɔ] 'thread'  
 (e) /òkuńkun/ → [ókũkũ] 'darkness'  
 (f) /ɔkuńrin/ → [ɔkũrĩ] 'male'

The following phonological rules are generated for the underlying nasal vowel as exemplified in (5):

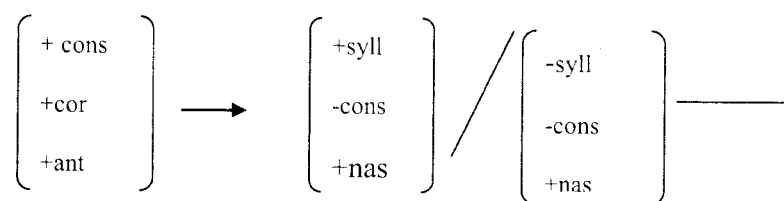
Rule 3: an oral vowel becomes nasalized before an alveolar nasal consonant.

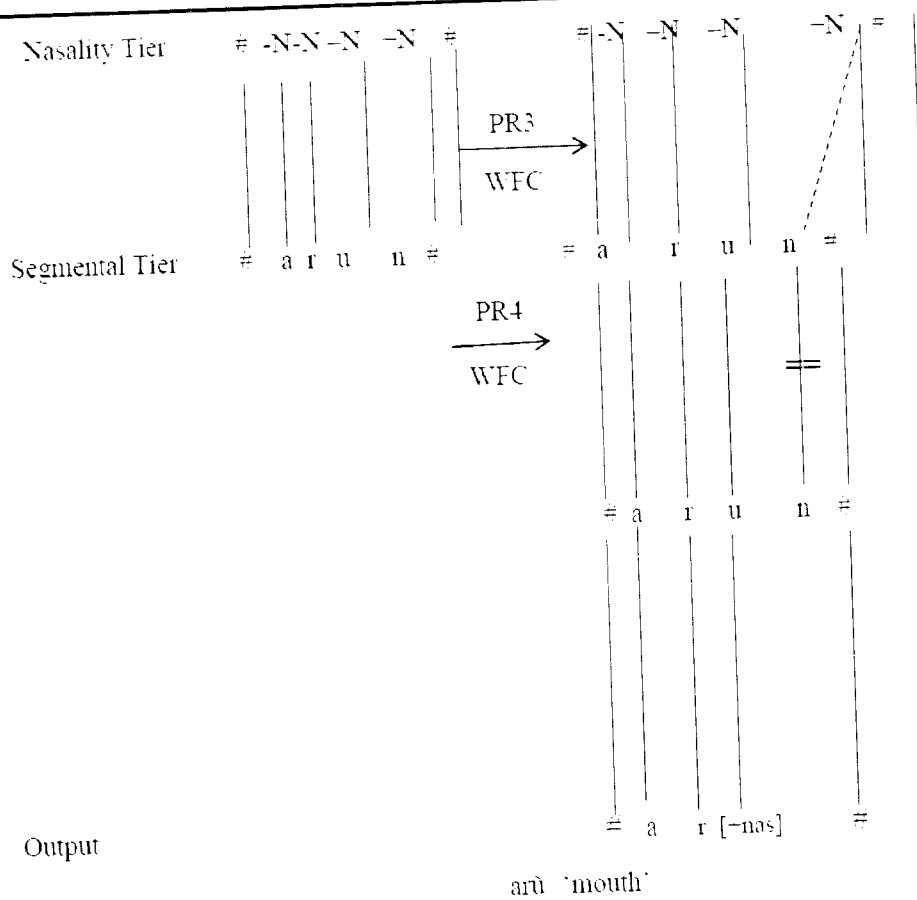


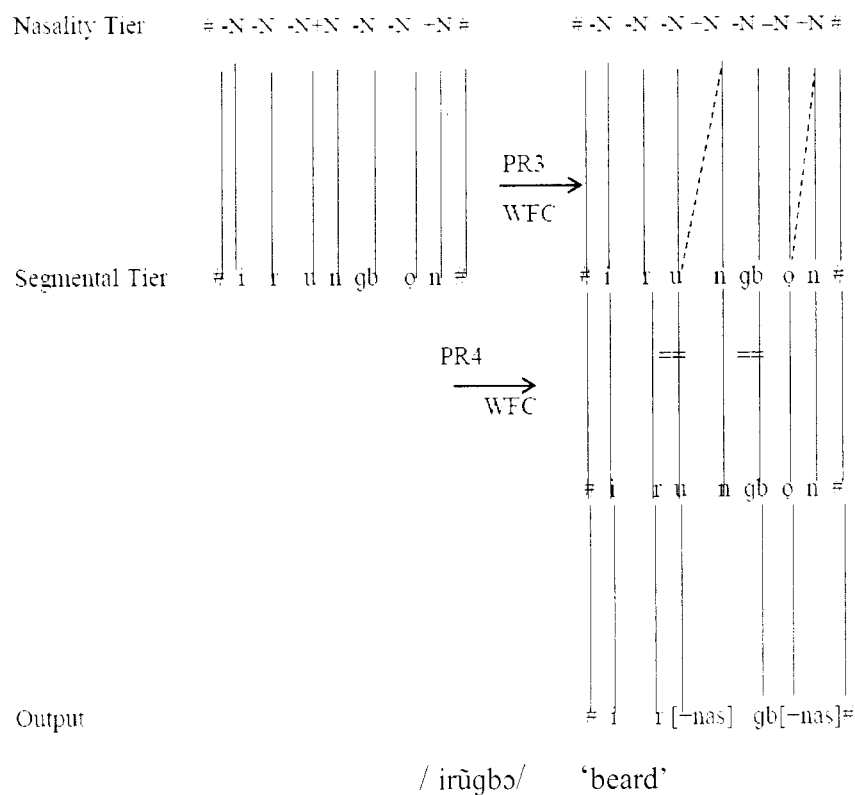
Rule 4: an alveolar nasal consonant gets deleted after a nasalized vowel.



