

Chapter One

Introduction

1.1 Background to the study

Language is a means of communication, which carries with it the cultural values of its users. Researches so far conducted on the classification of Igbo dialects which include Ikekeonwu (1987) and Nwaozuzu (2008) have shown that the Igbo society is not linguistically homogenous, as the Igbo language varies in many ways among its speakers. That is why Emenanjo (1977:3) notes that “when two Igbo people – a highly individualistic people – from two contiguous towns (or òbòdò) or clans (mbà) speak, there are appreciable differences noticed by a keen observer.”

Igbo is a major language in Nigeria with a multiplicity of dialects as noted by Ugorji (2003) and these dialects differ in the areas of phonetics, phonology, morphology, syntax and semantics. Ugorji notes that the Igbo dialect communities are restive, calling for serious attention. We infer that the attention Ugorji has in mind is the study of the different dialects to find out their peculiarities. Nwachukwu (1980) had earlier suggested that an extensive and in-depth study of Igbo dialects is never the job of one man, but requires a team to tackle it from different directions at one and the same time. Following from this, a lot of studies have been done on Igbo dialects and speech varieties since 1980, which include Ikekeonwu (1987), Nwaozuzu (2008), Eme (2008) and, most recently, Ohiri-Aniche (2013). Notwithstanding positive response to the call for different dialects of Igbo to be studied, the truth remains that not all dialects and speech communities of Igbo have been fully studied, including the speech communities of Ọmambala area. Oha (2004) is of the opinion that studying the dialects not yet fully studied would help to inject from their riches into the standard Igbo as well as set parameters of the whole language.

This study discusses the phonology of Ọmambā la varieties of the Igbo language. Ọmambāla is a general name for the four Local Government Areas of Anambra East, Anambra West, Ayamèlùm and Òyi. The name is used to address the four Local Government Areas based on the Ọmambā la River, which cuts across them.

Available literature to the researcher shows that not much has been discussed on Igbo speech communities of Ọmambala area. Some scholars like Ikekeonwu (1987) and Nwaozuzu (2008), who have discussed some aspects of the Igbo dialects found in this area, hold divergent views in their groupings of the dialects. Ikekeonwu (1987) groups them as satellites of the Inland West Dialect Cluster (IWDC), while Nwaozuzu (2008) groups them as primary dialects of the East Niger Group of Dialects (ENGD). Emenanjo (2015:5-7) cites Manfredi (1991:32) as capturing the name *Ọmambāla* in his classification, where he considers it to be a dialect of Northern cluster and

which sub-divides into three, namely: Oka, Ònìchà and Àgùlerì. From that grouping, Manfredi may have, probably, used Àgùlerì to represent the varieties of Igbo in Anambra East, Anambra West, Ayamèlùm and Òyì LGAs. Some of the past studies identify the phonemes and discuss the phonological patterning of words in Omambala varieties but not in detail, while none of them discusses their phonological processes and secondary articulatory features let alone identifying their differences and similarities. Following from this fact, theories of phonology have not equally been applied in discussing the phonological processes and secondary articulation features of the speech varieties. Also, the non-availability of enough materials for Omambala varieties has hindered a contrastive study of standard Igbo (subsequently SI) and Omambala speech varieties in order to help Igbo speakers of Omambala varieties overcome the problem they have in studying Igbo in school. This is because differences in SI and different dialects and speech varieties of the language are major contributory factors to the poor performance of students in Igbo as a school subject, since the variety for teaching is the SI. The required materials for a contrastive analysis are available for SI, but not much for Omambala Igbo. All these, together with the fact that the researcher hails from the area, prompted this research.

The study focuses mainly on identifying the phonemes of Omambala Igbo, finding out their phonological patterning of words, examining their phonological processes and secondary articulation features and reclassifying/repositioning Omambala varieties within the landscape of Igbo dialectology. The study has applied theoretical framework that is eclectic to analyse the phonemes, some phonological processes and secondary articulation features identified in the study. In particular, the theories applied in this study are theory of distinctive opposition for analysing the sounds and identifying the phonemes, the generative phonology theory, autosegmental phonology model and government phonology theory for analysing the phonological processes and secondary articulation features. The phonological processes and secondary articulation features are discussed on the basis of the three parameters of intersegmental coordination in speech adapted from Eme (2008). This work will, therefore, complement the efforts of researchers who have studied other speech varieties and dialects of Igbo. The copious data from this study will be useful, especially, to applied linguists, lexicographers and linguists interested in theories of language and their applications.

1.2 Statement of the problem

Some phonological issues of the Igbo speech varieties of Omambala, such as the phonological patterning of words, phonological processes and secondary articulation features, have not been studied. Neither have theories of phonology been applied in discussing these phonological issues.

Added to this is the fact that phonological differences and similarities existing among these speech varieties were not properly considered in the classification of the Igbo dialects, thereby making the speech varieties to be wrongly placed. This study intends to rectify these problems.

Differences between the Igbo speech varieties of Ọmambala and SI is a major contributory factor to the poor performance in Igbo subject among the Ọmambā la secondary school students. The dearth of materials on Omambala Igbo has hindered a contrastive study of Igbo speech varieties of Omambala and SI. For a better understanding of SI, which is the variety taught in schools, the different dialects of the language need to be studied by linguists to enable contrastive studies of the different dialects and SI. For such a contrastive study involving Igbo speech varieties of Ọmambāla to be possible, there must be adequate materials for both SI and Ọmambā la Igbo. The required materials are available for SI, but not much for Ọmambāla Igbo. This study provides some of the needed materials for Ọmambāla speech varieties in the area of phonology.

1.3 Scope of the study

There are many aspects of phonological study as well as many dialects or speech varieties of Igbo to be studied, but this study sets out to investigate only the sound patterns Ọ mambala varieties. It is limited to identifying the phonemes, explaining the phonological patterning of words, the phonological processes and secondary articulation features of Ọmambala varieties and reclassifying/repositioning of Ọmambala varieties within the landscape of Igbo dialectology. The study is further limited to investigating only three speech communities in each of the four Local Government Areas making up Ọmambala.

1.4 Purpose of the study

The general purpose of this study is to discuss the phonology of Igbo varieties of Ọmambala. To guide the researcher, the following specific objectives have been set out, to:

- i. identify the phonemes of Ọmambala varieties.
- ii. explain the phonological patterning in Ọmambala varieties.
- iii. explain the phonological processes and secondary articulation features of Ọmambala varieties.
- iv. do a reclassification/repositioning of the Ọmambala varieties within the landscape of Igbo dialectology.

1.5 Research questions

To guide us in this study, the following questions were put forward:

- (a) What are the phonemes of the Ọmambala varieties of Igbo?
- (b) How are words phonologically patterned in Ọmambala varieties?
- (c) How do phonological processes and secondary articulation features manifest in Ọmambala varieties?
- (d) In what way can the Ọmambala varieties be reclassified/repositioned within the landscape of the Igbo dialectology?

1.6 Significance of the study

The study will be very beneficial to everyone who is interested in phonology and application of phonological theory to phonological processes and secondary articulation features of language.

