

**VOWEL HARMONY AND DISHARMONY IN IGBO**

**BY**

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**DEPARTMENT OF LINGUISTICS STUDIES  
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BENIN CITY**

**JULY, 2017.**

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## **APPROVAL PAGE**

It is hereby certified that this study was carried out by Desire Ozioma Ahanonu in the Department of Linguistics Studies, Faculty of Arts, University of Benin, Benin City.

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## PLAGIARISM CERTIFICATION

I, **DESIRE OZIOMA AHANONU** with the matriculation number **ART1301130** declare that this work titled **“Vowel Harmony and Disharmony in Igbo”** has successfully passed the anti-plagiarism test (with the score of 28%) and so does not violate any copyright regulation:

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**Desire Ozioma AHANONU**

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Date.

## **DEDICATION**

This work is unreservedly dedicated to Jehovah the Almighty God, for He has done so much for me all through the years of my academic endeavors. He is my father, my God and my Friend. I love Him dearly.

## ACKNOWLEDGEMENT

Foremost personality to acknowledge is the God Almighty for giving me life, wisdom and for making this work a success.

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## Abstract

*Among languages of Africa, Igbo is considered in the literature to give a model instance of vowel harmony based on the [ATR] feature. A record of the regular and the irregular examples are exhibited here, guided via autosegmental phonology. Along these lines, the present examination looks at vowel harmony and disharmony in Igbo on the premise of a corpus of exact information drawn from noncontiguous provincial dialects. The reason is to present empirical data to demonstrate the conventional depictions made on the basis of the standard Igbo. It likewise demonstrates that exemptions are noticeable, as instances of disharmony, which have not gotten satisfactory consideration in the writing, and would like to attract regard for them by concentrating on them. Inclining toward the autosegmental phonology for this record is down to earth as the hypothesis all the more exquisitely represents the inside constituents of the CV skeleton and the relative autonomy of a V-put as against a C-put, essential to the operation of vowel harmony. More than one vowel is observed to be opaque over the dialects, however share regular formal portrayal.*

# CHAPTER ONE

## Introduction

### 1.1 Igbo language and the People

Recent classification of Nigerian languages groups Igbo in the West Benue-Congo language family (Williamson 2000). Igbo is one of the three major languages of Nigeria spoken by over 18 million people, located mainly at the South-Eastern part of the country with more than thirty dialects. The language is spoken in the Southern Delta States of Abia, Anambra, Ebonyi, Enugu, Imo as well as in the Northeast of the Delta State, the Southeast of the River state, and parts of Bayelsa state. ([www.aboutworldlanguages.com](http://www.aboutworldlanguages.com). 8/6/2017.11:18am) It is also spoken in Equatorial Guinea. ([www.omniglot.com/writing/igbo](http://www.omniglot.com/writing/igbo). 8/6/2017. 11:18 am.).

#### 1.1.1 Status of Igbo language

Igbo is the main language of trade and commerce in Abia, Anambra, Ebonyi, Enugu and Imo. In the Southern Delta region, it is used as the language of the Mass Media (e.g. Radio and Television). It is not only spoken, but also written, documented and made available for learners, language

enthusiasts and researchers. Igbo courses are also offered in colleges of education and universities.

### 1.1.2 Sound System

The sound inventory of standard Igbo consists of thirty-six phonemes, comprising twenty-eight consonants and eight vowels. Below are the examples of consonant and vowel sounds:

**consonants:** /b, tʃ, d, f, g, gb, ɾ, g<sup>w</sup>, h, dʒ, k, kp, kw, l, m, n, ŋ, ŋ<sup>w</sup>, ɲ, p, r, s, ʃ, t, v, w, j, z/.

**Vowels:** /a, e, i, ɪ, o, ɔ, u, ʊ/. Obimma (1998), cited in Cecilia Amaoge Eme & Ebele Deborah Uba. M.A thesis, Department of Linguistics, Nnamdi Azikiwe University, Awka. (<http://dx.doi.org//10.4314/ujah.v17:14.8/6/2017>. 11:18 am.).

Igbo is a tone language with three tones levels: high [']; low [·] and down step [-] (see Ikekeonwu, Ezike Ojiaku, Ubani and Ugorji 1999) cited in Cecilia Amaoge Eme & Ebele Deborah Uba (<http://dx.doi.org//10.4314/ujah.v17:14.8/6/2017>. 11:18 am.). Igbo language features “Vowel Harmony” with sets of vowels distinguished by pharyngeal

cavity size described in terms of Advanced Tongue Root [ATR]. Lindau (1978). The concept of vowel harmony however, would be discussed in detail in the next chapter. Having introduced the language under study, we shall now discuss our methodology.

## **1.2 Methodology**

The method of data collection employed in this research is oral interview with the use of a 400-wordlist. The quest for unadulterated data made the researcher to travel to Eliozu and Eliowhani villages in Obiakpor L.G.A. Rivers state so as to interact with mature native speakers of the Igbo language/dialect. The Eliozu and Eliowhani dialects are members of the Ikwerre cluster of Igbo regional dialects. The villagers were indifferent to the idea of the language interview, forming “I am so busy” kind of, this made it difficult for the researcher.

After two weeks of unfruitful stress in search of interviewees, the researcher finally met two benevolent men with the following respective profiles:

1<sup>st</sup> Name: Chief Samuel Emenike Worlu

Age: 67years

Occupation: Retired civil servant

Location: Eliozu village in Obiakpor LGA, Rivers State

Religion: Christianity

2<sup>nd</sup> Name: Mr. Edwin Amadi

Age: 57years

Occupation: Interior decoration

Location: Eliowhani village in Obiakpor LGA, Rivers State Religion:

Christianity

The researcher held face-to-face oral interviews with each of them on different days and time with the use of Ibadan 400 list of basic vocabulary as the camera man was busy capturing the scenes. The data were transcribed into phonetic form for proper linguistic representation of what is actually pronounced as the researcher later replayed the recorded interviews, getting ready for the presentation and analysis of the data as we shall see in chapters 3 and 4.

In addition to the Ikwerre dialect data (Rivers State), the researcher also examines data from Obollo dialect (Enugu state). Obollo dialect is a member of

the Nsuka cluster of Igbo regional dialects. They are presented as data 1 and data 2, respectively. The Obollo data is another 400 wordlist elicited and made available by Mr. Akalugo Nwodo and Prof. C.U.C. Ugorji. (see the appendix and the CD for more information about the 400 wordlist).

### **1.3 Theoretical Framework**

The theoretical framework for this study is the Auto-segmental phonology. Auto-segmental theory was propounded in 1976 by John Goldsmith.

A further innovation of autosegmental theory is the set of universal principles termed well-formedness conditions. Well-formedness conditions are the principles which govern the multi-tiered structure of the representation. These principles define the set of theoretically possible inter-tier arrangement. (i.e each element on one tier that "may" be associated to an element on another tier "must" be associated to such an element, and association lines do not cross).

The theory posits some of these following conditions:

- All vowels are associated with at least one tone.
- All tones are associated with at least one vowel

- All harmonizing features are associated with at least one vowel.

John Goldsmith (1976).

Auto-segmental Phonology is preceded by the Generative Phonology proposed by Chomsky and Halle in 1968 in which segments and supra-segments are treated as one; i.e. supra-segments are dependent on the segments bearing them.

Segments = vowels or consonants.

Supra-segments = any phonetic feature that is not a segment. They include; [tone], [nasality], [ATR], etc.

### **1.3.1 Reason for Auto-segmental Phonology**

Auto-segmental Phonology came on board to account for the inadequacies of Generative Phonology which include inability to account for:

- a. Contour tone
- b. Stability of tone
- c. Floating tone etc.

### 1.3.2 Motivation for Choosing Auto-segmental Framework

We choose to carry out our analysis in this work using auto-segmental framework for the following reasons;

- Phonetic/phonological features such as [nasality], [tone], [ATR], etc, are normally dependent on segments bearing them in generative phonological analysis. For example, the feature ['] in /áká/ (Igbo word for hand) is represented as [+H] differently on a separate tier known as tone tier, the segments /a, k / are also represented on vowel and consonant tiers respectively in Autosegmental framework, while in Generative phonological framework there are no such provisions. Auto-segmental phonology is therefore chosen since it analyzes features independent of segments bearing them.
- Harmonizing features like [nasality], [tone], [ATR] can be extracted and treated differently. Thus, the [ATR] feature of Igbo Vowel harmony system can be placed on a different tier (Harmony Tier; H.T) to show its autonomy as supra-segment.

- The vowels that bear the harmonizing features are of two sets: the /i, e, o, u/ set which harmonizes with itself bears [+ATR] while the /ɪ, a, ɔ, ʊ/ set which harmonizes with itself bears [-ATR]. Hence, Auto-segmental framework would help us to present each set and its [ATR] feature separately.
- During analysis, this theoretical framework would help us to focus only on the feature [ATR] under study without accounting for other elements that are not under study for now.

#### 1.4 Statement of Problem

Igbo is usually presented as a typical example of a language that operates a complete Vowel harmony system. The vowels of the language can be divided into two harmonic sets as shown below:

[ i ]	[ɪ]
[u]	[ʊ]
[e]	[a]
[o]	[ɔ]

[+ATR] vowels and [-ATR] vowels do not generally co-occur in the same word except in loan-words and compound words.

However, cases of “disharmony” still exist in the language with no much attention given to them in the literature. The lack of adequate attention to the issue of disharmony presented the problem that made this study necessary.

### **1.5 Purpose of Study**

The present study examines vowel harmony and disharmony in Igbo on the basis of a corpus of empirical data drawn from non-contiguous regional dialects of Igbo (Ikwerre and Nsukka), the purpose of which is to bring empirical data to bear on the conventional depictions made on the basis of the standard Igbo and to draw attention to the identified cases of disharmony by focusing on them since they have not been given adequate attention in the literature.

### **1.6 Significance of Study**

This work, invariably, would be useful to linguistics students, language enthusiasts and researchers who may want to embark on further research on vowel harmony phenomenon especially on the issue of disharmony in Igbo language.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

This chapter presents the review of related literature under vowel, vowel harmony, approaches to vowel harmony, basis for vowel harmony. The review of these concepts is relevant as good background knowledge of them would fully equip us for the present study.

#### **2.1 Vowel**

The word 'vowel' comes from the Latin word *vocalis*, meaning "vocal" ("relating to voice"). In English, the word 'vowel' is commonly used to mean both vowel sounds and the written symbols that represent them, which are A, E, I, O, U. In phonetics, a vowel is a sound:(Wikipedia, page accessed: 16th May, 2017). In the more common phonetic definition, a vowel is a sound pronounced with an open vocal tract, so that the tongue does not touch the lips, teeth, or roof of the mouth, such as the English "ah" /a:/ or "oh" /oʊ/. There is no build-up of air pressure at any point above the glottis. Vowel is a speech sound which is produced by comparatively open configuration of the vocal tract with

vibration of the vocal cord but without audible friction and which is a unit of the sound system of kind that forms the nucleus of a syllable.(Wikipedia, page accessed: 16th May, 2017).

Sound system is a universal feature of languages; vowels combine with consonants to form the sound system of any language. Vowel is therefore, indispensable in the study of language and the existence of vowel in language gave right to the vowel harmony phenomenon.

## **2.2 Vowel Harmony**

Here, the issues addressed include definitions of vowel harmony, approaches to vowel harmony and basis for vowel harmony, the relevance being that a review of some works done on this linguistics phenomenon by various authors would provide a good foundation for the present work.

