

## A PHONOLOGICAL DESCRIPTION OF TONE METATHESIS IN IGBO

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### Abstract

Scholars have discussed metathesis as a phonological process involving only the segmental phonemes. There have also been seminal papers on tone as a very important issue in phonology, but none has considered studying metathesis in relation to tone. This paper re-examines metathesis in Igbo with a view to establishing that the process involves both the segmental phonemes and the supra-segments (tone). Data obtained from Igbo texts and Ogbunike Igbo variety are descriptively and acoustically analysed. The results reveal that tone metathesis sometimes occurs in Igbo during connected speech, particularly across word boundary where the first word must have a High Downstep (H<sup>↓</sup>H) tone sequence and the second word is High High (H H) tone sequence. Irrespective of the application of the correct tone sequences, tone metathesis can never occur if the first word is in its infinitive form. It is concluded that metathesis involves both the segmental phonemes and supra-segments (tone) in the Igbo language.

**Keywords:** phonology; metathesis; tone; phonological processes; Igbo phonology

### Ụmị edemede

Ndị Ọkànchọcha emeela ọtụtụ nchọpụta gbàsara ntụnwòrịta ùdà dị ka mpùtàrà nnọdèbe ọdịdị ùdàasùsù nā-ēmetụta naānị mkpụrụùdàasùsù nkè. Ọzọ, e mēēla otụtụ nchọcha gbàsara ùdàolū dị ka nnukwu ihē pūtara ihè nkè ọdịdị ùdàasùsù, mà ọ nwebèghi onye tūlere ntụnwòrịta ùdà dị ka o si metụta ùdàolū. N'edemede à, e lēbànwòrò anya na ntụnwòrịta ùdà ịjị gosipụta nà ọ bughị naānị mkpụrụùdàasùsù nkè kà o mètùtàrà kamà o mètùtàkwùrù nsokwàsị nkè (ùdàolū). Ọ gbàkwàsàrà ùkwù n'ìhe nnyòcha kènkòcha na keumjùdà wèe mee ntùcha ihè nnyòcha sitere n'akwùkwọ ederede Ìgbò nà onu Ìgbò nkè Ogbunike. A chọpùtàrà nà mgbè ụfọdụ a nà-ènwe ntụnwòrịta ùdà nkè nsokwàsị nkè (ùdàolū) n'Ìgbò mgbè a kpòkòrò mkpụrụùdàasùsù ọnụ n'okwu, tùmàdù ebe mkpụrụokwù àbụọ nòkòrò ọnụ nkè mkpụrụokwù nke m̄bu nwèrè ùsòrò ùdàelū nà ùdànsudà (H<sup>↓</sup>H), ebe mkpụrụokwù nke àbụọ nwèrè ùsòrò ùdàelū nà ùdàelū (H H). N'agbanyèghị ètù akàràùdàolū si dabà, à naghị ènwe ntụnwòrịta ùdà nkè ùdàolū mà ọ bụrụ nà mkpụrụokwù nke m̄bu dị n'ùdị m̄fīnīfivù. E kpēbiziri nà e nwèrè ntụnwòrịta ùdà dị ka o si metụta mkpụrụùdàasùsù nkè nà kwà nsokwàsị nkè (ùdàolū) n'asùsù Ìgbò.

**Ọkpụrụkpụokwù:** ọdịdị ùdàasùsù; ntụnwòrịta ùdà; ùdàolū; mpùtàrà nnọdèbe ọdịdị ùdàasùsù; ọdịdị ùdàasùsù Ìgbò

## 1. Introduction

Metathesis is discussed as a phonological process involving segmental phonemes. The process has not been studied in relation to tone. All tone languages do not operate the same system; while some operate a register tone system, some operate a contour tone system. Igbo, a language of the Kwa language family, operates a register-tone system where tones are essentially level as noted by Anagbogu, Mbah and Eme (2010). Several studies have been conducted on tone with a lot of discoveries made. For example, Igwe (1975), Emenanjo (2015) and Uwaezuoke (2017a) disclose that though Igbo is a register-tone language, gliding tone sometimes occurs in the language.<sup>1</sup> Goldsmith (1979) in his autosegmental phonology (AP) study of tone concludes that a segment may be affected in connected speech without affecting its tone. In a study of the tonal system of Igbo, Clark (1990) identifies different phrase levels

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<sup>1</sup> Emenanjo (2015) says gliding tone is a result of two different pitch levels on two identical vowels at contiguous position. He also argues that it is not phonemic since Igbo is a discrete level tone language.

of analysis and submits that spreading in Igbo is assigned to Phrase Level II on grounds of ordering. Uwaezuoke (2019a) discusses strengthening (fortition) and weakening (lenition) of tone in Igbo and concludes that these processes involve both the segmental phonemes and supra-segments (tone). Uwaezuoke (2021) treats tone assimilation in Igbo. In the *Igbo Language Studies* Vol. 2 (2017), many scholars made a lot of reflections on many other issues concerning tone in Igbo. None of these past studies discusses tone in relation to metathesis.