- a. This study examines the speech sounds of Ọmambala varieties of Igbo using the minimal pair/set tool. Through that, the phonemes of Igbo speech varieties were identified, showing the phonemes of each of the speech communities and how they are related. It has also looked at the phonological patterning of words in Ọmambala varieties and brought out instances of their relatedness and differences. Some findings of this study in some instances differ from earlier findings of the previous studies. This study, therefore, is an improvement on the previous studies on the phonology of Ọmambala Igbo.
- b. This study explains the phonological processes and secondary articulation features of Ọmambala varieties and has through that exposed some phonological processes not captured in Igbo literature, like the syllabic nasal elision discovered in Ìfite Ọgwārì.
- c. The study has, through its reclassification/repositioning of the Igbo varieties of Ọmambala within the landscape of Igbo dialectology, made a major contribution to Igbo dialectology.
- d. Owing to the extensive materials this study will make available to Applied linguists interested in a contrastive study of different dialects of the Igbo language, on one hand, and the SI and different dialects, on another hand, this study will make the job of conducting a contrastive study of the Igbo varieties of Ọmambala and SI and between the Igbo varieties of Ọmambala and other dialects easy. With this, the problems Igbo students of Ọmambala area usually have understanding the SI used as school subject in schools will be ameliorated. Teachers will, through this material, be equipped with enough information on the differences among Ọmambala varieties and, therefore, know

how they would guide their students on language studies, particularly the Igbo language.

- e. The lexicographers working on Igbo dictionary will also find this work very useful because of copious data therein . This study will be a reference material for translation experts who might be commissioned to translate government policies and programmes for the benefit of the Ọmambāla people since the translators would be familiar with the phonological patterning of words in these speech communities.
- f. Finally, this study will serve as the researcher’s contribution to development of the Igbo language as a linguist and to exposure of the Ọmambāla varieties of the Igbo language.

1.7 Geographical area of study

This study centres on Ọmambāla area. Ọmambāla is a general name for the Igbo people of Anambra East, Anambra West, Ayamèlùm and Òyi LGAs of Anambra State, Nigeria. The name *Ọmambāla* is derived from the Ọmambā la River (young people call it *Ọmambāla* but elderly people call it *Ọmabāla*), which cuts across the four LGAs. These LGAs are offshoots of the old Anambra LGA, which had Otuocha as its headquarters. However, the people of Ayamèlùm LGA were at a time placed under Uzō Ụwaàni LGA of Enugu State . Following the protest by the people that were separated from their kith and kin, they were returned to Anambra State and placed under Òyi LGA and finally given a local government status in 1997.

There are eleven communities in Anambra East LGA. These are Àgùlerì , Enugwū Àgùlerì, Enugwū otū Àgùlerì, Ezi Àgùlùd ū, Mkpunaòdò, Ụmūèrì, Ụmūòba Anam, N̄sugbè, Naòdò, Ìkem and Ìgbá r̄iām. Anambra West LGA hasten communities made of Nzàm, Ìfite Ā n̄ Ezi Ā nam Ụmūèze Ānam (also called Ụmūziām), Ọr̄oma Ēt̄iti, Ụmūènwelum Ānam (also called Ụmūèm), Ìnoṃà, Owelle, Ụkw̄ àlà and Olumbànasà . Ayamèlùm LGA has eight communities of Anàkù , Ọm̄or, Ìfite Ọgw̄ar̄i, Ụmūòlum, Ọmàsì, Ìgbá kw̄ ū Ụmūèjè and Ụmūmboō . Finally, in Òyi LGA are five communities: N̄tèjè, Awkuzu, Ụmūry à, Ogbunikē and Nkwèlle Èzùnakā. The people of the four LGAs are predominantly fishermen and farmers. They are very hospitable.

Following the 2006 Census, the four LGAs have a population of six hundred and forty-five thousand, eight hundred and five (645, 805) persons distributed as follows:

- i. Anambra East – 152, 149 (77,539 male and 74, 610 female)
- ii. Anambra West – 167, 303 (85,833 male and 81, 470 female)
- iii. Ayamèlùm – 158, 152 (81, 065 male and 77, 087 female)
- iv. Òyi – 168, 201 (85, 694 male and 82, 507 female)

Nzàm, Ìnòmà, Owellē, Ùkw àlà and Olumbànasà in Anambra West LGA are coordinate bilingual in nature as they speak the Ìgbò and Ìgalà languages, but without equal mastery of both of them: They speak Ìgalà more fluently than Igbo because of their closeness to the Ìgalà people of Kogi State and that is their L1.

The study centres on thirteen communities, consisting of the Local Government Headquarters and two other communities in each LGA except Ayamèlùm LGA which has four speech communities because of the pilot study conducted on Ùmùòlùm speech community that enabled us establish some differences between Ùmùòlùm and some speech communities of Omambāla

A map of Anambra State showing the locations of Anambra East , Anambra West, Òyi and Ayamèlùm LGAs is given below:

Fig. 1.1 Map of Anambra State showing the Omambala area



HINT :

Highlighted Area of the Map = Omambala

Source : http://omambala.com/sites/omambala.com/files/anambra_map.jpg

1.8 Limitations of the study

Omambala area covers a large expanse of land. The researcher had problem visiting some of the selected speech communities, especially in Anambra West and Ayamelum LGAs because of their very difficult terrain. The roads linking some of the speech communities are very bad such that in most cases, the researcher had to wait till the rain subsides for a reasonable number of days to enable him ply them. This way, he was able to visit all the speech communities selected for the study, from where he collected the data used in the research.

The headquarters of Anambra West LGA, Nzam, and Ùkw àlà, which are among the speech communities investigated, speak Igala as their first language and learn Igbo as a second language in school or from speakers of other dialects of Igbo who are in their communities for agricultural and other purposes. As a result, the data collected from these communities were based on the extent of exposure of our respondents. This reason made us drop the data collected from the two communities during our analysis since it could not serve as Igbo L1 data of the speech communities.

Some of the respondents were afraid of being interviewed with a video or tape recorder. It was very difficult to convince some of them that the speech patterns being requested of them would not be used for negative motive. The researcher relentlessly tried to make them feel relaxed by telling them that the speech communities of the Omambala area had for long been neglected and that the study intends to bring their speech communities to the limelight. In order to overcome this problem, the researcher made arrangements to be always accompanied by a guide from each of the selected speech communities. These guides played a very important role in making their people feel relaxed during the interactions. This way we were able to get the required and reliable information from our respondents.

Another limitation to this study is the problem of lack of electricity or inadequate electric power supply in most of the speech communities visited, such that the researcher had problem charging the battery of the video recorder which was used at the initial stage of the interview, as the battery required constant charging. Sometimes, after interviewing three or four respondents, the battery would go down and the interview would be called off till a rescheduled date. This slowed down the pace of the interview. The researcher later got a digital audio recorder from a senior colleague in the Department, Dr. Linda Nkamigbo. This digital audio recorder has advantage over the video recorder as it uses finger battery and not a rechargeable battery and, therefore, does not require constant charging of the battery. The researcher had to go to the linguistic field with packets of battery and replaced weak batteries at will. This helped to speed up the pace of the study.

Chapter Two

Literature review

2.0 Introduction

This chapter is presented in four sections. Section one is on conceptual studies. In section two, empirical works of different scholars related to the current study are presented. Section three discusses the theoretical framework. Finally, section four is a summary of the entire review.

2.1 Conceptual studies

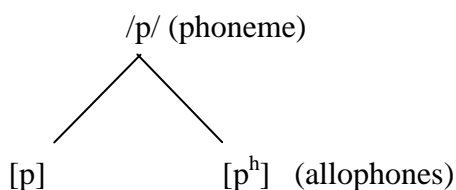
Some important concepts which manifest in this study are discussed under this section. The importance of discussing the concepts is to enable the readers to have a better and proper understanding of them.

2.1.1 Phoneme

The phoneme is an important concept in phonology. It is discussed by scholars from three different points of view: mentalistic or psychological point of view, physical or phonetic point of view and phonological or functional point of view.