Greenberg (1962) is of the view that vowel harmony is “a system in which the vowels of a language are divided into two broad groups or set; members of each set or group harmonizing with themselves within the same formative”.

Williamson, K. (1984:70) gives the operational definition of vowel harmony as: The system whereby in many languages, the vowels are divided into two sets 'wide' and 'narrow' in such a way that vowels from the same set normally go together in the simple word.

Chomsky and Halle, (1968:314-315) say "vowel height is one of the features which is frequently assimilated in vowel harmony in terms of tenseness and laxness. Vowel harmony is a law which governs the co-occurrence of vowels within a span of utterance nearly always the word.

Ladefoged, (1975: 202) "there is said to be vowel harmony in a language if the vowels are constrained so that the vowels in a single word must have some properties in common".

Welmers, (1973: 202) note that Igbo has an eight-vowel- system neatly divided into four pairs: i, e, o, u.: i, a, o u. He also says that by vowel harmony, all vowels belong to one or the other of the following vowel groups - / i, a, u, o/, /i, e, o, u/ and that with few exceptions, Igbo nouns may be analyzed as containing a prefix (a vowel or syllabic nasal) and a stem. He says that the stem is very commonly monosyllabic and its vowels determine the harmonic group to which a prefix vowel belongs. According to him, occasionally, violations of

vowel harmony are found in nouns which are probably all compounds or adopted words.

Emenanjo (1978: 6-7) sees “vowel harmony as an interesting feature of Igbo among many West African languages”. He also states that vowel harmony in Igbo operates in simple, non-compound words but not beyond and that the language has two mutually exclusive sets of harmonic vowels which are presented thus:

Set I  
i, u, e, o

Set II  
ĩ, ɥ, ɔ, a

Phillip (2005: 1159-1160) sees vowel harmony as ‘when vowels within a word are required to resemble one another in terms of some properties’. Vowel harmony according to Phillip is a well-known phenomenon found in many languages such as: native Eurassia, Africa, and to lesser extent, other places. Harmony is not found in any familiar indo- European languages. Phillip cited some examples such as Greek, French or English.

Harrison, K (1999) says “vowel harmony is a constraint by which vowels agree with other vowels in terms of a particular phonological features such as backness, roundness, height, or Advanced Tongue Root (ATR)” Vowel

harmony is a type of long-distance assimilatory phonological process involving vowels that occurs in some languages. A vowel or vowels in a word must be members of the same subclass (thus "in harmony"). In languages with vowel harmony, there are constraints on which vowels may be found near each other.

Smolek (2010:7) claims “vowel harmony is a constraint by which vowels agree with other vowels in terms of a particular phonological feature’ (cf. Harrison 2000:11), such as backness, height or advanced tongue root [ATR]

Lindau, M (1975) shows that two phonetic movements are responsible for the distinction between the two sets of vowels usually distinguished in West African Vowel harmony languages. These are the raising or the lowering of the larynx and the advancing and retraction of the tongue root. Both movements operate to alter the size of the pharynx. The pharynx size is expanded when the tongue root is advanced and the larynx lowered. On the other hand, when the tongue root is retracted and accompanied by a raised larynx, the pharynx size is reduced. Thus, the vowels of one set are usually referred to as “wide” (i.e. produced with an expanded or wide pharynx) while those of other set are

usually referred to as “narrow” (i.e. produced with a non-expanded or narrow pharynx).

Wide		narrow	
i	u	ɪ	ʊ
e	o	ɛ	ɔ
a	(or ɜ)	a	

Drawing examples from Abuan and Odual as ten vowel languages, Lindau demonstrated the following harmony:

### Abuan

isuyana	‘fowls’	itūyɛmɪ	‘teaching’
egurubio	‘locust’	ɛɛkpūā	‘forest’
adiwo	‘mouse’	apɪtaka	‘cassava’
okpoki	‘money’	ɔfɛgūma	‘carrying pole’
uwekulom	‘poor man’	uḱiū	‘bitter leaf’

### Odual

izon	‘nose’	ɪdɔ	‘axe’
ade	‘land’	ɛba	‘bag’
ozu	‘skin’	ūgbɔ	‘thigh’
egi	‘heap’	ɛmɪ	‘weight’
ole	‘to eat’	ɔfɛ	‘to pet’

According to (Hyman 1975: Asher 1994 and Gleadson 1961), the term ‘vowel harmony’ is sometimes construed as assimilation. Gleadson specifically referred to it as a type of ‘non-contiguous assimilation’ (Asher 1994: 4954).

Essien (1990:40) defines vowel harmony as “a process by which the vowels in a language usually in a single word are constrained that all of them must have some properties in common as determined by the phonological environment’. In sub-Saharan languages such as Igbo and Ijò according to Essien, Advanced Tongue Root (-ATR) are used as parameters for selecting vowels into harmony sets.

Krämer (2003: 3-35) also states that all vowels within a word or other morphological domain, “look alike with respect to the active features”. There are two main ways that vowel harmony system operates, according to Krämer. The first is classified as morphologically driven form of harmony. The second type of harmony is phonologically driven and it is generally called dominant recessive harmony. In this type which is rarely found outside of ATR harmony systems, one class of vowels [general + ATR], if present in either root or affix,

causes all of the other vowels within the word to assimilate to its value. (See Krämer 2003: 3-35).

Oyebade (1997: 73-74) claims “languages that attest this process impose the euphonic constraint of allowing vowels from a particular group to co-occur together in a well-defined domain to the exclusion of the members of other group”. He goes on to say that within the framework of the binary distinctive feature theory, vowel harmony “is always based on one phonetic feature or another” the most common one in African languages being “the ATR feature”.

Shirley Yul-Ifode (2008: 55), states that vowel harmony is a phenomenon whereby the vowels of a language are restricted in such a way that all the vowels in a simple word must share certain common features or properties. He further says that this is the typical West African type of vowel harmony, but that there exist other types elsewhere.

Hyman (1975) is of the view that the vowels [ɪ] and [ʊ] give the impression of a very tense closed [e] and [o] respectively while [o] resembles [ɔ]. In constructing words in Igbo according to him, all vowels found within

word boundaries are chosen from one of these sets; for example, /abʊ/ ‘hymn’ not /abo/.

Aziza (1994: 1) states that concerning vowel harmony, that each set must behave in such a way that the vowels in any word are drawn exclusively from one set or the other. Also, that the phenomenon of vowel harmony has been observed in many West African languages. The vowels of these languages bear strikingly similarities with one another both in their phonetic nature and in the rules that govern their alternations (Aziza 1994:816). In accounting for this phenomenon (vowel harmony) different authors have proposed or used various terms and features. For example, terms like: ‘tenseness’ (Welmers 1964; Ladefoged 1964, 1971); ‘Wide/Narrow’ (Sweet, 1996) etc.

Oyebade,F. (1998) reports the existence of partial vowel harmony in Yoruba. Partial vowel harmony has also been reported in a number of other Nigeria languages: Armstrong, 1985 for the Idomoid languages; Kuhn and Dasu, 1985 for Berom; Jenewari, 1985 for Kalabari, Essien, 1985 for Ibibio; Donwa-Ifode, 1995 for Isoko, etc.

The classification of the Igbo vowels as shown above follows Lindau's (1972) use of the term 'Advanced Tongue Root [ATR]' as a way of accounting for vowel harmony system. Set I reflects [+ATR] while set II reflects [-ATR].

Set I [+ATR]		Set II [-ATR]	
• ikó	'cup'	ọdụ	'tail'
• ikùkù	'air/wind'	ákà	'hand'
• ùdó	'peace'	ụdọ	'rope'
• ódó	'mortal'	achịcha	'bread'
• íde	'flood'	akwụ	'palm nut'

Asher (1994: 4954) classifies vowel harmony as an assimilation thus: specific: (vowel) harmony defines as a system, classifies the vowels of lexical entries into mutually exclusive sets (allowing for some vowels to be members of more than one set) with respect to some distinctive features, and this pervasive division radiates to word level by means of 'unrounded' feature spreading.

From the above, it is observed that some vowels known as 'transparent' or 'neutral' vowels mix freely with the vowels of the distinct harmonic sets within morphemes. This is more applicable to languages that operate partial harmony system. Vowels are usually segregated into distinct or non-

overlapping sets. General laws dictate that the vowels of word constituents must be drawn from one or the other set but not both. Vowels belonging to the same set may be said to be in harmony with each other.

Yusuf (2007: 75-78) says “vowel harmony is a feature of African languages and that it is a phonological phenomenon in which a span of vowels within a derived or un-derived word exhibits a single value for some phonological (vowel) feature which may relate to height, roundedness, or position of the tongue root”.

Casali (2008: 500) notes that vowel harmony is typically present in languages with rich morphological system where affixes have varying vowels based on the surrounding sounds, and vowels within a root generally belong to the same harmony set.

Katamba (1989) holds that “vowel harmony is a process whereby within a certain designate domain usually the word, all vowels are required to share one or more phonological properties”. He further says that vowels of a language are divided into two mutually exclusive sets and all vowels within a

stipulated domain according to him, must be either front or back; high or low, rounded or unrounded.

Utman (1973) considers vowel harmony as ‘a uniform assimilation of all vowels in a grammatical unit’, the implication of which must be that such a vowel system must consist of two parallel sets of vowels sequel to this claim. The contrastive features such as [ATR]; [back], [high] and [round] may describe harmonic status of vowels. It is equally possible for a given language to exhibit dual harmony system. The vowel harmony system is broadly classified into two groups: ‘partial’ and “complete” vowel harmony. The complete vowel harmony exists if a vowel of a morpheme assimilates to another vowel. On the other hand, partial vowel harmony exists if the vowel assimilates certain features (as against all) to another.

Eze (1997) says “Igbo possesses a crucial linguistics phenomenon called vowel harmony. This language features vowel harmony with two sets of vowel distinguished by pharyngeal cavity size.

Ringen (1979: 248) says that Igbo and Diola-Fongy have vowel harmony systems in which harmony feature is Advanced Tongue Root [ATR].

Aoki (1968) suggests that symmetry is a relevant criterion for classifying vowel harmony system; Igbo according to him is a symmetric system, while Diola-Fongy is asymmetric system. “In a symmetric system, any vowel in a certain position can determine the series of vowels for the word. Examples are Finnish, Hungarian, Atlantic languages, Twi and Igbo. On the other hand, asymmetric system has one series dominating others. In such system, “the presence of a dominant vowel in a word changes the vowels of a non-dominant series” (Aoki 1968: 143).

Iwara (1994:10) says “vowel harmony is a supra-segmental process whereby the vowels of a language are divided into two sets according to some phonetic features such as  $\pm$  tongue root advancement and front/backness such that vowels of the same set occur together minimally within a simple disyllabic word”.