In this paper, it is argued that tone metathesis occurs in the Igbo language during connected speech. The data for analysis are obtained from the secondary and primary sources. While the secondary data are from past literature, such as: Hume (2004), Mbah and Mbah (2010), Emenanjo (1978; 2015), Uwaezuoke (2017a, 2017b, 2019a), Oyeade (2018), Hume and Seyfarth (2019); the primary data are from Ogbunike Igbo variety. Ogbunike Igbo belongs to the Omambala main dialect of the Inland West Igbo Dialect Cluster following Ikekeonwu's (1987) classification as modified by Uwaezuoke (2019b). Ogbunike Igbo is chosen because of one of the researcher's intuitive knowledge of the speech variety having come from Ogbunike community. These data are analysed descriptively and acoustically.

In tone-marking the data, Green and Igwe's (1963) tone-marking convention is adopted, whereby high tone is left unmarked; low tone is marked with grave accent [ ` ]. Downstep tone is marked orthographically with a macron [ ¯ ]; while phonemically and phonetically it is marked with a down pointing arrow before the syllable that bears the tone, followed by an acute accent on the tone-bearing unit [ ˈ ].

## 2. Metathesis: Explication

Metathesis as a phonological process is viewed differently by scholars. Hume (2004) defines metathesis as a process whereby there is a reversion of the linear ordering of sounds under certain conditions in certain languages. The emphasis here is on context, indicating that the change in the linear arrangement of the sounds does not occur in the same context.

In the opinion of Oyeade (2018), metathesis takes place when there is an exchange regarding the positions of two contiguous segments at the surface phonetic representation. He illustrates with McCarthy's (1986) data from the Rotuman language as presented below:

(1)	<b>Complete</b>	<b>Incomplete</b>
	<b>pure</b>	<b>puer</b> 'to decide'
	<b>hosa</b>	<b>hoas</b> 'flower'
	<b>pepa</b>	<b>peap</b> 'paper'
	<b>hoʔa</b>	<b>hoaʔ</b> 'to carry'
	<b>tiko</b>	<b>tiok</b> 'flesh'
	<b>seseva</b>	<b>seseav</b> 'mistaken'

It is observed in (1) that the last two segments (which are consonant and vowel) in the first set exchange their positions in the second set leading to short diphthongs. These examples seem to support Hume's (2004) definition of metathesis since the metathesis occurs in different contexts rather than being a surface phonetic realization of the complete form. Oyeade also used Rotuman data to demonstrate that metathesis may pave way for another phonological process to occur. This is illustrated in (2).

(2)	<b>Complete</b>	<b>Metathesis</b>	<b>Incomplete</b>	
	<b>mose</b>	<b>moes</b>	<b>mös</b>	'to sleep'
	<b>hoti</b>	<b>hoet</b>	<b>höt</b>	'to embark'

Examples in (2) indicate that the last two segments in the first set interchange positions in the second set, and their exchange of positions led to coalescence in the third set. Oyeade (2018) also illustrates metathesis with *Badagry*<sup>2</sup> ('a town in Lagos, Nigeria') as seen in (3).

<sup>2</sup> Badagry is a town in Lagos, Nigeria.

- |     |   |                                 |                              |
|-----|---|---------------------------------|------------------------------|
| (3) | <b>Compound</b><br>àgbèdè grèmè 'blacksmith farm' | <b>Metathesis</b><br>àgbadarigi | <b>Derivation</b><br>badagry |
|-----|---|---------------------------------|------------------------------|

According to Oyebade, the expression in the first set is Egun compound, which their Yoruba neighbours referred to as what is seen in the second set. It is from there that 'Badagry' is claimed to have been derived.