The psychological point of view of phoneme is a school of thought that considers the phoneme as representing a mental image or intention and which its variants or alternate realisations are different actualisations of a single underlying ‘ideal’ or ‘intended’ sound. Kushkina (2014) presents the picture more clearly. To this scholar, the psychological view of phoneme regards the phoneme as an ideal mental image that the speaker bears in mind when pronouncing allophonic variants. He further says that the speech realisation of a target phoneme deviates from the ideal because of the peculiarities of the speaker’s articulating organs and the influence of neighbouring sounds. In line with the psychological view of the phoneme, Dirven and Verspoor (2004:113) state that “the term *phoneme* designates the more abstract unit, of which [p^h] and [p] are examples.” They further submit that [p^h] and [p] are allophones of the same phoneme /p/ in English and that they can be represented with the figure below:

Figure 2.1 A phoneme and its allophones



(Adapted from Dirven and Verspoor, 2004:113)

Jones (1957) discloses that the term ‘phoneme’ as an abstraction was developed by de Courtenay and Kruszewski during 1875 -1895. Twaddell (1935) and Harris (1951) submit that some structuralists (excluding Sapir) rejected the idea of a cognitive or psycholinguistic view of the phoneme.

The school of thought which considers the phoneme based on phonetic reality regards the phoneme as what is conveniently used to represent a number of phonetic units. Linguists who belong to this school of thought have given different definitions of the phoneme. Jones (1967) cited by Oyebade and Mbah (2008) in Mbah and Mbah (2008:32) defines the phoneme as “...a family of sounds in a given language which are related in character and are used in such a way that no other member ever occurs in word in the same phonetic context as any other member”.

The functional view of the phoneme is the thinking of the school which argues that the phoneme can satisfactorily be considered solely on the basis of its function in the system of the language. To them, the phoneme is a minimal unit that can function to distinguish meaning or an abstraction and a theoretical construct at the phonological level. Trubetzkoy (1939) belongs to this school of thought and he defines the phoneme as the sum of phonologically relevant properties of a sound. He argues that reference to psychology must be avoided in defining the phoneme since the phoneme is a linguistic concept and not a psychological concept residing in the minds of the speakers.

Mbah and Mbah (2010) summarise the views of the three schools of thought by saying that although they do not agree on any particular definition of the phoneme, they are not in conflict, but rather their views help in understanding the different aspects of the phoneme as phonetic, phonological and psychological realities.

From the foregoing, one can say that the phoneme simply refers to minimal meaningful speech sounds in language, imagined or in reality, with their different phonetic realisations; and which are in opposition with one another in language based on their semantic contents. It is the opposition among speech sounds that aroused the interest of linguists during the classical phonology period.

2.1.2 Minimal pair/set

Minimal pair/set (MP) test is a fundamental analytical tool in phonological study. Jones (1944) sees minimal pair (subsequently MP) in phonology as pair of words or phrases in a particular language that differ in only one element, such as phoneme, toneme or chroneme and have distinct meaning. This is to say that a MP can only differ in sound segment, tone, or chroneme. To

Swadesh (1934), the MP is an essential tool in the discovery process, arrived at by substitution or commutation tests. This definition does not give a clear view of what a MP is.

Ladefoged (1975) and Hyman (1976) share the same view on the concept of MP. The two scholars contend that the MP refers to a set of words in which each differs from all others by only one sound. They differ from Jones (1944) by Jones' inclusion of phrases in the pairing.

In the opinion of Barlow and Gierut (2002:58), "A minimal pair is a set of words that differ by a single phoneme whereby that difference is enough to signal a change in meaning." Dirven and Verspoor (2004:114) submit that 'a simple way of deciding whether two sounds in a language belong to one phoneme or to two different phonemes is to look for minimal pairs.' They regard MP as a pair of words that are identical in all respects except for the sounds in question. They illustrate with the words *pat*, *bat* and conclude that the pair confirms that /p/ and /b/ constitute separate phonemes in English, while the impossibility of a contrast between [sp^hai] and [spai], or between [p^hai] and [pai] confirms that [p^h] and [p] do not belong to different phonemes in English (p.114).

The definitions of 'minimal pair' given by Ladefoged (1975), Hyman (1976), Barlow & Gierut (2002), and Dirven & Verspoor (2004) are very succinct. They give a clearer picture of what is a MP and one can easily deduce from these scholars' view that MP is the juxtaposition of related words of a language to find out the sounds of the language that occur in the same environment, thereby giving different meanings to the words.

Ladefoged (1975) goes further to illustrate how to determine if two words form a MP. In his opinion, the words, the unit of analysis, should rhyme apart from the segments of the MP. He argues that where two words do not rhyme at segmental tier, they cannot form MP. Based on this view, Ladefoged considers the examples presented below as not constituting MPs since they have more than one segment that set them apart:

1. (a) key (b) my
 bee nigh

Mbah and Mbah (2010:154), however, have different view. They argue that 'the writing system of a language is used to determine MPs only when the written form coincides with the spoken form as in [pet, bet].' They further illustrate with /k/ sound in *knee* and *gh* in *nigh*, pointing out that because no one produces /k/ in *knee*, it cannot be used to judge whether MP exists in a set of words or not. Mbah and Mbah also contend that since the glide ~~h~~ appears in the pronunciation of the word *nigh* and not *gh*, the glide ~~h~~ should equally be considered in its

forming of a MP or not rather than *gh*. This study agrees with Mbah and Mbah's (2010) view because in MP test, what are considered very vital are sounds and not the letter symbols of the language.

Two levels of analysis have been identified for generating MP each of which Mbah and Mbah (2010) note must be considered before any meaningful contrast is arrived at. The two levels are the prosodic and the segmental levels (Pike, 1948; Hyman, 1976; Nartey and Arishi, 1989; Essien, 1990; Iwara, 1995; Roach, 2009; Mbah and Mbah, 2010). Mbah and Mbah note that the phenomenon of tonal MP is rampant in African languages. This means that there is equally MP for tone contrast in tonal languages and that tone distinguishes meaning in tonal languages. Some scholars such as Pike (1948) and Roach (2009) refer to this as a contrast involving the tonemes. Based on the two tiers identified for generating the MPs, Pike (1948) concludes that contrastive lexical units of sounds are phonemes, while contrastive sound units especially in tone languages are tonemes. He defines a tone language as a language that has a lexically significant contrastive but relative pitch on each syllable.

The MP is used to refer to a simple binary opposition, but opposition involving more than two items is referred to as the minimal set (MS). To Ladefoged (2006), the MS is where a number of words differ from each other in terms of one phone in a particular position in the words. Ladefoged (2001) had earlier shown that the vowels /a/, /e/, /i/, /o/ and /u/ of Swahili are distinct by the following set of words: pata 'hinge'

2. peta 'bend'
- pita 'pass'
- pota 'twist'
- puta 'thrash'

Fromkin and Rodman (1993) consider it not always straightforward to establish such set as it may require very complex study of multiple oppositions. It is sometimes difficult to establish MP. Phonologists have provided a way of rigging out of such difficulty and that is the use of "near minimal pair" (Wells, 1982).