Omozuwa (2010: 223) posits that “vowel harmony is the phonetic phenomenon whereby the occurrence of vowels within the same lexical formative is sequentially constraint; this phonetic constraint is imposed by the existence of two sets of vowels which are mutually exclusive in their

distribution within the same formative in a language that manifests vowel Harmony”. He further states that Vowel harmony in languages that attest this phenomenon, can either be complete or partial and that Igbo Language is one of the languages that operate a complete vowel harmony system

Citing Igbo as an example of language that operates complete vowel harmony system, Omozuwa says that the language vowels are divided into two clear sets; the first set made up of [i, e, u, o] is characterized by the feature [+ATR] while the second set made up of [ɪ, ʊ, ɔ, a] is characterized by the feature [-ATR]. In Igbo, therefore, wherever members of one set occur in a formative, members of the other set are excluded. Consider the following examples (cf. Oyebade, 1998: 78-79 following Ihionu, (1984):

Set A [i, e, u, o]

1. [òsísí] ‘cooking’
3. [òbìbì] ‘living in’
5. [òlùlù] ‘throwing’
7. [òxíxé] ‘tying’
9. [òtító] ‘growing’

Disyllabic words:

11. [é!gó] ‘money’

Set B [ɪ, ʊ, ɔ, a]

2. [ɔ̀mímí] ‘sucking’
4. [ɔ̀dídá] ‘cutting’
6. [ɔ̀híhí] ‘squeezing’
8. [ɔ̀bóbá] ‘peeling’
10. [ɔ̀símó] ‘avoiding’

- 12 [á!go] ‘tiger’

13.[í!gwé] ‘sky’	14 [á!lɔ] ‘abomination’
15.[é!ró] ‘mushroom’	16 [á!yó] ‘odour’
17.[ó!gwú] ‘thorn’	18 [ɔ!gɔ] ‘pumpkin’
19.[ó!tʃé] ‘chair’	20 [ó!gɔ] ‘twenty’

Vowels of Set A and those of set B are mutually exclusive in their distribution.

It is observed in examples 1-20 that Igbo operate complete vowel harmony system which is different from partial vowel harmony system which operates in Yoruba. The language (Yoruba) has seven Oral vowels: [i e, ε, a, u, o, ɔ] in v c v words, the vowel system in Yoruba falls into three groups in terms of their distribution. “The first group contains e, o; the second group contains ε, ɔ; and the third has i, u, a” (Oyebade, 1998: 74). Members of the first group according to him can co-occur with each other but cannot co-occur with the second group; the second group can co-occur with each other but cannot co-occur with members of the first group; whereas members of the third group can co-occur with each other and also with members of first and second groups.

It could be seen from the observation above that the mid vowels are mutually exclusive in Yoruba in terms of their distribution in v c v words. The distribution constraint is in respect with the half-close- half-open dichotomy. Thus, in Yoruba, the half-close, mid vowels can co-occur with each other to the exclusion of the half-open, mid vowels as shown in the examples below (cf. Oyebade, 1998:74):

- |                      |                           |
|----------------------|---------------------------|
| 31. [owó] ‘money’    | 32. [ɔw] ‘hand’           |
| 33. [òwe] ‘proverbs’ | 34. [ɔsɛ] ‘week’          |
| 35. [ɛɖʒò] ‘snake’   | 36. [ɛɖʒɔ] ‘gossip, case’ |
| 37. [ew] ‘leaf’      | 38. [ɛɖʒɛ] ‘blood’        |

These two groups of mutually exclusive vowels can co-occur freely with the vowels [i, u, a] as follows:

- |                     |                      |
|---------------------|----------------------|
| 39. [ìwo] ‘horn’    | 40. [ofù] ‘month’    |
| 41. [ìl] ‘house’    | 42. [ɔdũ] ‘year’     |
| 43. [í] ‘ground’    | 44. [ɛwu] ‘dress’    |
| 45. [ìtó] ‘spittle’ | 46. [ɛd] ‘blackness’ |
| 47. [íta] ‘outside’ | 48. [ífu] ‘yam’      |
| 49. [ìl] ‘town’     | 50. [ìgì] ‘tree’     |
| 51. [àwo] ‘plate’   | 52. [afɛ] ‘cloth’    |

53. [ate] ‘broad- brimmed hat’

54. [ara] ‘body’

55. [adʒɛ] ‘witch’

56. [iḡba] ‘calabash’

West African vowel harmony type described here consists of two parallel sets of vowels which meet the condition that the vowels in any word are exclusively drawn from one set or the other.

The two sets are as follows;

i, u, e, o, ə or ɜ and ɪ, ū, ɛ, a, ɔ. (see Shirley Yul-Ifode 2008: 55).

Stewart (1967) and Ladefoged (1964) show that the position of the tongue root conditions the system. They go further to say that the vowels in each group are produced by retracted and advanced tongue root position respectively.

Donwa (1995: 55-58) argues that vowel harmony is a phenomenon whereby the vowels of a language are restricted in such a way that all the vowels in a simple word must share certain common features. He also says that this kind of vowel harmony is common with West African languages even though other types exist.

Carnochan (1960:155-163) claims that the vowels of Igbo fall intact into two classes and that only vowels belonging to the same class can co-occur in a given word. In Carnochan (1960: 155 - 163), professor D. Jones was cited as dealing briefly with vowel harmony in Igbo but omitting the exceptions.

According to Krämer (2003:3), all vowels are alike with respect to the active features when they are found within a word or other morphological domain.

Casali (2008:500) argues that vowel harmony is identified with languages with rich morphological system where affixes have vowels that differ based on the sounds surrounding them.

### **2.3 Approaches to Vowel Harmony**

Vowel harmony system operates in two main ways; Krämer (2003: 35), classifies the first one as a morphologically-driven form of harmony which is commonly referred to as root control harmony.

Casali (2008: 500) then said that no matter the vowel qualities in either morphological class, that the so-called “harmonizing affixes” assimilate to root.

Clements and Sezer refer to this kind of harmony system as “asymmetrical” system (1982: 215).

The second way the vowel harmony system operates is phonologically-driven (Krämer 2003: 32), and it is generally referred to as dominant-recessive harmony”. This type of harmony system is said to be scarcely found outside of Advanced Tongue Root systems and that if one class of vowel (commonly the [+ATR]) is found in either affix or root, the other vowels within the word would then be assimilated to its value. In most vowel harmony processes, it is noticed that the vowel values are spread left-to-right, though right-to-left spreading are also noticed in some cases (see Clements and Sezer 1982: 219).

## **2.4 Basis for Vowel Harmony**

(cf. Trubetzkoy 1969, cited in Harrison et al 2002:3) posits that it was previously thought that vowel harmony systems are most likely to arise in languages that have symmetrical vowel inventories.

Such inventories are examples of feature economy, which “favors maximizing the number of phonemes that can be obtained by the free combinations of a given set of features” (Clements 2003:291).

Smolek (2011) has it that Tuvan operates a near-perfectly symmetrical vowel system where the combination of [ $\pm$  high], [ $\pm$ back], and [ $\pm$ round], if used in every combination, gives  $2^3$  or 8 possible vowels, every one of which is present in the Tuvan language.

Harrison et al (2002) more recently, holds that harmony systems are actually likelier to arise in asymmetrical systems. Additional basis for the operation of vowel harmony according to Harrison (2002:3) is as a result of co-articulation where the sounds of a word assimilate to another one. The cognitive and physical articulatory processes of the speaker and hearer are simplified by having all the vowels in a word belonging to one class. This gives rise to “transitional probability” (i.e. the possibility for the remaining vowels in a given word drops by at least half once the first vowel is known). Having the vowels occur in the same general area of the vowel space does not require much effort for the speaker according to Krämer: (2003:26).

Kaun (1995:78) is of the view that a symmetric harmony pattern can enhance the probability that a given contrast or a set of contrasts will be perceived by the hearer accurately if [the  $[\pm F]$  's] duration is extended. There are still other vowel harmony systems whereby positional neutralization serves a similar purpose by restricting the distribution of perceptually subtle differences to places where they will be more easily identified (Steriade1993, cited in Kaun 1995).

Suomi's argument (1993, cited in Kaun 1995:80) is that harmony exists in order to make weaker vowels more contextually predictable. Vroomen, Tuomainen and de Gelder (1998) hold that another reason for the existence of vowel harmony is the ability it has to show word boundaries; word boundaries along with word stress help the hearer to ascertain the morphological boundaries.

Notice that the above definitions identify the various bases for vowel Harmony. We exemplify only three major bases as follow:

- Tongue Root
- Tongue Height

- Rounding

### **2.4.1 Tongue Root Harmony**

In languages described as having ‘tongue root’ harmony, vowels harmonize for features that correspond to the position of the tongue root or pharyngeal expansion/compression. In these languages, following common phonological description, vowels may be ‘advanced’, articulated with the tongue root in an advanced position, or ‘retracted’, articulated with a non-advanced or retracted tongue root. The relevant phonological dimension of distinction, it has been proposed, is  $[\pm\text{ATR}]$  (originally from Halle and Stevens 1969) with advanced vowels sharing  $[\text{+ATR}]$  and retracted vowels  $[\text{-ATR}]$ . This is a standard way of describing the phonetic basis and the phonological feature in question. But work by Lindau (1978), using radiographic and acoustic data, and by Tiede (1996) using MRI data, indicates that the relevant difference is in terms pharyngeal expansion versus compression, which can be achieved in different ways one of which is by positioning the tongue root in the way implicated by  $[\pm\text{ATR}]$ . At a first approximation, however, we can talk about patterns of transparency and opacity in ‘tongue root’ harmony without being precise about the phonetic dimensions involved. Thus, our first example

of ‘tongue root’ harmony comes from Akan (Schachter and Fromkin 1968, Ladefoged 1964, Lindau 1978, Dolphyne 1988). As can be seen in the personal pronoun – stem combinations shown in, each pronoun prefix alternates between two forms, a [+ATR] form shown in the left column and a [–ATR] form shown in the right column. Here, as in Hungarian, the stem determines the exact form of the affix, but it is the [ATR] value as opposed to the [back] value, in the case of Hungarian, that is being determined by the stem. In the left column, the verb *di* ‘to eat,’ which contains a [+ATR] vowel, imposes that value to the prefix so that we get forms such as *mi-di* ‘I eat’ and *wu-di* ‘you eat’. By contrast, the verb *dɪ* ‘to be called’ imposes its [–ATR] value to its prefix, so that the same prefixes surface as *mɪ-dɪ* ‘I am called’ and *wɔ-dɪ* ‘you are called’.

#### Akan vowel harmony

[+ATR]		[–ATR]	
a. mi-di	‘I eat’	f. mɪ-dɪ	‘I am called’
b. wu-di	‘you eat’	g. wɔ-dɪ	‘you are called’
c. o-di	‘he eats’	h. ɔ-dɪ	‘he is called’
d. ye-di	‘we eat’	i. yɛ-dɪ	‘we are called’
e. wo-di	‘they eat’	j. wɔ-dɪ	‘they are called’

In Akan, as can be seen above, both high and mid vowels are subject to harmony, but in other tongue root harmony languages, the vowels which alternate comprise a more restricted set. In these latter languages, mid vowels alternate and high vowels are transparent. Thus, in Wolof only the mid vowels /e/, /ɛ/, /o/, /ɔ/ alternate in harmony.

#### **2.4.2 Tongue Height harmony**

Languages may also show vowel harmony in terms of ‘height’. In phonological terms, these systems require uniformity across vowels in terms of the phonological feature [ $\pm$ high]. Some instances of what have been called ‘height’ harmony systems have been an issue of discussion in connection with ‘tongue root’ harmony. This issue arises because tongue body vertical position, an undisputed correlate of phonological height, and pharyngeal size have very similar effects in the frequency of the first formant -- see Lindau (1978) for particularly clear illustration of this from Akan. As an expected consequence, then, in some harmony systems such as that of Kinande, the harmonic classes seem to differ according to vowel height as well as tongue root position. Clements (1990, 1991) proposes an account for such systems in terms of an ‘aperture’ theory of vowel height. In his theory, the harmonic classes are

distinguished based on their value for the feature [open], used to implement height distinctions. More recent discussion of the same issue, ‘tongue root’ versus ‘height’ harmony, can be found in the instrumental studies of Gick et al. (2006) and Kenstowicz (2009) who provide converging evidence in favor of the ‘tongue root’ interpretation for the Kinande vowel harmony system.