Hume and Seyfarth (2019) see metathesis as a term that is used in linguistics to describe a language pattern where a sequence of two sounds occurs in one order in context and in the opposite order in a related context. They further explain three different ways metathesis could be said to have occurred, such as: a word might have two sounds in one order in its singular form, but the opposite order in its plural form; or the relative ordering of two sounds within a word form might change over the history of a language; or a speaker might swap two sounds when speaking quickly. The first way explained by Hume and Seyfarth (2019) can be said to agree with Hume's (2004) view of metathesis, while the third way supports the opinion of Oyebade (2018). The second way talks about the diachronic change in language.

Metathesis is viewed by Uwaezuoke (2017b) as a phonological process which involves the exchange of the positions of two sounds in speech. He illustrates this using Igbo example in (4).

- (4) Ìkem man's speech: **òsipaka** [òsipaka] 'rice'

The word is **òsikapa** ('rice') and pronounced as /òsikapa/ in Igbo, but an Ìkem man pronounced it as [òsipaka]. The two segments that have exchanged their positions in the above utterances are the /k/ and /p/. The tones of the two syllables whose their consonants have exchanged positions are not affected in the metathesis involving the segmental phonemes, thus supporting Goldsmith's (1976; 1979) claim that tone is represented on an autonomous tier different from the segments.<sup>3</sup> Uwaezuoke (2017b) also presents a P-rule analysis of metathesis as represented in (5), thus:

- (5) P-rule analysis of metathesis in Òmambala Igbo

$$V \left[ \begin{matrix} \text{Syllable} \\ 1 \end{matrix} \right] \left[ \begin{matrix} \text{Syllable} \\ 2 \end{matrix} \right] \left[ \begin{matrix} \text{Syllable} \\ 3 \end{matrix} \right] \# \rightarrow 1 \ 2 \ 4 \ 3 \ 5 \text{ e.g. } \text{òsikapa} \rightarrow [\text{òsipaka}] \text{ 'rice'}$$

$$\begin{matrix} 1 & 2 & & 3 & 4 & 5 \\ \left[ \begin{matrix} \text{Syllable} \\ 1 \end{matrix} \right] & \left[ \begin{matrix} \text{Syllable} \\ 2 \end{matrix} \right] & & \left[ \begin{matrix} \text{Syllable} \\ 3 \end{matrix} \right] & \# & \end{matrix}$$

From the foregoing, it is clear that past studies treat metathesis as a process affecting only the segmental phonemes. This is the point of departure of this paper. It is argued by this paper that metathesis as a phonological process affects both the segmental phonemes and supra-segmental phonemes (tone in particular). The next section expounds on tone in Igbo.

### 3. Tone in Igbo

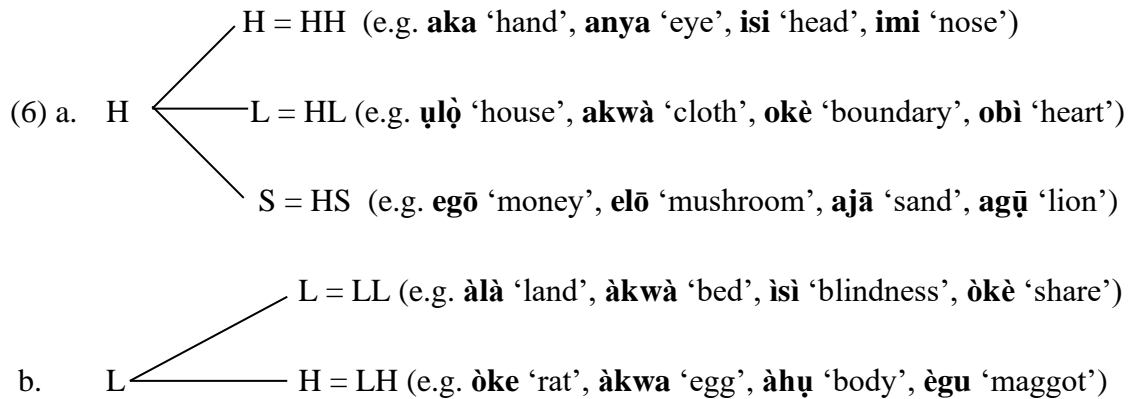
Tone is a very important phonological issue in Igbo. It is as important as the segmental phonemes in the language. This is because, just as the Igbo segmental phonemes distinguish meaning, tone distinguishes meaning in the language. Igbo has three basic tones: the high tone marked with acute accent / ´ /; the low tone marked with grave accent / ` /; and the downstep tone, which orthographically is marked with a macron / ¯ /, but phonemically and phonetically it is represented with / ˇ /, that is, a down-pointing arrow before the syllable and an acute accent on top of the tone-bearing unit (see also Ohiri-Aniche 2013; Uwaezuoke 2019a).