Some sounds have different realisations. These different realisations are called allophones. The choice of either of the allophones is sometimes conditioned by context. This means that the occurrence of one phoneme is predictable when compared to the other and the phonemes at such instance are said to be in complementary distribution (Birch, 2002). Dirven and Verspoor (2004) see complementary distribution as referring to where one allophone occurs exclusively in one environment (context), another allophone occurs exclusively in another environment. In the

opinion of Oyebade and Mbah (2008), a pair of sounds are said to be in complementary distribution when they occur in mutually exclusive environments. Continuing they say that “sounds occur in mutually exclusive environments when each sound occurs in a fixed set of contexts in which no other phonetically related sound can occur” (p.33). To Mbah and Mbah (2010:78), “if two phonetically different sounds are restricted to different environments in relation to other sounds, their differences are accounted for and ruled out by their distribution”. They conclude that the different sounds are phonemically not distinctive but are in complementary distribution.

Dirven and Verspoor (2004), however, disclose that when any of the allophones is selected without affecting the meaning of an utterance, the sounds are said to be in free variation (subsequently FV). Mbah and Mbah (2010) and Bittner (2013) collaborate Dirven and Verspoor; Mbah and Mbah succinctly describe FV as that which involves the occurrence of two speech sounds that are phonetically different in the same environment without contrasting meaning; while Bittner (2013) presents FV as a phenomenon in linguistics that accounts for two or more sounds or forms that appear in the same environment with neither a change in meaning nor being regarded as incorrect by native speakers. Durand (1990:8) had earlier disclosed that FV occurs “if two phones can be substituted for each other in the same environment without destroying the identity of the lexical item under consideration.” The word *identity* as used by this scholar refers to *meaning*.

From the foregoing, it is evident that two types of allophones are recognized, based on whether there is a contextual determinant of the place of occurrence of a specific allophone of a phoneme or the speaker can conveniently choose any of the allophones in whichever context; allophones in complementary distribution (CD) and the allophones in free variation (FV).

2.1.3 Phonological processes and secondary articulation features

Dirven and Verspoor (2004) discuss phonological processes and secondary articulation features in terms of sounds in context. They consider them as involving the assertion of influence on sounds such that they undergo some changes from their original state when words are combined with other words. As pointed out by Mbah and Mbah (2010), certain phonological processes tend to modify or change the nature of speech sounds involved during speech, while secondary articulation is the superimposition of some additional articulation on the primary articulation. In the opinion of Schane (1973), phonological processes refers to all changes that take place when morphemes are combined to form words and the segments of neighbouring morphemes are juxtaposed. Eme (2008) considers phonological processes and secondary articulation features to be the effects of intersegmental co-ordination in speech where sounds of a language are brought

together for the formation of meaningful utterances in normal flowing speech thereby causing the sounds to change to something different from what they would ordinarily have been if they were to be pronounced in isolation. According to Oyebade (2001:61), phonological processes are “sound modifications motivated by the need to maintain euphony in language or to rectify violation of well-formedness constraints in the production of utterances.” What this definition suggests is that phonological processes are products of language-specific well-formedness constraints; they are also context-dependent. This study agrees with Oyebade’s view. Alozie (2015) and Emenanjo (2015) buttress this issue of context in their separate definitions. Alozie (2015), for example, defines phonological processes as changes which speech sounds undergo when they occur in company of other sounds as a result of the influence of adjacent segment or their environment of occurrence. Emenanjo (2015:71) sees phonological processes as “states of being that come into reality when certain sounds come together in certain environments, during speech.”

One can say that the scholars agree in their views on the phonological processes and secondary articulation features. However, two things delight the researcher in Emenanjo’s definition and they are; that there are “states of being” (referring to the various sounds of a language and the way they are ordinarily produced) and these “states of being” become something in “reality” (referring to their actual real production different from their original state) when they occur together in certain context during speech. It could be inferred from Mbah & Mbah (2010) that both phonological processes and secondary articulation features involve speech sounds coming together in speech. Their major difference is that in the former, the way speech sounds are produced is modified but in the latter, a different articulation is superimposed on the primary articulation of speech sounds.

Having generally discussed the phonological processes and secondary articulation features, let us now look at some of these processes and features. They include: aspiration, lengthening of sounds, vowel reduction, devoicing of sounds, lenition, labialisation, palatalisation and homorganicity of nasals, nasalisation and double articulation, liaison, neutralization of phonotactic constraints, assimilation and elision.

Crystal (2008:38) defines aspiration as the “audible breath which may accompany a sound articulation when certain types of plosive consonants are released.” What this definition suggests is that there is a puff of air that follows the production of a sound that is aspirated. Eme (2008) adopts the definition by Ladefoged (1982:47) that it is ‘a period of voicelessness after the articulation of stop and before the start of voicing for the vowel or a voiced sound’.

Lengthening of sounds, to Eme (2008), is a process by which some sounds are made to be longer in duration than they ordinarily are. She observes that it is only vowels and syllabic nasals that could be lengthened and considers sound lengthening as a technique employed by speakers while searching for the correct word, hesitating or pausing in order to change line of thought in the discussion or just as a mere speech mannerism of a particular individual. These instances of lengthening are inexhaustive. Lengthening can also result from two identical vowels occupying a contiguous position. According to Eme, the lengthened sound, in some cases, fails to retain a level pitch throughout its duration thereby leading to a contour tone, which could be either a low rising contour tone [˘] or a high falling contour tone [ˆ]. She identifies the high falling tone as an evidence of a lengthened vowel or an evidence of two identical vowels with contrasting high and low pitches. In her opinion, the fact of the two vowels being together explains the longer duration of the vowels when compared with a single vowel. She, therefore, considers the use of contour tone in such instances as a convenient way of representing these two identical vowels.

Vowel reduction is described by Clark and Yallop (1995) as a direct outcome of target undershoots during the production of the vowel. In the opinion of Eme (2008), it is a process by which a vowel loses the articulatory maneuvers involved in its production and so it is realised as an indistinct vowel represented by a schwa [ə]. In relation to English, Dirven and Verspoor (2004) define vowel reduction as the process in which unstressed vowels typically lose their distinctive quality to take on the quality of the schwa vowel. From these definitions, one can conclude that vowel reduction is debasement of the quality of a vowel and that the debased vowel usually becomes schwa [ə].

The weakening (lenition) and strengthening (fortition) of consonants is an articulatory process that does not lead to a loss of segment, but instead, is used to bring about dialectal variation, whereby sometimes, where one dialect uses a stronger consonant, another one uses a weaker one (Eme, 2008). Eme observes that in Igbo, the closer the articulators during the production of a consonant, the stronger the consonant produced and the more open the articulators, the weaker the consonant (p. 37&38) e.g.

3 a.	S.I.	Akpo man		}	lenition
	[a [↓] bó]	[a [↓] wó]	‘am’		
	[nsògbu]	[nsòwu]	‘problem’		
b.	S.I.	Amaezụ		}	fortition
	[dʒi]	[sì]	‘your’		

Schane (1973) sees labialisation as a secondary modification whereby the lip position of a rounded vowel induces a secondary articulation onto the consonant. Labialisation is the instance of lip rounding superimposed on an unrounded segment because of the influence of a rounded sound segment in its environment (Eme, 2008; Mbah and Mbah, 2010). Labialisation, to Emenanjo (2015:99), refers to “secondary articulation involving any noticeable lip rounding accompanying any primary sound.” Eme and Mbah & Mbah’s view of labialisation seems more succinct. Emenanjo’s view would require the knowledge of the sound segment that is the primary sound. What is not clear in all these definitions of labialisation is the direction of the inducement. Eme (2008) submits that labialisation is a natural phenomenon, while Mbah and Mbah (2010) disclose that phonetically, the symbol used to denote labialisation is a raised [ʷ] on the labialised phoneme.