Spreading







The NBUs in Yàgbà are: (a, e, i, o, u). All nasal vowels are achieved as a result of the assignment of the feature [N] obtained by association conventions. In the analysis of (5), the first rule is a case of spreading of nasality feature from the alveolar nasal to the preceding oral vowel; while the second rule captures the deletion of the nasal consonant after spreading. Hence, the segment is deleted from the nasality tier.

### Nasalization

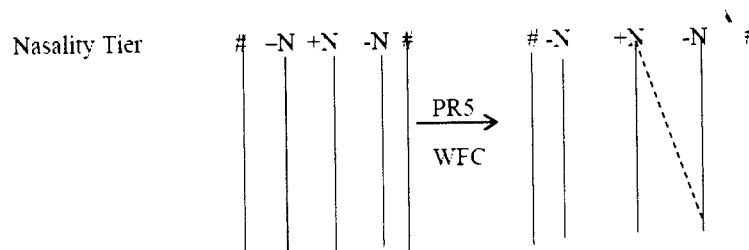
Nasalization works progressively in this dialect.

- |               |                          |
|---------------|--------------------------|
| (6): a. /omi/ | [omĩ] 'water'            |
| b. /ɔmɔ/      | [ɔmɔ̃] 'children'        |
| c. /ina/      | [inã] 'fire'             |
| d. /ɔm ran/   | [ɔm rã] 'sturborn child' |
| e. /ekanna/   | [ekãñã] 'nail'           |

A rule is generated from (6):

$$\begin{pmatrix} -\text{syll} \\ -\text{cons} \end{pmatrix} \longrightarrow \begin{pmatrix} -\text{nas} \end{pmatrix} / \begin{pmatrix} +\text{cons} \\ +\text{syll} \\ -\text{nas} \end{pmatrix} \text{ — } \text{ — }$$

Rule 5: a vowel is nasalized when it is preceded by a nasal consonant.



Output

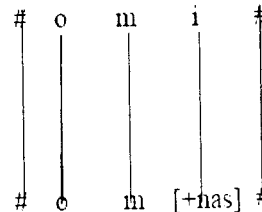
/omĩ/

'water'

# o m [+nas] #

Segmental Tier

# o m i #



Output

/omĩ/

'water'

# o m [+nas] #

# o m [ + nas ] r ă #

We observed from the process in (6) that, the nasality spread across several segments when a vowel is preceded by a nasal consonant. That is, if the oral segment is more than one, the nasality continues to spread until it reaches the consonant.

Coalescence is ‘when two contiguous segments at the underlying representation disappear at the surface phonetic level to be replaced by a third segment which shares features from both of the segment that disappeared’ (Crowley, 1997). It is said that two segments have been fused into one. This phenomenon is known as coalescence. The data from Yàgbà exhibit the fusion of two vowels.

twenty two

twenty seven

twenty three

twenty four

twenty six

AG see old-age

AG know bathe

hear sound



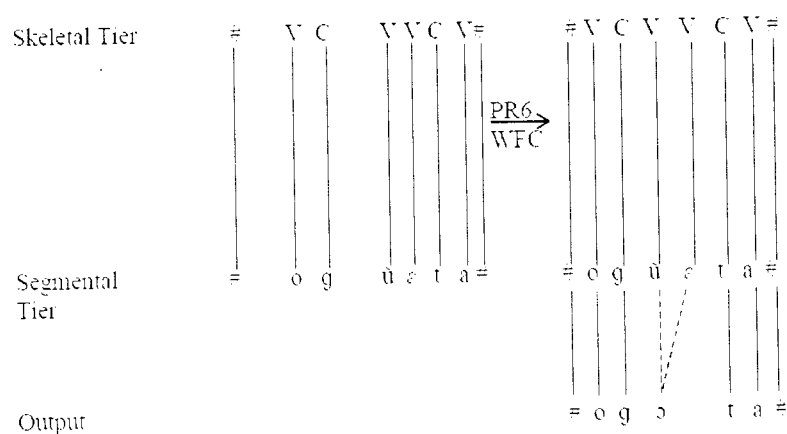
We observe from (7) the following output:

$\hat{u} + e$	$\rightarrow$	o
$\hat{u} + \varepsilon$	$\rightarrow$	ɔ
$i + o$	$\rightarrow$	o
$i + o$	$\rightarrow$	u
$o + i$	$\rightarrow$	u
$o + i$	$\rightarrow$	e

The following rule captures this process:

$$\left[ \begin{array}{c} V1 \\ + \text{syll} \\ - \text{cons} \end{array} \right]_1 + \left[ \begin{array}{c} V2 \\ - \text{syll} \\ - \text{cons} \end{array} \right]_2 \longrightarrow \left[ \begin{array}{c} V3 \\ - \text{syll} \\ - \text{cons} \end{array} \right]_3 \quad \boxed{\emptyset}_2 \quad \boxed{\emptyset}_1$$

Rule 6: two vowels at morpheme boundary merge together to become a single (different) vowel.



/ ɔgɔtə / 'sixty'

From this analysis, the two contiguous vowels at morpheme boundary are fused together which result into a different surface vowel as indicated by the two broken association lines in the analysis. The peculiarity of this resulting vowel is its incorporation of some of the phonetic features of the fused or coalesced vowels.

### Insertion

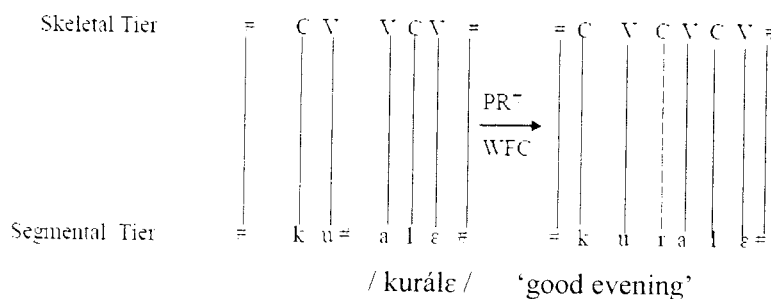
'Insertion is when an extra sound is added between two other sounds' (Hayes, 2009). Insertion involves the addition of a sound to a word. Consonant insertion however, is not common in languages. Yàgbà exhibits consonant insertion when vowel /u/, a high back rounded vowel occurs together with another vowel at morpheme boundary. The epenthesized segment is /r/, an alveolar trill. For example, using the form of greeting 'ku' plus any other word, the following are generated:

- (8) a /ku + ábò / → [kúrábò] 'welcome'  
come  
b /ku + ale / → [kurále] 'good evening'  
night  
c /ku + isẹ / → [kurísẹ] 'well done'  
work  
d /ku + íle / → [kurile] 'welcome'  
house  
e /ku + ode/ → [kurode] 'happy ceremonial outing'  
ceremony  
f /ku + ọdun/ → [kurọdun] 'happy festive celebration'  
year

A rule is generated for the observed process in (8):

$$O \longrightarrow \left[ \begin{array}{l} +\text{cons} \\ -\text{son} \\ +\text{cor} \\ +\text{lat} \end{array} \right] / \left[ \begin{array}{l} +\text{syll} \\ +\text{high} \\ +\text{back} \end{array} \right] \text{---} \left[ \begin{array}{l} -\text{syll} \end{array} \right]$$

Rule 7: an alveolar trill is inserted between a high back vowel and a vowel at the morpheme boundary.



It could be observed in the above Autosegmental representation that a central liquid which is not underlyingly present surfaces in the phonetic representation of the forms. Thus, at the skeletal tier, a slot "C" is created for the accommodation of the extraneous segment /r/, such that they are linked together with the broken association line in the surface representation.

### Summary of Findings

1. Non-linear Phonology allows easy analysis of assimilation process in Yàgbà. It is observed in the data that in the assimilatory processes, there is spreading and delinking. This means that when assimilation takes place, the contiguous sound spreads to the preceding or following segment; and the vowel is disconnected from its super-ordinate node.

2. Consonant insertion is better handled using auto-segmental approach in the dialect. We observe in the insertion process that an extraneous consonant is inserted between high back vowel and a low vowel or front high vowel. This process is easier because it was separated into two different tiers. Note, however, that ASP analysis of consonant insertion is favoured because only one form of consonant is involved; hence, the issue of non-predictability does arise.

3. An underlyingly nasal vowel could be analysed through right-to-left spread of nasality followed by the deletion of the nasal consonant.

### Conclusion

This work has discussed and analysed some phonological processes in Yàgbà. Using ASP, we have proved that the theory is effective in handling phonological issues in languages. While the idea of parallel tiers of element is not new; this research ensures that the impact of auto-segmental approach goes beyond the question of how to represent tone. Although Phonologists have begun to turn away from the rule based frameworks to constraint based account of linguistic phenomena, better analysis of Yàgbà phonology can be done using ASP as it is shown in this work.

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