The height harmony systems we chose to exemplify below come from dialects of Italian. These systems have not received an interpretation in terms of ‘tongue root’ harmony and thus can be considered as good representatives of ‘height’ harmony (see van der Hulst and van de Weijer 1995 for further relevant discussion of the ‘tongue root’ versus ‘height’ harmony issue).

Dialects spoken in Italy’s central Veneto region and the island of Grado show a type of height harmony in which a post-tonic high vowel triggers raising of a stressed mid vowel (Walker 2005, 2010). In Central Veneto and Grado, a post-tonic high vowel causes /e/, /o/ to raise to [i], [u], respectively. Commonly, harmony is triggered by an inflectional suffix. All of the Central Veneto and Grado data in this section is taken from Walker (2010).

Height harmony triggered by suffixes:

## example

### Central Veneto

a. kals-ét-o	kals-ít-I	‘sock (M. SG./PL.)’
b. kant-é-se	kant-í-si-mo	‘sing (1SG./1PL. IMPF. SUBJ.)’
c. móv-o	múv-i	‘move (1SG./2SG.)’
d. botón	botún-i	‘button (M. SG./PL.)’

### Grado

e. kré-e	krí-i	‘believe (3SG./2SG.)’
f. benedét-o	benedít-i	‘blessed (M. SG./PL.)’
g. rómp-o	rúmp-i	‘break (1SG./2SG.)’
-h. albor-ét-o	albor-ít-i	‘tree (M. SG./PL. DIMIN.)’

The data in illustrates the basic pattern of vowel harmony in the dialects of interest here. Harmony is triggered by suffix vowels and may only target stressed vowels. If trigger and target are not adjacent, the intervening vowels must also undergo harmony.

### 2.4.3 Rounding harmony

In various languages, including those of the Turkic, Mongolian, and Tungusic families, as well as Yawelmani (now called Yolumne), an American Indian language of California, vowels harmonize for lip posture. As we

remarked for the case of ‘tongue root’ harmony, the phonetic basis of the harmonizing ‘rounding’ feature is a separate non-trivial issue (see Goldstein 1991). With this in mind, we will follow standard description in saying that the feature showing harmony in these languages is [ $\pm$  round]. In Turkish ‘rounding’ harmony, both high and non-high vowels can trigger rounding harmony, but only high vowels are eligible as targets. The first person singular possessive suffix, for example, alternates depending on the value of the stem for the feature [round], as shown below.

High vowel suffixes alternate in Turkish

a. ip	‘rope’	ip-im	‘my rope’
b. süt	‘milk’	süt-üm	‘my milk’
c. ev	‘house’	ev-im	‘my house’
d. çöp	‘garbage’	çöp-üm	‘my garbage’
e. kız	‘girl’	kız-ım	‘my girl’
f. buz	‘ice’	buz-um	‘my ice’
g. at	‘horse’	at-ım	‘my horse’
h. gol	‘goal’	gol-um	‘my goal’

In the examples above in stems with [–round, –back] vowels take the –*im* form of the suffix, stems with [–round, +back] vowels take the –*ım* form, stems with [+round, –back] vowels take the –*üm* form of the suffix, and stems

with [+round, +back] vowels take the *-um* form of the suffix. The behavior of the high vowel suffix may be contrasted with that of the dative suffix, *-e/-a*, which, like other non-high suffixes, does not participate in rounding harmony. Stems containing a front vowel take the *-e* form of the dative, and those containing a back vowel take the *-a* form. There are no rounded versions of the dative suffix.(adapted from <http://www.ling.uni-potsdam.de/~gafos/papers/HL1680.pdf>; date accessed: 10/6/2017)

## **CHAPTER THREE**

### **DATA PRESENTATION**

#### **3.1 Introduction**

As pointed out in our literature review, Vowel harmony phenomenon has been observed in many African languages of which the Igbo language is one of them. There is said to be Vowel harmony in a language if the vowels in a single word are constrained in such a way that they must have some features in common.

Hence, this chapter presents Igbo basic vocabulary gotten from different native speakers of two non-contiguous dialects of Igbo; Ikwerre and Nsuka. Ikwerre would be presented as Data 1; Nsuka as Data 2. All the lexical items would be grouped into categories of nouns, verbs, adjectives, compound words and words showing vowel disharmony in their formatives, giving us a total of five groups. For the purpose of simplicity, we want to maintain only five groups of lexical items, therefore, lexical items that are not categorically verbs or adjectives are added to the noun group. Compound and borrowed

words are exceptions to the rule of harmony. Therefore, we will not dwell on them in this discussion.

### 3.2 Presenting Data 1

Data 1 contain four hundred (400) basic vocabulary categorized thus:

- NOUN GROUP: 249 (62.25%); Some of which include:

[-ATR]		[+ATR]	
/ímí/	‘nose’	/áńá/	‘eye’
/m̀k̀p̀èkwú/	‘navel’	/ónũ/	‘mouth’
/òbèlè/	‘calabash’	/m̀k̀p̀ómà/	‘heart’
/rúgwè/	‘iron’	/óǹfí/	‘leg’
/ńrúró/	‘tongue’	/ók̀p̀úk̀p̀ú/	‘bone’

From the 249 words in the noun group, 5 words showing [+ATR] vowel harmony and 5 [-ATR] vowel harmony are presented,

- VERB GROUP: 128; (32%) Some of which include:

[+ATR]		[-ATR]	
[gùzórú]	‘stand’	/ńwómá/	‘die’
/sòrú/	‘follow’	/ńúó/	‘drink’
/wòrú/	‘take’	/hùsí/	‘roast’



From the noun group, verb group and adjective group, we got 103 compound words. The 5 words above represent the whole.

- WORDS SHOWING VOWEL DISHARMONY: 11; (2.75%), they are as follow:

/kpóremé/	(ɔ and e)	‘burn’
/rémá/	(e and a)	‘breast’
/ólòkónḡdžà/	(o and a)	‘orange’
/áhùékéré/	(a, u and e)	‘groundnut’
/vuzó/	(u and ɔ)	‘carry’
/réhuǎ/	(e, u and a)	‘name’
/dùrùbià/	(u, i and a)	‘doctor’
/òtùlá/	(o, u and a)	‘vagina’
/woṅkoloma/	(o and a)	‘cat’
/núá/	(u and a)	‘push’
/lékási/	(e, a and i)	‘taste’

In this group, all the words that have mixture of the two distinct sets of vowels ( [+ATR] and [-ATR] ) in their formatives are presented.

### 3.3 Presenting Data 2

Data 2 contain 282 basic vocabulary of Igbo categorized thus:

- NOUN GROUP = 105; (37.23%) Some of which include:

[+ATR]		[-ATR]	
/ísí/	‘head’	/ík̀p̀àk̀p̀â/	‘liver’
/eb̀ùb̀è/	‘glory’	/ák̀ <sup>w</sup> árá/	‘vein’
/úme/	‘breath’	/b̀ǹóǹó/	‘edge’
/ólú/	‘neck’	/b̀s̀ó/	‘speed’

The same thing we did in data one applies here, representing the 105 noun group with 5 words showing [+ATR] harmony and 5 showing [-ATR] harmony.

- VERB GROUP = 129;(45.75%) Some of which include:

[+ATR]		[-ATR]	
/gédzè/	‘move’	/gbaá/	‘shoot’
/orùtè /	‘arrive’	/mk̀p̀òt̀f̀á/	‘scrape’
/jìk̀órú/	‘ascend’	/b̀d̀òd̀ó/	‘pierce’
[ófùó]	‘disappear’	/ńt̀áj̀í/	‘throw away’

Same here with the 129 verb group, 5 words with [+ATR] vowels in their formatives and 5 having [-ATR] in their formatives.

- ADJECTIVE GROUP = 48; (17.0%) Some of which include:

[+ATR]	[-ATR]
/m̀kp̀ur̀ík̀p̀ù/ 'short'	/ù̀g̀p̀l̀ò̀d̀ò/ 'long'
/ó̀d̀ò/ 'yellow'	/á̀s̀á/ 'wide'
/ó̀d̀z̀ì / 'dark'	/à̀t̀f̀ìt̀f̀ì/ 'dirty'
/nr̀ùè/ 'soft'	/ò̀kp̀òkp̀ó/ 'dry out'
/ìk̀e/ 'strong'	/ò̀kp̀àkp̀à/ 'straight'

we also represented the 48 adjective group with 5 words showing [+ATR] harmony and 5 showing [-ATR] harmony.

- COMPOUND WORDS = 71; (25.7%) Some of which include:

/égb̀ùgb̀ù+ò̀ǹò/	'lip'
/ò̀p̀í+ḡk̀ṛ̀ṛ̀/	'adam's apple'
/ḡk̀ù+éḡá/	'eyebrow'
/ìgb̀ús̀ò+ò̀ǹó+m̀ìḡḡ/	'spit'

From the noun group, verbgroup, and the adjective group, we got 71 compound words and represented the group with 4 words.

- WORDS SHOWING VOWEL DISHARMONY: 6 (2.12%) identified, they are as follow:

/ákpeté /	(a and e)	‘step’
/mákpùrú/	(a and u)	‘squat’
/ónwá/	(o and a)	‘moon’
/jákpò/	(a and o)	‘roll’
/ńfúkò/	(u and ɒ)	‘fold’
/Jákpòme/	(a, o and e)	‘turn over’

Here, all the 6 words showing vowel disharmony are presented.

Having presented our data, we shall proceed to analyze them in the next chapter. In the introduction of the theoretical framework, it was made clear that auto-segmental theory uses multitier for its analysis. Therefore, at the course of this analysis, certain abbreviations such as: H.T for Harmony tier, CVT for Skeletal Tier, VT for vowel tier; CT for consonant tier; [+ATR] for Advance Tongue root; and [-ATR] for Retracted Tongue Root would be introduced.

## CHAPTER FOUR

### DATA ANALYSIS AND FINDINGS

#### 4.1 Introduction

In this chapter, the data presented in the preceding chapter would be analyzed via auto segmental framework. [+ATR] harmony of words from data 1 and 2 are analyzed together, same with [-ATR] harmony.