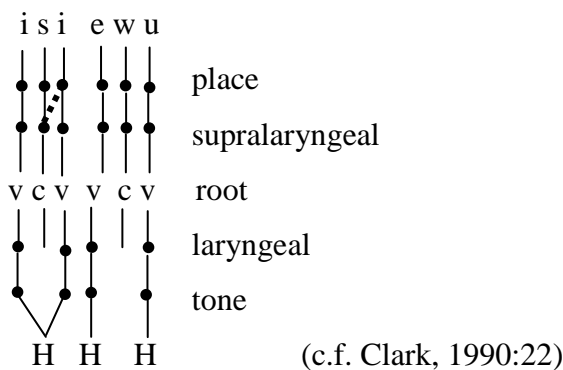
For palatalisation, Dirven and Verspoor (2004) describe it as a common process in which the palatal glide [j] causes a preceding obstruent to be articulated in the palatal region. What this suggests is that palatalisation is a secondary articulation feature involving only the obstruents. Dirven and Verspoor point out that palatalisation can occur across word boundaries or within a word. This is not far from Schane (1973:50) where he defines palatalisation as a secondary modification whereby the tongue position of a front vowel is superimposed on an adjacent consonant. To Eme (2008:62), palatalisation is simply “the raising of the front part of the tongue towards the hard palate during the production of a sound that does not primarily involve such a raising.” Crystal (2008) aligns with this definition. Crystal (2008:347) is, however, clearer by describing palatalisation as referring to “any articulation involving a movement of the tongue towards the hard palate.” In their submission, Mbah and Mbah (2010) add that it is the raising that is responsible for the i-colouring perceived during palatalisation. Dirven and Verspoor’s view of palatalisation clearly shows how palatalisation takes place as well as the sound segment that is usually affected. Following from this, Eme (2008) rightly observes that in Igbo, palatalisation usually occurs to a consonant when it precedes the Igbo high front vowel [i] in its anticipation e.g. [kʰiːtáà] ‘now’.

Emenanjo (1987) and Katamba (1993) had earlier presented palatalisation and labialisation as involving the vowels. They disclose that in speech, especially in fast speech, if a high vowel precedes another vowel, especially at juncture, the high vowel turns into a semi-vowel (palatalisation or labialisation). In the opinion of Emenanjo (1987), the semivowels ‘y’ or ‘w’ do not behave alike in Igbo. He says that while ‘y’ is an exponent of an underlying *y* ‘w’ is an additive feature, a secondary articulation of labialisation to the preceding consonant (pp. 3-4). Emenanjo (2015) maintains this position. This is contrary to Katamba’s (1993) finding about Luganda, that when the first of two adjacent vowels is high, it becomes a glide [y] or [w] without

necessarily affecting the tone (p.155). Utulu (2006) agrees with Katamba (1993) and adds that it is a common feature in many languages to convert the front high vowels and their back counterparts to semivowels. If Emananjo (1987; 2015), Katamba (1993) and Utulu (2006) are correct in their opinion that labialisation and palatalisation involve the conversion of the high vowels to semivowel when they are followed by another vowel, then this kind of secondary articulatory feature cannot be described as being anticipatory. Sometimes, a high vowel does not have another vowel occupying a contiguous position with it but the preceding consonant is still produced with secondary articulation feature. This study agrees with the view that labialisation and palatalisation are anticipatory features.

Eme (2008) agrees with Clark’s (1990) view that the linking of the vowel *i* or *ɨ* with the preceding consonant blocks vowel assimilation in line with Uniform Applicability Condition (UAC) of Schein and Steriade (1986). She discloses that under the Uniform Applicability Condition, a rule *R* may not alter the contents of a phonological unit α unless α satisfies the structural description of *R* in all its linkages. Clark (1990) maintains that under the term of the UAC, the vowel [i] remains present in the surface output as it cannot undergo vowel assimilation; its linkages (the link to the consonant [s]) fails to satisfy the structural description of the rule, which requires linkage to [-CONS].

Fig. 2.2: Analysis of *i* or *ɨ* linkage to the preceding consonant in Igbo using the UAC of Schein and Steriade (1986)



This study adopts Eme (2008) and Mbah and Mbah’s (2010) views on labialisation and Dirven and Verpoor’s (2004) view on palatalisation. It differs from Eme on her argument that the phenomenon of linking the vowel *i* or *ɨ* with the preceding consonant blocks vowel assimilation. It contends that in anticipation, the consonant preceding the high vowel becomes palatalized or labialized, as the case may be, while the high vowel assimilates the following vowel. The assimilation process is not automatic, as it is determined by tone as our data on palatalisation and labialisation in chapter four show.

Homorganic nasal assimilation, to Eme (2008), occurs as a result of the urge for economy during the articulation of the sounds. We agree with this description because of the spontaneous copying of some features of the next segment by the syllabic nasal *N* for easy articulation and flow of speech rather than being realised based on its original state. This is equally an example of partial assimilation.

Nasal assimilation occurs when one segment takes on the nasality of a neighbouring segment (Dirven & Verspoor, 2004:120). Eme (2008) describes nasalisation as a situation where the velum is lowered to allow the airstream to flow out through the nasal cavity during the production of a nasal sound and still remains in this position for the production of a following non-nasal sound. The airstream now flows out through the nasal cavity as well as through the oral cavity, thereby causing the sound to be nasalised. In her opinion, this phenomenon is language universal and a common feature among the Igbo dialects. The difference between Dirven and Verspoor (2004) and Eme's (2008) views on nasalization is that while in the former, only one segment (whether in front of or after) can be nasalised , such that it could be perseverative or anticipatory , as in *nnà* [ñnà] 'father' in Igbo or can't [kãnt] in English; in the latter, it is only perseverative e.g. *m̃madù* [m̃mãdù] 'person'. The former could be described as being general and the latter is specific. Essien (1979) earlier disclosed that nasalisation takes place within a syllable and does not occur across syllable boundaries. The reason for this could be because a syllable is usually made of a vowel or a consonant followed by a vowel and by the time the vowel of a syllable is produced, the articulators would be ready for articulation of the next syllable. Nasalisation is different from nasal consonant. Emenanjo (2015) distinguishes nasal consonant from nasalisation and says that in the nasal consonant, there is a complete closure in the mouth and thus the air in the mouth can only escape through the nose, but in nasalisation, the air in the mouth escapes through both the mouth and nose following the lowering of the velum. This study agrees with this distinction based on two premises: firstly, the feature [+nasal] is one of the parameters used for describing a consonant sound whose production involves a complete closure of the oral cavity and the airstream goes out through the nasal cavity only unlike consonants where the nasal cavity is completely closed and the airstream goes out through the oral cavity only; secondly, nasalisation is a partial assimilatory process where the sound segment involved does not completely copy all the features of the sound segment that influences it e.g. *anù* [añù] 'meat'.

Eme (2008) defines double articulation as the production of a sound with two simultaneous strictures of equal importance, which perceptually tends to have the quality of a combination of two sounds merged together. She submits that these sounds are phonemic in Igbo. She also points out that it is a natural phenomenon that during the co-articulation of consonants produced with

double articulation, there is perseveration in voicing following the fact that every sound produced with double articulation must be realised as a single sound segment, such that it is either voiced or voiceless.