Some scholars contend that Igbo has only two basic tones, the high tone and the low tone, excluding the downstep tone. Their reason is that downstep tone has a limited

<sup>3</sup> Autosegmental phonology posits that tones are represented on a tonal tier, while segments are represented on a segmental tier.

environment of occurrence, only in an environment following a high tone. Among the proponents of this view is Emenanjo (2015). However, Uwaezuoke (2019a) is of the view that there are three basic tones in the language - the high tone, the low tone and the downstep tone. He argues that since downstep tone is a minimal distinctive sound pitch unit and performs the same phonological function in Igbo as the phoneme which is a minimal distinctive sound unit, it is a basic tone.<sup>4</sup>

As noted by Emenanjo (2015), when in their canonical form and pronounced in isolation, Igbo monosyllabic words have H, and L as tonal possibilities. For disyllabic words, the initial tones with their combinations are presented in (6).

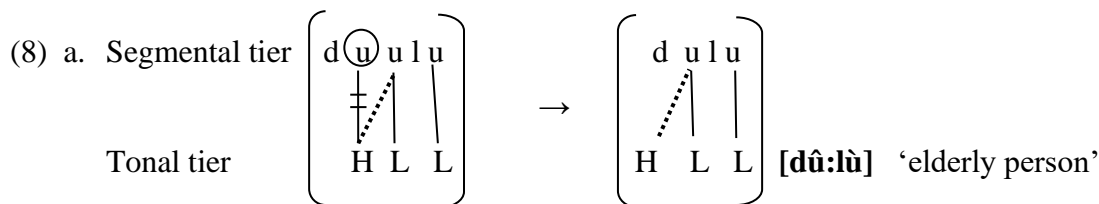


Mbah and Mbah (2010) presents the tonotactic characteristics of tone in Igbo, while Emenanjo (2015) discusses tone rules that account for tonal changes in associative construction. In addition to performing lexical function, tone performs some other functions, such as: grammatical function and lyrical function<sup>5</sup> (For details of functions performed by tone, see Emenanjo 2015).

Although Igbo is a register tone language, tones sometimes glide (Igwe 1975; Ogbonnaya 1975; Emenanjo 2015; Uwaezuoke 2017a). Uwaezuoke (2017a) presents data from Umuolum Igbo variety to exemplify gliding tone in the language, as illustrated in (7).

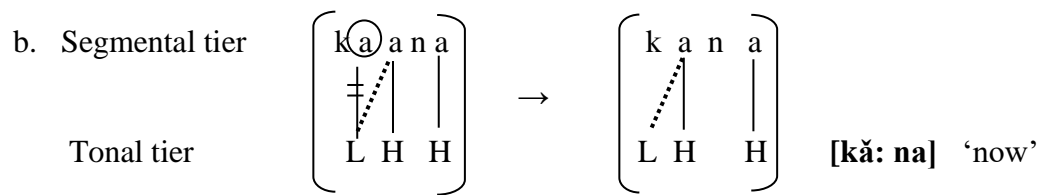
- (7) a.  $\mathbf{n\grave{o}\grave{o}\grave{n}a}$  →  $[\mathbf{n\grave{o}\grave{n}\grave{a}}]$  'now'  
 b.  $\mathbf{du\grave{u}l\grave{u}}$  →  $[\mathbf{d\grave{u}l\grave{u}}]$  'elder'  
 c.  $\mathbf{k\grave{a}ana}$  →  $[\mathbf{k\grave{a}\grave{n}\grave{a}}]$  'here'

The tones of the two identical vowels in (7a–c) are not of the same pitch. Two adjacent identical v-elements are realized as one sound in speech while maintaining their pitches. Uwaezuoke (2017a) also analyses the data using the Autosegmental phonology model of Goldsmith (1976; 1979) as represented in (8):



<sup>4</sup> Just as phoneme distinguishes lexical meaning in the Igbo language, so also downstep tone distinguishes lexical meaning, as seen in  $\mathbf{ez\bar{e}}$  'teeth' and  $\mathbf{ez\grave{e}}$  'king'.