As pointed out by Emenanjo (1978), the phonology of Igbo language shows that it has two mutually exclusive sets of harmonic vowels as shown below:

Set 1

i, u, e, o

Set 2

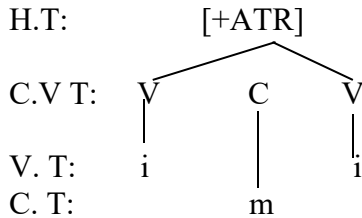
i, ɨ, ɔ, a

This above classification is based on the position of the tongue during their production. Set 1 reflects Advance Tongue Root [+ATR] while Set 2 reflects Retracted Tongue Root [-ATR]. Consider the following analysis:

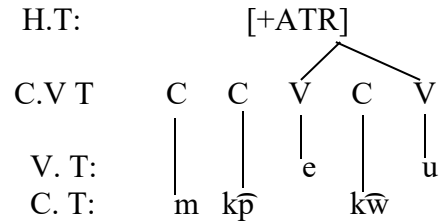
## 4.2 Analyzing the Data

### [+ATR] Harmony

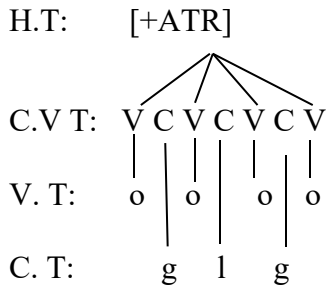
1. [imĩ] ‘nose’



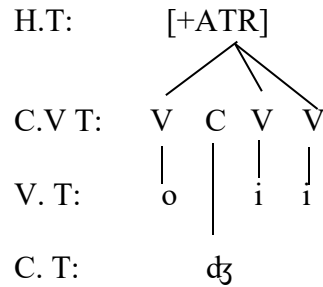
2. [m̀kp̀èkwu] ‘navel’



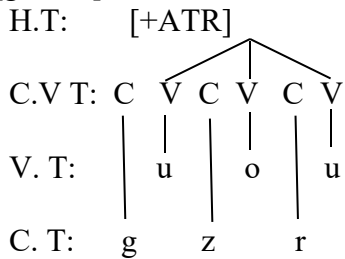
3. [ògólógó] ‘long’



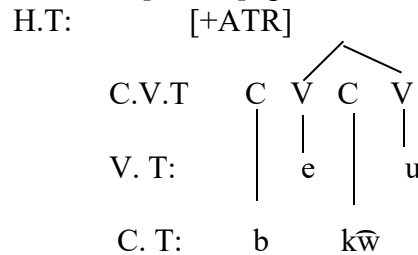
4. [ódziì] ‘dark’



5. [gùzórú] ‘stand’



6. [békwũ] ‘greet’

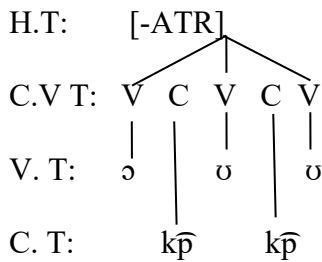


Notice here that 1- 6 above draw their vowels from the [+ATR] set which includes /i, e, o, u/. The formatives; /imĩ, m̀kp̀ èkwu, ògólógó, ódʒiì, gùzórú, and békwũ/ show absence of /ɪ, a, ə, ʊ/ the [-ATR] set. Both sets do not

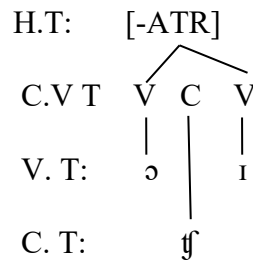
agree in simple formatives in this language as discussed in our review of related literature. Thus, the above analyses show harmony among the [+ATR] vowels.

### [-ATR] Harmony

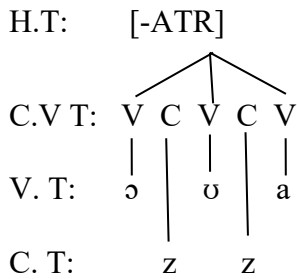
7. [ɔ̀kᵑkᵑkᵑ] ‘bone’



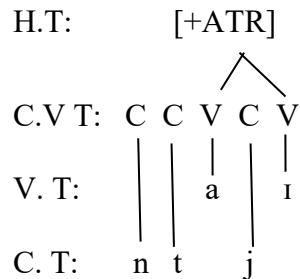
8. [ɔ̣ʃí] ‘leg’



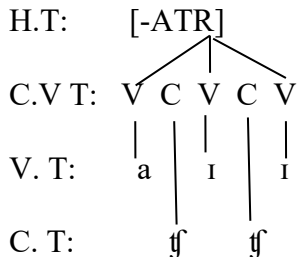
9. [ɔ̀zúzá] ‘swell’



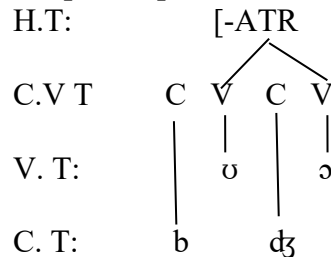
10. [ńtájí] ‘throwaway’



11. [àʃíʃí] ‘dirty’



12. [bùdʒó] ‘bad’



Examples 6-12 above demonstrate harmony among /ɪ, a, ɔ̣, ɔ̣/ the [-ATR] set of vowels. Observe the formatives: /ɔ̀kᵑkᵑkᵑ, ɔ̣ʃí, ɔ̀zúzá, ńtájí, àʃíʃí, bùdʒó/. All

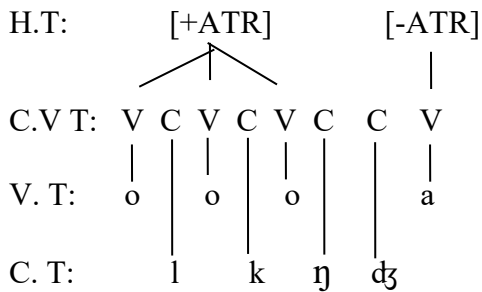




## Vowel Disharmony

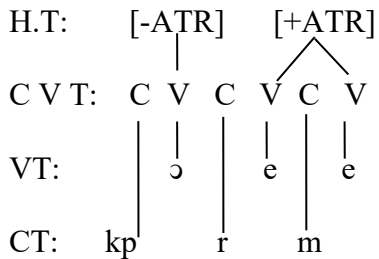
Although, vowel harmony is pervasive in Igbo, in some cases the process breaks down as /a/ tends to occur indiscriminately thereby causing seemingly violation or disharmony. Consider the analysis below:

### 1. /ólòkónṅdžà/ 'orange'



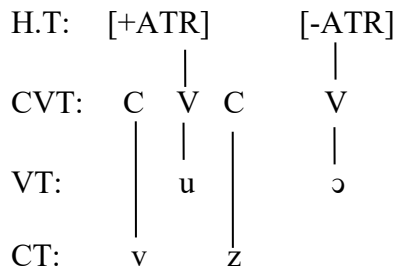
The above draw from [+ATR] /o/ and [-ATR] /a/, with /a/ at the final position

### 2. /kṗórémé/ 'burn'



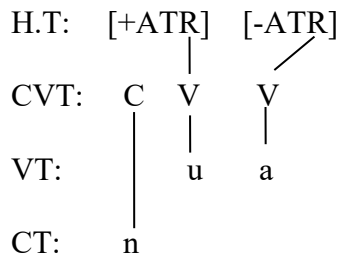
This is a formative involving [-ATR] /ɔ / and [+ATR] /e/.

3. /vùzò/ ‘carry’



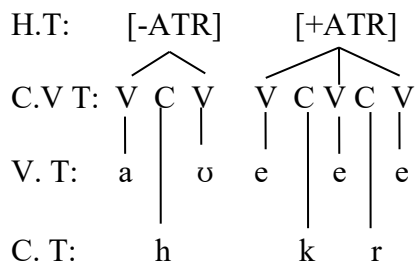
This shows a formative with [+ATR] /u/ and [-ATR /ò /.

4. /núá/ ‘push’



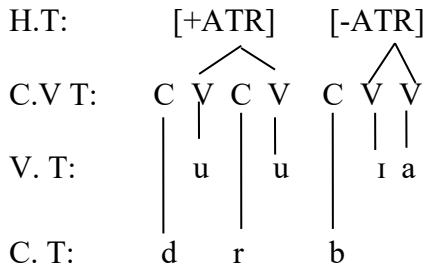
Notice [+ATR] /u/ and [-ATR] /a/ in this formative, with /a/ at final position

5./àhùékéré/ ‘groundnut’



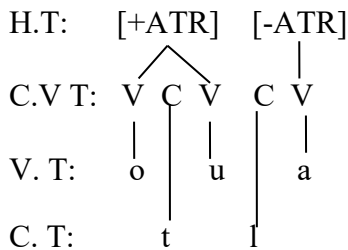
Notice [-ATR] /a/, and [+ATR] /u/&/e/ in this formative. /a/ appearing at the initial position.

6. [dùrùbià] ‘doctor’



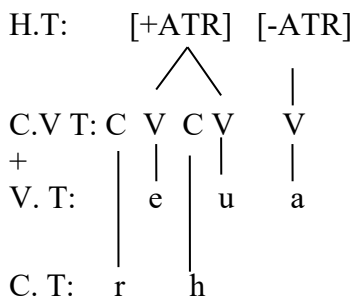
In this example, [-ATR] /a/ appears at the final position in a formative with the [+ATR] /u/.

7. [òtùlá] ‘vegina’



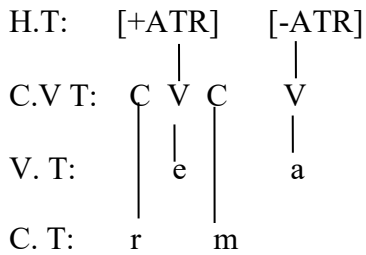
Notice the mixture of [+ATR] /o/ /u/ and [-ATR] /a/, /a/ still appearing at the word’s final position.

8. /réhuã/ ‘name’



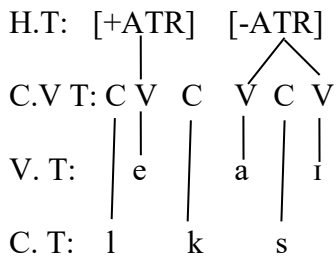
This as well shows the mixture of [+ATR] /e/, /u/ and [-ATR] /a/, /a/ at the final position.

9. /rémá/ 'breast'



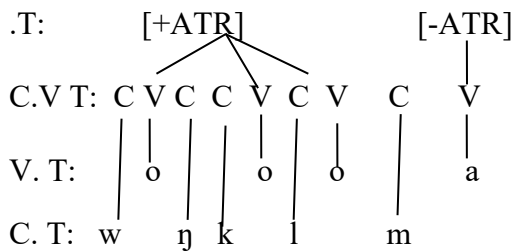
Disharmony here involves [+ATR] /e/ and [-ATR] /a/ with /a/ at the final position.

10. /lékási/ 'taste'



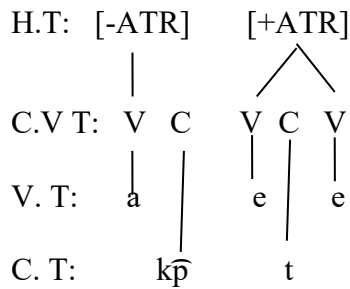
Notice [+ATR] /e/ and [-ATR] /a/ & /i/ in this formative, /a/ still at the medial position.

11. [woŋkoloma] 'cat'



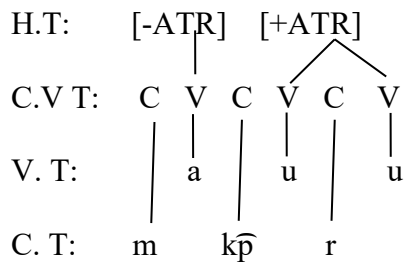
The analysis here shows [+ATR] /o/ and [-ATR] /a/, /a/ at the final position.

12. [ákpeté] ‘step’



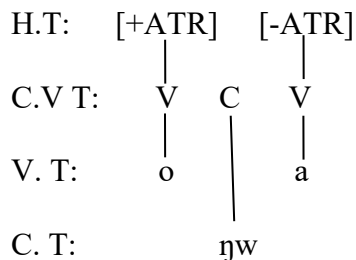
In this formative, we have [-ATR] /a/ and [+ATR] /e/ with /a/ at the initial position.

13. [mákpùrú] ‘squat’



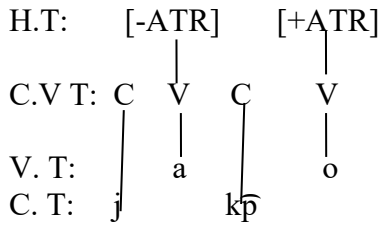
Here, there is a mixture of [+ATR] /u/ and [-ATR] /a/ with /a/ at the final position.