Eme (2008:84) succinctly defines liaison as a phonological process involving the introduction of a sound in between two words to serve as a connecting link between the two words. She opines that this segment should not be confused with the epenthetic vowel she culled from Clark (1989) and Ogwueleka (1994) or the epenthetic tone she culled from Mbah (2005). Eme asserts that in Igbo, liaison is more prevalent in relaxed speech than during very rapid speech and that the segment introduced during liaison could be said to be an optional element. She points out that Emenanjo (1978) may have had liaison in mind in his discussion of vowel reduplication, which he gives examples as:

- | | | |
|----|---------------|-------------------|
| 4. | osụụ ji | ‘pounder of yams’ |
| | ògbaā tùm tùm | ‘motor cyclist’ |

Eme (2008) has described neutralization of phonotactic constraint as an aspect of intersegmental coordination. Some of the phonotactic constraints which have been identified in Igbo by Ikekeonwu, Ezikeojiaku, Ubanị and Ugojị (1999) are: that the high front vowels ‘i’ or ‘ī’ do not occur after the labial and labialised velar sounds [kp gb kw gw] to form a CV word like *kpi *gbi *kwi *gwi, and they cannot follow k nw ny w to form *ki, *nwi, *nyi, *wi; cannot come after m, nw, ny to form words like *nɔ, *nwɔ, *nyɔ. This is considered an over generalization as Igbo has words like nyị (*nwa*) ‘push (baby)’, wị (*ara*) ‘mad’, nyi ‘climb/rise’, kpị (*m̄p̄ ìkp̄*) ‘stingy’.

Assimilation is a phonological process where ‘a segment takes on features of a neighbouring segment’ (Schane, 1973:49). Napoli (1996) and Dirven and Verspoor (2004) agree with Schane (1973). Napoli (1996) points out that assimilation arises when a sound changes to become similar to the nearby sound. To Dirven and Verspoor (2004), assimilation is a phonological process involving a sound causing an adjacent sound to be “more similar” to itself. They identify two kinds of assimilation – progressive assimilation and retrogressive assimilation and note that retrogressive assimilations are frequent in English. These definitions are clear in their view that the sound influenced and the sound that influences it must be at contiguous position. What they have not made clear is the level of influence an adjacent segment asserts on the segment so influenced. Eme (2008) fills this gap. She succinctly describes assimilation as an instance where a sound becomes influenced by another sound segment such that the sound so influenced becomes, either fully or partially, like the segment that influences it. She says that complete assimilation

may involve vowel to vowel or consonant to consonant, but that vowel to vowel assimilation is more prevalent in Igbo. Eme (2008) attributes it to the fact that consonants do not end words in the Igbo language. To Betancourty (2009), assimilation is a common phonological process by which the phonetics of a speech segment becomes more like that of another segment in a word or at a word boundary. The flavour of this definition is in its disclosure that assimilation could take place within a word or at a word boundary.

Emenanjo (1987; 2015) differs from Eme (2008) on kinds of vowel assimilation in Igbo. Emenanjo (1987) identifies three kinds of vowel assimilation – complete assimilation, conditional assimilation and partial assimilation, while Emenanjo (2015) identifies complete assimilation, coalescent assimilation and conditional assimilation. Emenanjo sees vowel assimilation as a process whereby two dissimilar vowels on either sides of the juncture may become similar in quality in rapid speech not minding the tongue position, tongue root position or size of the pharynx. He is of the opinion that vowel assimilation occurs in Igbo without vowel elision and/ or tone assimilation (Emenanjo, 1987; 2015). This study disagrees with Emenanjo (1987) that vowel assimilation does not involve vowel elision. It also contends that there is tone assimilation, especially before syllable elision as we shall see later in our data on syllable elision. Emenanjo (1987, 2015) also states that complete assimilation may be regressive or progressive. He points out that in regressive assimilation, the first vowel, V₁, shares the same quality as the following vowel, V₂. He represented it formally thus: V₁ + V₂ → V₂V₂ if V₁ is /a, e, ɔ/ (Emenanjo, 2015:81). Emenanjo notes that each of the vowels retains its duration and expected tone. The scholar illustrates with the following examples:

5. ùde + isi → ùdiisī
 ‘cream’ ‘head’ ‘hair cream’
 ahà + ihe → ahìihē
 ‘name’ ‘thing’ ‘name of a thing’
 egō + ewu → egeewū
 ‘money’ ‘goat’ ‘money for goat’
 ɸ̀ ɸ + ubì → ɸ̀lùubì
 ‘house’ ‘farm’ ‘farm house’

(adapted from Emenanjo, 1987; 2015)

According to Emenanjo (1987; 2015), progressive assimilation occurs when the final vowel of the first word is 3rd person singular subject pronoun and the V₂ is in the verb -bù ‘be identified as’; ‘be’ such that V₁ + V₂ → V₁V₂. He illustrates with the following examples:

- 6 a. ɔ + b̀u → ɔ̄ ‘it is’
 b. mà ɔ̀b̀u → mòòò

Emenanjo (2015) formally captures the general vowel assimilation with the P-rule thus:

Rule 1: Emenanjo’s P-rule analysis of general vowel assimilation in Igbo

$$\left[\begin{array}{l} + \text{syll} \\ + \text{high} \end{array} \right] \rightarrow \left[\begin{array}{l} + \text{syll} \\ + \text{high} \\ + \text{low} \end{array} \right] / - \left[\begin{array}{l} + \text{syll} \\ + \text{high} \end{array} \right]$$

From Emenanjo’s illustrations on complete assimilation, it is observed that regressive assimilation at word boundary sometimes involves weakening of tones of the second word e.g. ùde +isi→ùdiisī ‘hair pomade’, strengthening of tones of the first word or tone metathesis e.g. eḡō+ewu→egeewū, while progressive assimilation does not affect tones.

Emenanjo (1987; 2015) says that in conditional vowel assimilation, if the final vowel of the first word is u or ɔ and the speed of the utterance is rapid, the u or ɔ assimilates to the first vowel of the second word, otherwise, there is no assimilation

- 7 a. okwu + eḡō → okweeḡō or okwueḡō
 b. ‘talk’ ‘money’ ‘talk about money’
 c. ɔn̄u + an̄u → ɔnaan̄u or ɔn̄an̄u
 d. ‘mouth’ ‘animal’ ‘mouth of animal’

Eme (2008) states that in partial assimilation, the assimilated segment drops part of its phonetic qualities to take up part of the phonetic qualities of the segment that influences it. She also says that partial assimilation that occurs across word boundaries during connected speech usually involves a syllabic nasal and a consonant. This study agrees with Eme and further notes that the consonant involved could either be oral or nasal.

For coalescent assimilation, Schane (1973:54-56) presents three different kinds of coalescent assimilation, namely: consonant coalescence, vowel coalescence and coalescence of vowel and consonant. The scholar says that consonant coalescence involves two contiguous consonants being replaced by a single one which shares features of the two original ones. He exemplifies with Korean, where he observes that whenever a noncontinuant and *h* are contiguous they are replaced by an aspirated noncontinuant, and French, where Latin geminates were degeminated, making two identical consonants to often coalesce to a single one e.g.

8. Korean: a. nak ‘fall’ + hwa ‘flower’ → nak^hwa ‘fallen flower’
 b. kup ‘bend’ + hita ‘(causative suffix)’ → kup^hita ‘to bend’
 c. noh ‘to lay’ + ta ‘(verb ending)’ → not^ha ‘to lay (eggs)’

9. **Latin** **French**
 a. terra → tɛrə ‘land’
 b. bella → bɛlə ‘beautiful (feminine)’
 c. gutta → gutə ‘drop’

For vowel coalescence, Schane sees it as an instance where vowel cluster is reduced to a single vowel in a language. He illustrates with Romance language where Latin *ai* and *au* become *e* and *o* respectively with the resulting vowel having the same backness and rounding as the original high vowel e.g.