<sup>5</sup> See Emenanjo (2015: 112-138) for details of the functions performed by tone in the Igbo language.



(8a) shows in the first column that the first high back vowel, which has a high tone is delinked and deleted without its tone being affected at the tonal tier. Rather, its high tone is associated with a new association line to the next tone-bearing unit, which is the second high back vowel with a low tone. This occurs because the Obligatory Contour Principle (OCP) forbids two identical V-elements from co-occurring. The deletion of the first vowel with its tone associated with the adjacent vowel is what resulted in the gliding tone witnessed in the second column. The same explanation goes for example (8b).

Uwaezuoke (2019a) discloses that the phonological processes of strengthening (fortition) and weakening (lenition) involve both the segmental phonemes and supra-segments (tone). He avers that strengthening and weakening of tone can be determined by the pitch of voice; thus, the higher the pitch, the stronger the tone and the lower the pitch the weaker the tone. He illustrates with data from Omambala varieties of Igbo as represented in (9).

- (9) a. i. Anàkù woman’s speech e.g. **ubi** + **anyi** → [u<sup>↓</sup>b<sup>↓</sup>á<sup>↓</sup>á<sup>↓</sup>nī]
- farm                      our                      ‘our farmland’
- ii. Ìkem man’s speech e.g. (a) **sisie** + **òsipaka** → [sis<sup>↓</sup>oo<sup>↓</sup>òsipaka]
- finished                      rice                      ‘finished cooking  
cooking rice’
- (b) **àvò** + **íkem** → [àv<sup>↑</sup>í<sup>↓</sup>kem]
- 3<sup>rd</sup> market day                      town                      ‘Ikem market’
- b. i. Ífite Ògwari man’s speech e.g. **ànwu** + **ala** → [à<sup>η</sup>w<sup>á</sup>a<sup>↓</sup>l<sup>á</sup>]
- suck                      breast                      ‘suck breast’
- ii. Àgùlerì girl’s speech e.g. **nnekwu** + **ewu** → [nn<sup>ē</sup>kwe<sup>e</sup>w<sup>↓</sup>ú]
- big                      goat                      ‘big goat’

In (9ai), the low tone of the final vowel of the first word **ubi** (‘farmland’) and the first vowel of the second word **anyi** (‘we’) is strengthened to a downstep tone. For (9aiia), the initial vowel of the second word **òsipaka** (‘rice’), which has a low tone, is strengthened to a downstep tone; (9aiib) shows that the low tone of the final vowel of the first word **àvò** (‘third market day in Igbo land’) becomes strengthened to a high tone, while that of the first vowel of the second word **íkem** (‘a town’) is strengthened to a downstep tone. The second words in (9bi and ii), which have High High (H H) tone sequence in isolation, have the high tone of the second vowels weakened to a downstep tone when they are preceded by a word with a final high vowel.

It is evident from the review of tone in Igbo that no study was done on tone metathesis. Hence, the contribution of this paper to scholarship. The next section is a presentation and analysis of data to demonstrate instances of tone metathesis.

#### 4. Data Presentation and Analysis

This section contains the analysis of secondary Igbo data from Emenanjo (1978, 2015) and primary data from Ogbunike variety. Descriptive analysis is first done followed by acoustic analysis.

## 4.1 Descriptive Analysis

Emenanjo (1978; 2015) present some Igbo data which this paper considers as exemplifying tone metathesis in Igbo. The data are represented and analysed in (10).

	<b>Word 1</b>		<b>Word 2</b>	<b>Tone Metathesis</b>
(10) Emenanjo (1978; 2015): (i)	<b>ɔ̀nū</b> + 'mouth'	+	<b>anụ</b> 'animal'	→ <b>ɔ̀naanū or ɔ̀nụanū</b> 'mouth of animal' (cf. Emenanjo 1978, 23)
(ii)	<b>egō</b> + 'money'	+	<b>ewu</b> 'goat'	→ <b>ege ewū</b> 'money for goat' (cf. Emenanjo 2015, 81)

There is tone metathesis in (10i and ii) whereby the tones of the final syllables of the two words exchange positions. In each example, the final tones of words (1) and (2) interchange positions when the words are combined. While the first words in (10i and ii) bear a High Downstep (H ↓H) tone sequence, the second words bear a High High (H H) tone sequence when they are written separately. However, when the first words are combined with their second words counterparts, the tones of the first words take over the High High (H H) tone sequence of the second words, and the second words become a High Downstep (H ↓H) tone sequence. Below are some data from Ogbunike Igbo variety:

	<b>Word 1</b>		<b>Word 2</b>	<b>Tone Metathesis</b>
(11) Ogbunike Igbo variety: (i)	<b>egō</b> + 'money'	+	<b>ewu</b> 'goat'	→ <b>ego ewū</b> 'money for goat'
(ii)	<b>egō</b> + 'money'	+	<b>isi</b> 'head'	→ <b>ego isī</b> 'money for hair plaiting'
(iii)	<b>ɔ̀nū</b> + 'mouth'	+	<b>akwa</b> 'cry'	→ <b>ɔ̀nụ akwā</b> 'ready to cry'
(iv)	<b>elō</b> + 'mushroom'	+	<b>ezi</b> 'road/'	→ <b>elo ezi</b> 'road mushroom' pathway'
(v)	<b>egō</b> + 'money'	+	<b>unyi</b> 'dirt'	→ <b>ego unyi</b> 'dirty money'
(vi)	<b>agū</b> + 'lion'	+	<b>nwa</b> 'child'	→ <b>agụ nwā</b> 'strong/brave child'
(vii)	<b>enū</b> + 'top'	+	<b>oche</b> 'chair'	→ <b>enu ochē</b> 'top of a chair'
(viii)	<b>ezē</b> + 'teeth'	+	<b>efi</b> 'cow'	→ <b>eze efi</b> 'cow teeth'
(viii)	<b>ezē</b> + 'teeth'	+	<b>ewu</b> 'goat'	→ <b>eze ewū</b> 'goat teeth'

The same analysis in (10) goes for (11). The examples show that for tone metathesis to occur in Igbo, the tonal sequence of the first word must be High Downstep (H ↓H), while that of the second word is High High (H H). However, where the first word is in its infinitive form, tone metathesis does not occur. This is illustrated with data from Ogbunike Igbo variety presented in (12).

	<b>Word 1</b>		<b>Word 2</b>	<b>Connected Speech</b>
(12) Ogbunike Igbo variety: (i)	<b>igō</b> + 'to buy'	+	<b>ewu</b> 'goat'	→ <b>igō ewu</b> 'to buy goat'
(ii)	<b>ibē</b> + 'to cry'	+	<b>akwa</b> 'cry'	→ <b>ibē akwa</b> 'crying'
(iii)	<b>ijē</b> + 'to go'	+	<b>afia</b> 'market'	→ <b>ijē afia</b> 'to go to the market'
(iv)	<b>itā</b> + 'to chew'	+	<b>anụ</b> 'meat'	→ <b>itā anụ</b> 'to chew meat'

- (v) **ilī** + **n̄ni** → **ilī n̄ni**  
'to eat' 'food' 'to eat food'
- (vi) **izō** + **ife** → **izō ife**  
'to struggle' 'something' 'to struggle for something'
- (vii) **ijē** + **ozi** → **ijē ozi**  
'to go' 'errand' 'to go for an errand'
- (viii) **ikū** + **aka** → **ikū aka**  
'to clap' 'hand' 'clapping'
- (ix) **igbā** + **osọ** → **igbā osọ**  
'to run' 'race' 'to run a race'
- (x) **ikpū** + **isi** → **ikpū isi**  
'to cut' 'head' 'to cut hair'

It is noticed in (12) that because the first words are in their infinitive forms, metathesis did not occur unlike what happens in (10) and (11). Rather, the tones of the first words remain as they are, while the high tone of the first vowels of the second words are either weakened to a downstep tone or could be said to have assimilated the downstep tone of the second vowel of the first words. Apart from the tonal sequences in (10) and (11), this study has not discovered any other tonal sequences in Igbo that can lead to an exchange of positions of two different tones. For Igbo data showing other tonal sequences in connected speech, read Emenanjo (2015:115–123). An acoustic analysis is done in the next section to test the veracity of the claim of tone metathesis in Igbo.