14. [óηwá] ‘moon’



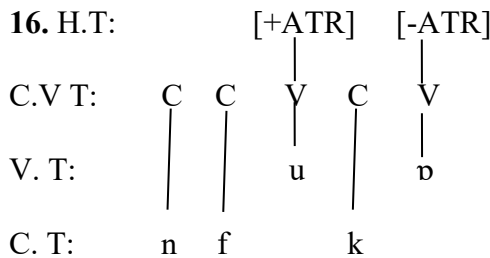
The disharmony here, is the mixture of [+ATR] /o/ and [-ATR] /a/. Notice /a/ at the final position.

15. [jákpò] ‘roll’



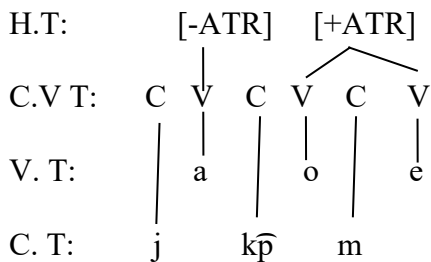
[-ATR] /a/ and [+ATR] /o/ in a formative, with /a/ at the medial position.

[ńfúkò] ‘fold’



Notice a change in this analysis, [+ATR] /u/ and [-ATR] /ɒ/ in a formative. This is not as regular as it is with /a/.

17. [jákpòmé] ‘turn over’



Also in this example, we have [-ATR] /a/ and [+ATR] /o/ & /e/ with /a/ at the medial position.

Notice that examples 1-17 above show a mixture of the two exclusive sets of the vowels in their formatives resulting in disharmony. /a/ is regularly involved. In our analysis, it appeared either at word’s initial position, medial

position or final position. Three cases of absence of /a/ in formatives involving [-ATR] /ɔ/ & [+ATR]/e/ in /kpóréme/ ‘burn’; [+ATR]/u/ & [-ATR] /ɔ/ in /vùzɔ/ ‘carry’ and [+ATR] /u/ & [-ATR] /ɔ/ in /ńfúkɔ/ ‘fold’ are observed.

All the lexical items on the wordlist for data 1 and 2 are not presented. For more information about them, you may turn to the appendix on pages 66-72.

### 4.3 Findings

Data 1:

Total number of [+ATR] harmony word:	101 (25.25%)
Total number of [-ATR] harmony words:	185 (46.25%)
Total number of compound words:	103 (25.75%)
Total number of words showing disharmony:	11 (2.75%)

101+185 = 286. 286 simple Igbo-origin words out of 400 words in the word list for data one are obedient to the vowel harmony rule. Assurance covers the 103 compound words. They are considered exceptions to the rule. The 11 candidates showing disharmony, divided by total number of 400 candidates, multiplied by 100 gives us 2.75% of the candidates of disharmony.

### **Data 2:**

Total number of [+ATR] harmony word:	114 (40.42%)
Total number of [-ATR] harmony words:	91 (32.26%)
Total number of compound words:	71 (25.18%)
Total number of words showing disharmony:	6 (2.12%)

The same applies to data 2. Compound words are considered exceptions to the rule. Their combination of the two sets of the vowels therefore, does not matter.

Out of the 282 words in the data, the total of  $114+91=205$  simple words of Igbo-origin are obedient to the rule, while 6 show disharmony. The 6 candidates violating the rule, divided by the total number of 282 candidates, multiplied by 100 gives us a total of 2.12% of the candidates of disharmony.

#### **4.4 Summary of Findings**

Considering the 11 and 6 simple words of Igbo-origin identified in data 1 and 2, one may still doubt the full operation of the Igbo vowel harmony. Well, the fact is that to every rule, there are exceptions in one way or the other. The degree of violation identified in data 1 and 2 may be considered insignificant to

refute the claims that the Igbo language operates a complete vowel harmony system. Data one above show 2.75% candidate of disharmony while data two show 2.12%. Based on our findings, the percentage of disharmony is too insignificant to matter. The degree of harmony matters more.

## CHAPTER FIVE

### 5.1 Conclusion

In this study, Igbo vowel harmony system based on [ATR] feature has been extensively discussed with more attention given to cases of disharmony which has not received adequate attention in the literature. In other to understand the operation of vowel harmony in different languages including Igbo, a “kwa” Sub-group of language, we reviewed previous works done by well-informed authors on the concept of vowel harmony.

The works of these authors reveal that Vowel Harmony Phenomenon is common among many West African Languages and that it is of two kinds – “complete” and “partial”. One of the Nigeria Languages that is said to operate partial harmony is Yoruba while Igbo operates complete Harmony based on position of the tongue root, which could be “advanced” or “retracted” during the production of vowel sounds.

Phonology of Igbo language reveals that the language has eight vowels which are mutually divided into two harmonic sets as shown below:

Set A	Set B
i	ɪ
e	ə
o	ɔ
u	ʊ

Set A is tagged [+ATR]; i.e Advanced Tongue Root while set B is tagged [-ATR], i.e Retracted Tongue Root. With the exception of compound words and borrowed words, the two distinct sets of vowels do not co- occur in simple lexical items.

Using empirical data gotten from Ikwerre and Nsukka dialects of Igbo, we examined harmony and disharmony by auto segmental phonology which enabled us show the autonomous nature of the [-ATR] feature. Auto segmental framework was propounded by Goldsmith to account for the weaknesses of generative phonology.

Based on our analysis, a greater number of Igbo simple words are obedient to the [ATR] Vowel harmony rule. This serves as a proof that the language operates a complete harmony system.

Nonetheless, the study reveals that in spite of the obedience of a greater number of the candidates to the harmony rule, there still exist violations to the

rule though, in a very low percentage. Few Igbo simple words as shown on pages 50-55 draw from the two exclusive sets of vowels in their formatives, involving /a/ in most cases as in: / a & e/; /a & u /; /a & o/; /a, o, & e /; etc. Three cases of formatives involving [ +ATR] /u/ &[-ATR] /v/; /v/& [+ATR] /e/ in absence of /a/ were identified. The percentage ( 2.75 % candidates of data 1 and 2.12% candidates of data 2) of vowel disharmony in our findings led to the conclusion that the degree of harmony matters more than that of disharmony.

## **5.2 Recommendation**

It is noticed that /a/ is usually involved in formatives showing disharmony. Insufficient time and finance could not permit us to examine this vowel. We therefore recommend that future researchers who may come across this work may do well to examine this segment to see if something phonetically different might be discovered about it.

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## APPENDIX 1

GLOSS	IKWERRE	GLOSS	IKWERRE
Head	/rísí/	Banana	/ínèrè/
Hair	/rúkérizé/	Orange	/ólókónǵà/
Eye	/áǵá/	Groundnut	/áhùèkééré/
Ear	/ńsí/	Kolanut	/éǵǵí/
Nose	/ímí/	Tobacco	/ájwòrò/
Mouth	/ónǵ/	Cotton	/wu:l/
Tooth	/ízé/	Oil palm	/mónǵbókǵwó/
Tongue	/ńrúruó/	Seed	/mǵpúróísisí/
Jaw	/ábà/ / /mǵkpó/	Grass	/ríhiára/
Chin	/ńti/	Tree	/íǵíǵí/
Beard	/róhúrónó/	Leaf	/ǵkwókwǵhǵá/
Neck	/líli/	Bark	/azóísisí/ /okpokoroísis/
Breast (female)	/réma/	Root	/égúǵúísis/
Heart	/mǵkpǵmà/	Thorn	/íǵwú/ /
Belly (External)	/róhǵ/	Stick	/ísisí/
Stomach (internal)	/ákǵpáróhǵ/	Firewood	/ǵkálábékǵwó/
Navel	/mǵkpékǵwú/	Charcoal	/rípòrò/
Back	/ázó/	Fire	/békǵwó/
Arm	/áká/	Smoke	/róǵwòrò/
Hand	/áká/	Ashes	/réto/
Nail (finger or toe)	/wúrímbáká/ / /wúrímbǵǵí/	Waterpot	/ńdúdúminí/
Buttocks	/òtùlázó/ / /íkèòtùlá/	Cooking pot	/itèwúrí/
Penis	/émǵ/	Calabash	/òbèlè/
Thigh	/róhónǵǵí/	Grinding stone	/rúǵwúǵkwǵhǵá/
Leg	/ǵǵí/	Mortar	/íbisí/ /ódówúrí/
Vagina	/éhǵ/ /òtùlá/	Knife	/ámá/
Knee	/mǵpèrǵǵí/	Hoe	/ésá/
Body	/éhi/	Axe	/égǵúǵǵú/
Skin	/ákǵpǵkpǵéhi/	Matchet	/ámáǵǵbéké/
Bone	/ǵkpǵkpǵó/	Spear (war)	/sǵǵǵám/
Blood	/òbàrà/	Bow (weapon)	/mǵǵbátá/
Saliva	/ónǵmíni/	Arrow	/ákǵwó/
Urine	/mǵǵpǵ/	Iron (metal)	/rúǵwè/
Faeces	/ńsí/	Mat	/étéré/ / /òkpó/
Food	/wúrí/	Basket	/ńkítá/
Water	/míni/	Bag	/òkpúrá/
Soup/stew	/míniwúrí/	Rope	/éríri/ /eririǵǵó/
Meat	/ánǵ/	Needle	/lǵǵǵá/
Fat	/íbu/ / /ǵto/	Thread	/érírilǵǵǵá/
Fish	/ázò/	Cloth	/íwó/
Oil	/mónǵ/	Robe/gown	/íwónwúdà/
Salt	/àrà/	Hat/cap	/èbèdè/
Wine/beer	/májá/	Shoe	/ákǵpǵkǵǵí/
Palm wine	/májáǵǵwò/	Money	/íwáí/
Yam	/ídǵí/	Door	/mǵǵbó/ /ónóǵǵbó/
Cassava	/òǵǵàrà/	Wall (of house)	/éhǵǵó/
Guinea corn	/ǵǵóró/	Room	/rímoǵó/
Millet	/milet/	House	/ǵró/
Maize	/íkǵpá/	Village	/áméìlì/ / /mǵǵbú/
Beans	/ákídi/	Town	/ámáǵǵbéké/
Pepper	/íséwèrè/	Well	/ǵmí/
Okro	/ǵkwòrò/	Smoke	/róǵwòrò/
Plantain	/ékinimà/		

**GLOSS**

Rubbish heap  
Road  
Market  
Farm  
Bush  
River  
Sea  
Boat (canoe)  
Stone  
Mountain  
Ground  
Earth (soil)  
Sand  
Dust  
Mud  
Wind  
Rain  
Sunshine  
Sun  
Moon  
Star  
Day  
Night  
Dawn  
Darkness  
Sleep  
Work  
War  
Fear  
Hunger  
Thirst  
Year  
Rainy season  
Dry season  
Song  
Story  
Word  
Lie(s)  
Thing  
Animal  
Goat  
He-goat  
Sheep  
Cow  
Horse  
Donkey  
Dog  
Cat  
Rat  
Chicken  
Cock  
Egg  
Wing  
Feather