10. **Latin** **Romance**
 a. aidifikium edifisio ‘building’
 b. aik^wálem eguál ‘even’
 c. páupere póbre ‘poor’

Schane uses French as an example of language with vowel and consonant coalescence. He discloses that in this language, a vowel and a nasal consonant coalesce to a nasalised vowel whenever the nasal consonant is followed by a consonant or a pause e.g.

- 11 a. bɔ̃ncɛr ‘happiness’ bɔ̃tɛ ‘goodness’
 b. tɔ̃nalitɛ ‘tonality’ tɔ̃ ‘tone’
 c. plɛnɔ̃ ‘full (feminine)’ plɛ̃ ‘full (masculine)’

Oyebade (1998) succinctly points out that when two contiguous segments at the underlying representation disappear at the surface phonetic level to be replaced by a third segment which shares features from both segments that disappeared, it is said that the two contiguous segments have coalesced into one. Eme (2008) agrees with schane (1973) and Oyebade (1998) where she considered coalescent assimilation as a case of two adjacent segments influencing each other such that they emerge to be one segment that shares certain phonetic qualities with the parent sounds. Below are examples from Eme (2008:115):

12. Akpo: a. kwete ↓yá → /kweti ↓é/ ‘consent’
 b. ɔ̀gò ya → /ɔ̀gì a/ ‘his/ her in-law’

Adazi Nnukwu:	a.	be ja	→	/bi e/	‘his/ her home’
	b.	gwa ↓já	→	/g ^w I ↓á/	‘tell her/ him’
Ezza:	a.	kpata ↓já	→	/kpatri ↓á/	‘the right/ correct one’
	b.	ufê ja	→	/ufî e/	‘everything to his satisfaction’

To Emenanjo (1987:24), coalescent vowel assimilation can occur in two forms in Igbo. He states that; $V_1 + V_2 \rightarrow yV_2$ if V_1 is either *i* or *ĩ* and V_2 is any vowel of the harmony set as *i* or *ĩ* and is on the same tone level (p.24).

13	a.	isi	+	ewu	→	isyewū
	b.	‘head’		‘goat’		‘goat head’
	c.	ùḍ rĩ	+	ṽ ò	→	ùḍ ryṽ ò
	d.	‘type’		‘house’		‘type of house’

Emenanjo also states that $V_1 + Ya \rightarrow (i) iye$ if V_1 is a wide vowel, or $(ii)ya$ if V_1 is a narrow vowel.

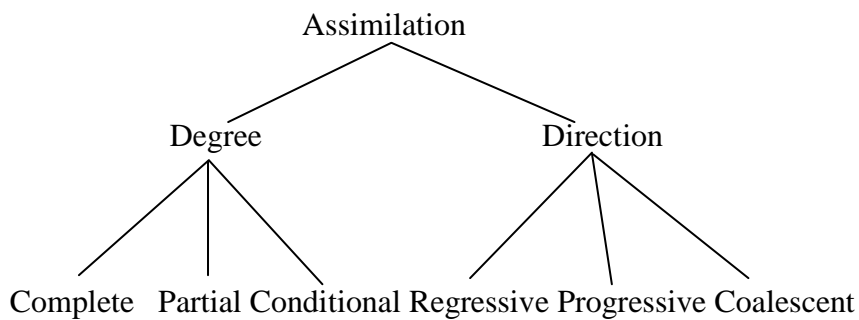
14 (a)	i.	imi	+	ya	→	imijē
		‘nose’		‘his’		‘his nose’
	ii.	ntĩ	+	ya	→	ntĩja
		‘ear’		‘his’		‘his ear’
(b)	i.	ike	+	ya	→	ikijē
		‘strength’		‘his’		‘his strength’
	ii.	egō	+	ya	→	egijē
		‘money’		‘his’		‘his money’
	iii.	aka	+	ya	→	akijā
		‘hand’		‘his’		‘his hand’
	iv.	afṽ	+	ya	→	afijā
		‘belly’		‘his’		‘his belly’

Emenanjo (2015) maintains his earlier position on coalescent assimilation in Igbo. This study holds a different view from Emenanjo (2015) on what he presents as the first form of coalescent assimilation in (13) as well as the first part of his second form of coalescent assimilation in (14a). It considers Emenanjo’s first form of coalescent assimilation in Igbo as rather a case of high vowel turning into a semi-vowel when contiguous with another vowel at juncture, while the first part of his second form is a case of firstly, elision of the consonant of the pronoun *ye* where the final

vowel of the first word has the features [+high], [-back], [+ or -ATR] or [+high], [+back], [+ATR]; where the final vowel of the first word is any other vowel, it will ‘agree’ with the consonant of the pronoun *ye* to coalesce to *i/i* depending on the vowel harmony group of the vowel affected by the coalescent assimilation. The coalesced sound segment will in turn ‘force’ the remaining vowel of the pronoun to agree in harmony with it. This instance can also be treated as partial progressive assimilation.

From the foregoing discussions on assimilation, one can conveniently suggest a reclassification of assimilation in Igbo: Assimilation based on degree, and assimilation based on direction. Assimilation based on degree includes complete assimilation, partial assimilation and conditional assimilation; while assimilation based on direction includes regressive assimilation, progressive assimilation and coalescent assimilation. A tree diagram representation of this reclassification is also given below:

Fig. 2.3: A reclassification of assimilation in Igbo



Yule (1996; 2010) sees elision as the omission of a segment which might be present in the deliberate pronunciation of a word in isolation, while to Eme (2008), it is the dropping of a sound or some sounds in a word during connected speech. To Dirven and Verspoor (2004), elision involves the omission of sounds in the stream of speech, especially in informal speaking styles. Mbah and Mbah (2010) present elision as a phonological process which involves the omission or deletion of some sound segments in rapid speech. From the foregoing, the scholars are saying the same thing and that is that in elision, sound segment(s) is/are omitted or deleted.

Vowel harmony is another phonological process which refers to all the vowels within a specified unit that agree in some phonetic features (Hyman, 1975). Katamba (1989) sees vowel harmony as a process whereby within certain designated domain, usually the word, all vowels are required to share one or more phonological properties. To Ifediora (2011), vowel harmony is a phonological process whereby vowels with identical phonological characteristics co-occur. Ifediora’s definition is succinct. In Igbo, for example, there are two groups: the plus advanced tongue root [+ATR]

vowels and minus advanced tongue root [-ATR] vowels. Vowels of the same group co-occur, but this is mostly for the formation of simple words.

On tone, scholars never agreed on the number of tonemes in Igbo. Igwe (1975) and Emenanjo (2015) identify two basic tones in Igbo – the high tone and the low tone, while Ogbonnaya (1975) and Mbah and Mbah (2010) identify three. Ogbonnaya calls the third tone mid tone and says it is marked as / ˊ /, while to Mbah and Mbah it is down-step tone. Mbah and Mbah further note that each of the tones can form a MP in the language (p.119). Igwe (1975) and Emenanjo (2015) argue against the down-step or mid tone being a basic tone in Igbo because it does not begin any word in Igbo. Emenanjo, however, admits that Igbo has a downstep tone rather than a mid tone but points out the difficulty in analyzing it because of its restricted distribution unlike the low and high tones, and the fact that it does not follow a low tone.