#### 4.2 Acoustic Analysis

For the acoustic analysis, the pitch of two different data where one exhibits tone metathesis and the other does not exhibit tone metathesis is tested. The data are:

- 13 i. **egō** + **ewu** → **ego ewū**  
'money' 'goat' 'money for goat'
- ii. **igō** + **ewu** → **igō ewu**  
'to buy' 'goat' 'to buy goat'

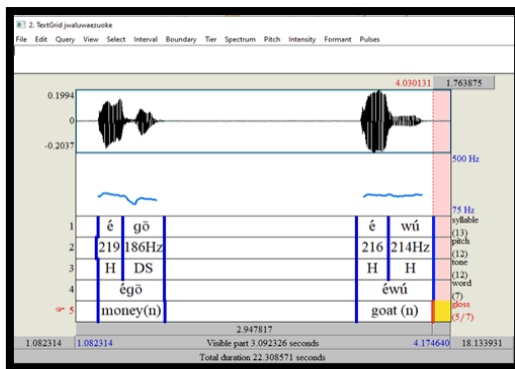


Fig 1. Pitch measurements of the sounds in égō and éwú

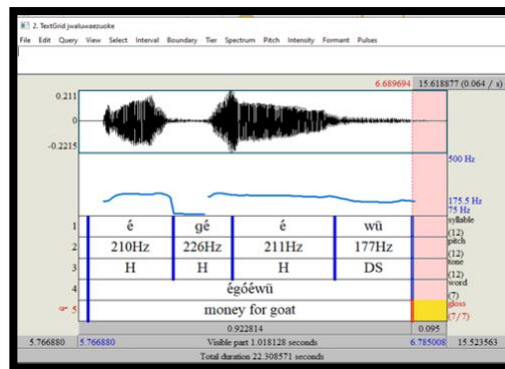


Fig.2. Pitch measurements showing tone metathesis in phrasal constructs

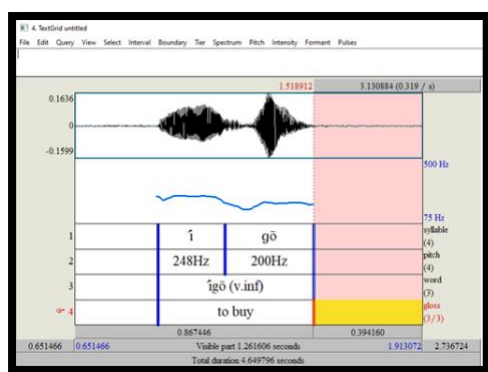


Fig 3. Pitch measurement of the sounds in igō

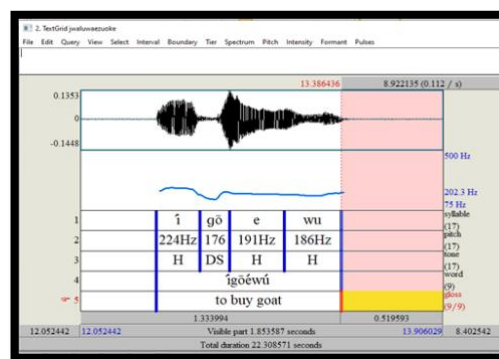


Fig.4. Pitch measurements showing tone metathesis in phrasal constructs

Note that the Igbo language entertains tonal influence such that the preceding tone may increase or reduce the height of the following tone though not significant enough to change the tone. Therefore, pitch levels are largely determined by consultants pitch height for that particular speech sample and also the height of the first high tone. In fig 3, the downstep is 200Hz given the height of the preceding high tone which is 248Hz while the downstep in Fig 4 is 176Hz given the preceding high tone which is now realized in the utterance as 224Hz. Likewise, the high tones following the downstep are realized on 191Hz and 186Hz, lower than the usual high. The latter is still considered as high in the Igbo language because downsteps are predictable: they follow only high tones. The results have shown a clear evidence of tone metathesis in Igbo.

## 5. Summary and Conclusion

This study re-examined the Igbo tonal system in order to find out if metathesis also involves the supra-segments (tone). Secondary data from texts and primary data from Ogbunike speech variety were descriptively and acoustically analysed. The results of the acoustic analysis have confirmed the outcome of the descriptive analysis. The study firstly has revealed that metathesis involves both the segmental phonemes and supra-segments (tone in particular). This is unlike past studies which have discussed metathesis as a phonological process involving only the segmental phonemes. It is also revealed that the process occurs across word boundary, and that the tonal sequence of the first word must be High Downstep (H<sup>↓</sup>H), while that of the second word is High High (H H) for tone metathesis to occur in Igbo. Finally, notwithstanding the application of the correct tone sequences, tone metathesis never occurs if the first word is in its infinitive form. It is concluded that metathesis as a phonological process involves both the segmental phonemes and supra-segments (tone).

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