**IKWERRE**

/m̀kp̀óm̀kp̀óròh̀ò/  
/àp̀á/ / òg̀b̀òd̀ò/  
/àh̀já/  
/ékẁú/  
/òh̀já/ / rím̀òh̀já/  
/m̀íní/ / òsímíní/  
/òsímíníkẁú/  
/òg̀b̀òm̀íní/  
/rúgẁú/  
/òlúgẁú/  
/èlì/  
/òlúẁà/  
/rízà/  
/rúzurùzù/  
/òr̀òt̀ò/  
/rúh̀èrè/  
/m̀íníòz̀ùz̀ò/  
/èhám̀òm̀ò/  
/èhám̀/  
/èŋẁá/  
/mb̀ò/  
/èsilàrèhìhìè/  
/àb̀àlì/  
/òkhéòsísì/  
/òt̀f̀íj̀írì/  
/àp̀nàrà/  
/èr̀ú/  
/òg̀ó/  
/ògẁù/  
/ẁurìòg̀òg̀ò/ / àg̀óẁurì/  
/ak̀p̀r̀ík̀p̀òb̀ék̀ẁú/  
/àh̀òà/  
/nd̀ùr̀um̀íní/  
/òk̀òt̀f̀ì/  
/èrì/  
/òt̀òt̀ò/  
/m̀kp̀òr̀úòk̀á/  
/òỳá/  
/nh̀á/  
/ònh̀já/  
/wòwù/ / óẁú/ /  
/wòmpì/  
/òẁúát̀òr̀ò/  
/èhì/  
/ìŋ̀j̀nà/  
/ìŋ̀j̀nàíẁú/  
/nh̀kítà/  
/wòŋkoloma/ / wòŋkòmm̀/  
/èk̀érèkẁú/  
/òr̀ìòẁòt̀f̀íj̀í/  
/òk̀òk̀p̀à/  
/èkẁá/  
/àk̀ànk̀ù/  
/àb̀òb̀à/

**GLOSS**

Horn  
Tail  
Leopard  
Crocodile  
Elephant  
Buffalo (bushcow)  
Monkey  
Tortoise  
Snake  
Lizard  
Crab  
Toad  
Snail  
Housefly  
Bee  
Mosquito  
Louse  
Bird  
Vulture  
Kite  
Hawk  
Guinea fowl  
Bat  
Person  
Name  
Man  
Male  
Husband  
Woman  
Female  
Wife  
Old person  
Senior/elder  
Father  
Mother  
Child  
Children  
Son  
Daughter  
Brother (elder) (man)  
Brother (younger) (for man)  
Sister (elder) (for man)  
Sister (younger) (for man)  
Mother's brother  
In-law  
Guest (stranger)  
Friend  
King  
Hunter  
Thief  
Doctor  
Watch  
Chief  
Medicine (charm)

**IKWERRE**

/mpì/  
/òd̀ò/  
/òd̀óm/ / òd̀óm̀gb̀ugeáag̀ó/  
/èbámínì/  
/èní/  
/ènimínì/  
/èŋwè/  
/mbèkwù/  
/ágwò/  
/mbèrè/  
/òt̀f̀òk̀òr̀ò/  
/áwò/  
/éq̀j̀ì/  
/rózò/  
/èh̀èh̀è/  
/ntòtà/  
/rùgwù/  
/ònonò/  
/idèlè/  
/ègwùlè/  
/òkwò/  
/òg̀àzì/  
/òsò/  
/bádò/  
/rèhòà/  
/nèrùkà/  
/nèrùkà/  
/nzi/ / /izi/  
/nèrìj̀nà/  
/nèrìj̀nà/  
/nŋwèrè/  
/òkòbádò/  
/nèsárùbádò/  
/ndá/  
/nmé/  
/nŋwò/  
/rómò/  
/ŋwòrùkà/  
/ŋwòrìj̀nà/  
/ŋwònèrùkàòkòbádò/  
/ŋwònèrùkàmàtì/  
/ŋwònèrìj̀nàòkòbádò/  
/ŋwònèrìj̀nàmàtì/  
/ŋwònènnèrùkà/  
/ògò/  
/nézè/  
/èj̀nì/  
/ézè/  
/néògbáégbè/  
/nébùzù/  
/nédùrùbìà/  
/òtùígè/  
/nézè/  
/bìsì/

Fetish (juju)	/òkàràṁíni/
Corpse	/izúbádù/
<b>GLOSS</b>	<b>IKWERRE</b>
God	/ɣí/
One	/ótù/
Two	/èbò/
Three	/ètó/
Four	/ènó/
Five	/isé/
Six	/ìsúnù/
Seven	/esáwà/
Eight	/èsátó/
Nine	/tólú/
Ten	/ríí/
Eleven	/rínùótù/
Twelve	/rínùèbò/
Thirteen	/rínùètó/
Fourteen	/rínùènó/
Fifteen	/rínùisé/
Sixteen	/rínùsiúnù/
Seventeen	/rínùèsáwò/
Eighteen	/rínùèsátó/
Nineteen	/rínùtólú/
Twenty	/ógù/
Twenty-one	/ógùnúótù/
Twenty-two	/ógùèbò/
Thirty	/ógùnùrí/
Forty	/ógùlárò/
Fifty	/ógùlárònùrí/
Sixty	/ógùètó/
Seventy	/ógùètònùrí/
Eighty	/ógùènó/
Ninety	/ógùènònùrí/
Hundred	/ógùísé/
Two hundred	/rìógù/
Four hundred	/ótùnnò/
Black	/rídḡí/
White	/ábòḡḡá/
Red	/ihíéhíéhé/
Big (great/large)	/ìbù/
Long (of stick)	/ògólógó/
Short (of stick)	/ìḡḡíḡḡí / /mkpòm̀kpò/
Old (person)	/bóká/
Old (opp new)	/òkàni/
New	/ikhé/
Wet	/rìpá/
Dry	/òkpòròkpò/
Hot (as fire)	/bèkwù/
Cold	/iyí/
Right (side)	/àkàrùkùḡḡà/
Left	/àkàékḡḡá/
Good	/òbòròḡḡá/
Bad	/bòḡḡó/
Sweet (tasty)	/òsòḡḡánónù/
Heavy	/rìpá/

Full	/ódzìrìèdḡí/
Strong	/ríkhé/
Hand	/áká/
Eat	/rí/
<b>GLOSS</b>	<b>IKWERRE</b>
Drink	/ḡù/
Swallow	/loó/
Bite	/táá/
Lick	/rá/
Taste	/lékásí/
Spit	/ḡḡó/
Vomit	/ḡwáhálá/
Urinate	/kpòm̀ḡḡó/
Defecate	/ḡnòsì/
Give birth	/òḡḡḡwò/
Die	/ḡwómá/
Stand (up)	/ḡùzòrú/
Sit (down)	/dázéréli/
Kneel	/ḡwútèmpèròḡḡí/
Lie (down)	/dàḡnèrìḡḡá/
Sleep	/zàḡnàrá / àḡnàrá/
Dream	/m̀bòrò/
Go	/zeé/
Come	/bjá/
Return	/jàhàḡḡá/
Arrive	/òḡḡádò/
Enter	/bàḡḡá/
Climb	/pèzólú/
Descend	/zìdàhò / zìdàà/
Fall	/dàrídá/
Walk	/zèéìzè/
Run	/ḡḡáèsò/
Jump	/ḡḡúèwòrò/
Fly	/h`énòzò/
Pass (by)	/h`èhòrò/
Turn round	/tòhàsá/
Follow	/sòrù/
See	/hùrò/
Hear	/nùrò/
Touch	/kpátòáká/
Know	/m̀àhḡḡá / /m̀àrò/
Remember	/ḡḡèkḡḡhíá/
Forget	/ḡḡèzùmé/
Think	/òrìrì/
Learn	/òḡḡòḡḡ/
Laugh	/rómó/
Weep	/kwáékwa/
Sing	/ḡùéerì/
Dance	/tèéerì/
Play (games)	/ìḡwòrèḡḡwù/
Fear	/òḡwù/
Greet	/bèkwùù/
Abuse	/ḡḡòḡḡó/
Fight	/òḡò/
Call	/sùkwùù/

Send	/pèzè/
Say	/kwúú/
Ask	/síkwá/
Reply	/òsòsà/
Ask (request)	/òríríó/
<b>GLOSS</b>	<b>IKWERRE</b>
Refuse	/òkwérùlé/
Like	/òsáómà/
Want (desire)	/òtùhá/
Look for	/òpíóhá/
Loose (something)	/òhùnáhóró/
Gather (things)	/òpókátá/
Get (obtain)	/òṅwéhiá/
Steal	/búzú/
Take (one thing)	/wòrú/
Carry (load)	/vùrú/ / /vùzò/
Show (something)	/gòrísí/
Give	/ṅègá/
Sell	/rèé/
Choose	/hòró/
Buy	/zòrú/
Pay (for something)	/kwúógwó/
Count	/gómá/
Divide (share out)	/kèwámá/
Finish	/òkwélé/
Catch	/nwùdé/gidé/
Shoot	/gḅáá/
Kill	/gḅúmé/
Skin (flay)	/gḅáákḗpókḗ/
Cook	/sí/
Fry	/ògḅéhá/
Roast	/hòsíá/
Pound	/sǔ/ / /téé/
Grind	/gwééhá/
Pour	/wóó/
Throw	/lòhùmé/ / /lòó/
Sweep	/záá/
Burn	/kḗrémé/
Extinguish	/kḗtḗjímé/
Plait	/gḅáá/
Weave (cloth)	/ògḅá/
Spin (thread)	/ògḅá/
Sew	/dó/
Put on (clothes)	/tírí/
Take off (clothes)	/tímé/

Wash (things)	/sómá/
Wash (body)	/hjáéhí/
Wring (clothes)	/híkómá/
Pull	/púzá/
Push	/núa/
Beat (person)	/lí/
<b>GLOSS</b>	<b>IKWERRE</b>
Beat (drum)	/kwáá/
Break (pot)	/lírámá/
Break (sticks)	/gḅádžímé/
Tear	/dókama/ / /dówámá/
Split	/kèwámá/
Pierce	/gḅápúmé/
Hoe	/esá/
Dig	/gwú/
Sow (seeds in hole)	/kḗpásí/
Plant (tuners)	/òròsí/ / /kḗpásí/
Bury	/olité/
Build (house)	/wú/
Mould	/òkḗpókḗ/
Carve (wood)	/òtòú/
Make	/òmèhá/
Tie (rope)	/kété/
Unite	/tómá/
Cover (a pot)	/kḗpúsímé/
Open (door)	/gḅámá/
Close	/gḅásímé/
Be (rotten)	/òrúró/
Stink	/ísí/
Swell (of boil)	/òzòzà/ / /òkùkò/
Blow (with mouth)	/hóú/
Blow (of wind)	/òhúhé/
Surpass	/òméká/
Dwell	/òwúrú/
Gather	/pókátá/ / /tḗkátá/
Hold	/ṅwùdé/

## APPENDIX 2

<b>GLOSS</b>	<b>OBOLLO</b>	Rib	[isisà]
Body	[éfi]	Brain	[òvòrò]
Skin	[ákpókópé]ĩ	Heart	[ékpóróbò]
Head	[ísí]	<b>GLOSS</b>	<b>OBOLLO</b>
Forehead	[ókífú]	Liver	[íkpaìkpaì]
Face	[ífú]	Muscle	[itèmjì]
Eye	[éjà]	Vein	[ák <sup>w</sup> ará]
Eyebrow	[ìkùéjà]	Breath	[úme]
Eyelid	[m̀mbùbèjà]	Saliva	[ònómĩjĩ]
pupil of eye	[éjàódzì]	nasal mucus	[imí]
Nose	[imí]	Tears	[éjàmĩjĩ]
Ear	[ítjì]	Blood	[òbàrà]
Cheek	[ákántjì]	bile, gall	[òlùlù]
Mouth	[ònò]	urine	[mámijĩ]
Lip	[égbùgbùònò]	Excrement	[ínsò]
Tongue	[iré]	Blink	[ítjìbèjà]
Tooth	[izé]	Blow Nose	[òzùzì imí]
Jaw	[àgbà]	Yawn	[újeré ]
Neck	[ólú]	Snore	[ík <sup>w</sup> óórà]
Throat	[ékpĩrĩ]	Spit	[ìgbùsò ònómĩjĩ]
Adam's Apple	[òpíjĩ kòlò]	Belch	[boò nk ò]
Hair	[édzòísì]	Hiccough	[otútù]
Beard	[áfò]	Sneeze	[úzerè]
Hair of Body	[édzòé]ĩ	Urinate	[ìjĩ ò maā m̄ òjĩ ]
Tuft	[àbàkàrà]	Fart	[ìjĩ ò éhà]
Shoulder	[ékàkà]	Tremble	[imā dzìdzìdzì]
Chest	[óbù]	Perspire	[mbà fù rù ]
Breast	[érà]	Bleed	[ìgb̄ àmejĩ ]
Side of Body	[ékàké]ĩ	Clot	[átáfjite]
Navel	[ótùbò]	Dizzy	[édzò]
Unbiblical Cord	[érirìótùbò]	Faint	[njòsò]
Stomach	[éfi]	Sleep	[órà]
Arm	[p̀rèkà]	Dream	[nrò]
Armpit	[évo]	wake up	[tèté]
elbow	[ìkpùrèkà]	See	[ifò ifé]
Wrist	[òg̀p̀rèkà]	Notice	[ìjìfò tá]
Hand	[ékà]	Watch (Look At)	[inē pā]
Fist	[ázékà]	Listen	[gèéntjì]
Palm of Hand	[imékà]	Smell	[isi]
Thumb	[ézékà]	Feel/Touch	[ibi ékà]
Fingernail	[ǹvékà]	Taste	[òsò]
Leg	[ók <sup>w</sup> ó]	Eat	[òriri]
Toe	[ùmók <sup>w</sup> ò ]	Bite	[érò]
Bone	[òkpókópù]	Chew	[òtótá]
bone marrow	[òmìòkpókópù]	Swallow	[òlùlùé]
Skull	[òkpókòrìsì]	Choke	[m̀gbàk <sup>w</sup> ó]
		lick	[nráfjì]
		Suck	[òjìjì ]

Drink [ɔ̃ŋɔ̃ŋɔ̃ ]  
 Sit [ńtúkú]  
 Rise-Up [ŋ<sup>w</sup>ùzɔ̃ɔ̃ɔ̃]  
 lie down [dʒínárɔ̃ ]  
 turn around [òkìrikírí]  
**GLOSS** **OBOLLO**  
 Walk [íɔ̃ɔ̃ ]  
 Step [ákpeté ]  
 Stumble [édá]  
 Limp [síkele]  
 Crawl [ígbeé ́]  
 Run [ɔ̃sɔ̃]  
 Swim [ígwú]  
 Jump [Imá lɪ ]  
 Wave (hands) [íhè éká]  
 point (finger) [irò éká]  
 Clap [íkòéká]  
 Slap [ímòrá]  
 Stand [k<sup>w</sup>ùrɔ̃ɔ̃ɔ̃]  
 Bend Down [fùdètè álè]  
 (be) seated [tùk<sup>w</sup>ùrú]  
 Squat [mákpùrú]  
 Kneel [sékpùrú]  
 hot (body) [é̃fòkɔ̃ ]  
 Hungry [égòò]  
 Tired [íkɔ̃ɔ̃ g<sup>w</sup>ɔ̃ g<sup>w</sup>ɔ̃ ]  
 sleepy [ín<sup>w</sup>órá]  
 Rest [izúíké]  
 Moon [òŋwá]  
 Year [afá]  
 Today [ntàná]  
 Yesterday [òpaá ]  
 Day before yesterday [á̃fɔ̃áŋ<sup>w</sup>áŋ<sup>w</sup>á]  
 Tomorrow [é̃fɪ]  
 olden times [m̃ gbɔ̃ɔ̃ɔ̃ɔ̃ ]  
 Day After Tomorrow [ŋ<sup>w</sup>áné̃fɪ]  
 Dawn [àgbák<sup>w</sup>á]  
 Sunrise [é̃nán<sup>w</sup>ɔ̃ ɔ̃f ɔ̃f ɔ̃ ]  
 Morning [ɔ̃tɔ̃tò]  
 Afternoon [é̃fùfùé]  
 sunset [m̃gbèdè]  
 Night [é̃nàsè]  
 Thing [íhè]  
 Top [élū]  
 bottom [òtùne]  
 Front of Something [í̃fíhè]  
 Back of Something [áziihè]  
 Side of Something [é̃gbèrè íhè]  
 middle [è̃t̃f̃t̃f̃i]

Edge [ɔ̃nónó]  
 Point [írùéká]/[ŋ̀gùsè]  
 Spot [ntòpò]  
 Move [gédʒé]  
 movement [òdʒíɔ̃ɔ̃ɔ̃]  
 Come [biá]  
**GLOSS** **OBOLLO**  
 Go [ɔ̃zéré]  
 Approach [ɔ̃zézóté]  
 Arrive [orùtè ]  
 Remain/ Stay [nòb́tá]  
 Leave [gbálí]  
 return/go back [jáf̃ímé]  
 Go Round [ɔ̃zéhétè ókòkòrò]  
 Enter [piélégé]  
 Come/Exit [gáfòtá]  
 Ascend [jikóru]/[gbágóru]  
 Descend [jidé tè ́ ]/[gbádátá]  
 Fall [édá]  
 swing [ŋ̀gèlèŋ̀gèlé]  
 Roll [tukpó ` jákpò]  
 Spread(Disease) [mkpásá ` ]  
 Burst [mgbásá ` ]  
 Disappear [òfùó]  
 Speed [ɔ̃sɔ̃]  
 (be) fast [lùrè̃f̃i]  
 (be) Slow [ŋ<sup>w</sup>ájɔ̃]  
 Hasten, Hurry [ɔ̃sísɔ̃ ]  
 Take [ŋ̀gáá]/[wóru]  
 Snatch, Seize [nàr̃t̃já ]  
 Catch [ɔ̃zidè ́ ]  
 Pick Up [wolítè ́ ]  
 Hold [ɔ̃zidè ́ ]  
 Raise, Lift [vùlíte]/[ pálítè]  
 Lower [wólét e]  
 Drop [dòbè]/[tòbè]  
 Throw [tòb ]  
 Shoot (verb) [gbaá]  
 Turn Over [jákpòmè]  
 Pull [dòb ]  
 Steer (verb) [jamá]  
 Overtake [ŋ̀gáfie]  
 Surround [gbàròkìrikìrì]  
 Fold [ńfúkò]  
 Coil (rope) [ńjákò]  
 Stretch [m̃gbáf̃f̃i]  
 Hit/strike [ò̃f̃f̃f̃i]  
 Beat [mmésá]

Rub	[ɔ̀fɔ̀fɔ̀á]
Scrape (verb)	[mkp̄ ɔ̀fá]
Scratch (verb)	[ɔ̀kɔ̀]
Pierce	[ɔ̀dɔ̀dɔ̀]
Tear	[ńdɔ̀wá]/[ńdɔ̀bri]
Shake	[ɔ̀jijá]
Crush	[ńriápiá]/[ńrapia]
<b>GLOSS</b>	<b>OBOLLO</b>
Create, Make	[mmébé]
Alter/Change	[mgbán <sup>w</sup> ò]
Break	[mgbá dʒi]
Destroy/ Spoil	[mmé bi]
(Be) Ruined, Spoiled	[mmé bi]
Join, Put Together	[ńdʒígbe]
accumulate	[ńjízí]
Gather	[mkpókó]
Divide/ Separate	[ókùke]
Scatter	[ńjásà]
Throwaway	[ńtájɪ]
Put, Place, Set	[ɸɪ̄ ɪ]
Keep, Save	[tɔ̀b é]
Hide	[dobè´]
Loss	[ofúfú ]
Look For	[íɸɔ̀]
Find	[áfòmá]
Drip	[ébo rɔ̀ tɔ̀]
Leak	[òííí]
Sprinkle	[íhéré]
Dry Out (cloth)	[ɔ̀kp̄ ɔ̀kp̄ ɔ̀]
Float	[okù kó]
Sink	[mmíí è]
Fade	[ńjáfá]
light (fire)	[ɸɪ̄ɔ̀kɔ̀]
Quench	[ńfòjɔ̀]
Begin	[bidó]
Beginning	[mbídó]
End	[ɔ̀g <sup>w</sup> ò]
Cease, Stop	[ńk <sup>w</sup> òsá]
Finish, Complete	[òzùrù]
Shorten	[débómé]
(be) big	[ógbórógbó]
Small	[ń <sup>w</sup> ádʒá]
Long	[ògɔ̀l ɔ̀d ɔ̀]
Short	[mkpùrikpù]
Fat	[gbàrágbà]
Thin	[gérére]
Wide	[ásá]
Narrow	[wégé wégé]

Straight	[ɔ̀kpàkpà]
Heavy	[ér <sup>w</sup> á]
Weight	[ér <sup>w</sup> á]
Light	[ɸiekè´ ɸiekè´ ]
(be) Sharp	[ńkɔ̀]
Blunt	[ɔ̀dɔ̀gàṅkɔ̀]
Rough	[ɔ̀dɔ̀gà teɪ éɪ éɪ ]
Smooth	[teɪ teɪ ré´ ]
<b>GLOSS</b>	<b>OBOLLO</b>
Hard	[òsiriké]
Soft	[nrúé´]
Dry	[kp̄ɔ̀rɔ̀ ɸkɔ̀]
Wet	[ɔ̀dɔ̀ mmíjɪ]
Slippery	[ébo rɔ̀ tɔ̀]
(be) Hot	[ɔ̀kɔ̀]
(Be) Cold	[òjɪ´ ]
(Be) Yellow	[ódò]
Dark	[ódʒì´ ]
Light	[íhè]
(Be) Able (To)	[mmé édoté]
Strong	[ike]
strength	[úmé]
Weak	[íkɔ̀g <sup>w</sup> òg <sup>w</sup> ò´ ]
Splendor, Glory	[ebù bè´ ]
Good	[ɔ̀dɔ̀jì]
Bad	[ɔ̀dɔ̀gòjì]
(be) Truth	[ezókúwú]
Beautiful	[émɔ̀r ɔ̀´ ]
Ugly	[égbúgbá]
Clean	[ɔ̀d ɔ̀fáá´ ]
Dirty	[àɸɪ̄ɸɪ̄]
Important	[mkpá]
Amusing	[ɔ̀k ɔ̀ ɔ̀fí]
New	[ɔ̀fóó´ ]
Old	[ńká]
Add	[jízé]
Decrease	[ndé bó]
Count (verb)	[ɔ̀gògò]
Arrange	[ńtɔ̀dó]
(be) equal	[ńhámòhà]
Many	[ɸitíkè]
Few	[ń <sup>w</sup> árin <sup>w</sup> á]
Half	[ékérébó]
Whole	[íhélilé]
Everybody	[ɔ̀hálilé]
Everything	[íhélilé]
Everywhere	[mmé éilé]
Nothing	[òṅ <sup>w</sup> ègò]

Street

[νόση<sup>ο</sup>κρο]