Mbah and Mbah (2010) present the tonotactic characteristics of Igbo thus:

- i. High tone: It has an acoustically high pitch. It is usually represented by the acute diacritic mark (ˊ) and can:
 - (a) begin a word or sentence e.g. áká
 - (b) come in the middle or at the end of a word e.g. ákwùkw ́ó ‘book’
 - (c) be final in a word or sentence e.g. ákwá ‘cry’
 - (d) be reduced a little but not as low as to the level of a low tone, e.g. áká + chí = áká chí ‘hand of God’
- ii. Low tone: It has a low pitch level. It is marked by the grave accent (ˋ) and can:
 - a. begin a word or sentence e.g. àlà ‘land’
 - b. come in the middle of a word e.g. ázìzá ‘story’
 - c. come last in a word or sentence e.g. ákùkù ‘way’
 - d. get raised to a stop when it falls in between two high tones across word junctures e.g. ̀lọ + ̀òkè = ̀lọ oké
 - e. can be transform to high when it occurs in a series and at syntactic junctures e.g. àlà ̀ìgbò = àlá ̀ìgbò
- iii. Step tone: It is a reduced high tone. It is usually marked with either an acute accent following a high tone or raised macron over the letter (ˊ̄) and:
 - a. cannot start word or sentence
 - b. can occur in the middle of a word e.g. náāní ‘only’, nīlḗ ‘all’
 - c. can occur at word final positions e.g. éḡō ‘money’, m̄m̄írī ‘water’
 - d. when it comes in between a series of high tones it can get raised or promoted to a high tone e.g. éḡō + élé = éḡó élḗ
 - e. cannot follow a low tone.

Ohiri-Aniche (2013) discloses the segments that bear tones and the convention of marking tones in Igbo. To her, tones are marked above the vowel or syllabic nasal and generally, low tone [ˋ] and downsteps [ˊ̄] are marked, while high tone is left unmarked in Igbo. This is in line with Green and Igwe’s (1963) tone-marking convention. Other tone-marking conventions which Mbah and Mbah (2010:122-123) present are R. C. Abraham’s tone-marking convention of writing syllables on high tone in capital letters, syllables with a step tone is written with an initial capital letter and

the following vowel in small letters or if syllabic nasals or monosyllables in small capital letter, low tone has its syllable written in small letters; Welmers and Nwachukwu's tone-marking convention of marking high tones and step tones with acute accent and low tones with grave accent; Emenanjo and Williamson's tone-marking convention of leaving all high tones unmarked, marking all low tones with a grave accent, and marking all step tones with a macron. Mbah and Mbah, however, note that R. C. Abraham's convention is no longer in vogue due to the influence of science and technology.

Despite Igbo is a register tone language, tones sometimes glide (Igwe, 1975; Ogbonnaya, 1975; Emenanjo, 2015). Igwe (1975) identifies the phonetically motivated glide and grammatically motivated glide, but Ogbonnaya (1975) and Emenanjo (2015) recognize only the grammatically motivated glide.

For Emenanjo (2015:111);

Igbo has two significant and contrasting tones (better tonemes), High and Low. Outside the features of downstep and downdrift, there are a number of non significant tonal features. One of these is the high falling-to-low-tone, a gliding tone. This high falling-to-low-tone is a grammatically motivated tone which always occurs in the last syllable preceding the verb in the Indicative verb form.

Emenanjo illustrates with the following example:

15. Ùluˀ gàwàrà ahĩa ‘Ulu went to the market.’

The scholar points out that our system of writing would prefer an extra low tone vowel of the same quality to precede the verb thereby giving:

16. Ùluù gàwàrà ahĩa ‘Ulu went to the market.’

He concludes that the high falling tone can reasonably be regarded as an allotone of the high tone which have a syntactically conditioned distribution because of it being in CD with a high tone in the syntactic environment it exists.

Ohiri-Aniche (2013) discloses that Ùkwuani and Ikwere have falling and rising tones as shown below:

17. Ùkwuani: ̀ukwũ [ok^woò] ‘waist’; ukwũ [okwɔ] ‘leg’; ɔnyaà [ɔɲaà] ‘trap’;
ɔnya [ɔɲa] ‘wound’.

Ikwere: ̀òmũ [òmô] ‘to bear a child’; òmũ [òmǒ] ‘to study’.

Ogbonnaya (1975) had earlier observed the scantiness of the high falling to low tone and the low rising to high tone and said that they are seldomly found on words in isolation. To him, they could

be found in words, phrases and clauses in which a syllable sort of ‘glides’ into another during speech.

- | | | | |
|-------|-------------------|---------------------------|----------------------|
| 18 a. | Ònyê chòrò ìtè? | ‘who wants a pot’ | } High falling tones |
| b. | Hâ nwèrè akwùkwọ. | ‘they have books’ | |
| c. | Ofê dì n’ìtè | ‘there’s soup in the pot’ | |
| d. | Àhù dì m̄ mmā | ‘I am well’ | |

- | | | | |
|-------|--------------------------|--|--------------------|
| 19 a. | Ta ǎ bụ Eke bụ ahịa | ‘today, which is Eke, is a market day’ | } low rising tones |
| b. | Gịnī kà ogě kwùrù ùgbuà? | ‘what is the time now?’ | |

Igwe (1975) discloses three more facts about glides in Igbo:

- i. A glide occurs in the process of passing away from one syllable to another.
- ii. There must not be an intervening consonant between the vowels or syllabic nasals which occur in juxtaposition.
- iii. For glide to result, two vowels or syllabic nasals must be contiguous.

Igwe (1975) is also of the opinion that phonetically motivated glide occurs when two vowels occur contiguously either in the same word or in juxtaposed words and the second vowel, which constitutes a syllable, is either lower or higher than the one preceding it.

20. (a.) m̄mēē ‘blood’, ag’ũọ ‘hunger’, nīle ‘all’, ùgbuà ‘now’
 (b.) lèè ‘look’, làa ‘go away’, Ọ zùtàrà azù ‘he bought fish’, Ọ lètàrà ngwā ‘he/she came back early’

The scholar says that this kind of glide is restricted to a single syllable and may be down-glides or up-glides and occur under any of these conditions:

- a. If a word or phrase or clause which functions as the subject in a sentence type of the Simple Sentence Form I has a high final syllable.
- 21 (i.) Eghù tàrà ji ‘The goat ate the yam’
 (ii.) akwùkwọ yā` fùrù ‘His book got lost’
 (iii.) ndị byāra ngwā` hùrù ya ‘those who came in time saw it’
- b. If the final syllable of a noun or a noun phrase is low and the noun or noun phrase is the head of the relative clause.

22. (i.) ̀mgbě gāra āga ‘in past time’ / ‘time which is past’
(ii.) àlǎ jūru oyī ‘ground which is cold’
- c. If a verb is the first in a sequence of verbal forms and the one immediately following it has a prefix.
23. (i.) Ha nâ àbya ème yā
‘let them keep coming and doing it’
(ii.) Unù gâ àga, unù màkwaa àwò
‘If you really wanted to go, you had better start early’

Emenanjo (2015) contends that the grammatically motivated glide is marked with a circumflex and that it is not phonemic in Igbo because Igbo is a discrete level tone language. To this scholar, it always occurs on the last syllable preceding the verb in the indicative verb form. He opines that whenever gliding tones occur in words in isolation, they should be treated as two different pitch levels on two identical vowels. He suggests a reanalysis of gliding tone in Igbo as an extra vowel of the same quality following the preceding vowel. He illustrates with the following examples:

24. (i.) Há b̂àrà > Há à b̂àrà ‘They came’
(ii.) È > Èé ‘Indeed! (Are you sure?)’

Emenanjo’s suggestion is in agreement with Mbah and Mbah’s (2010) earlier opinion that where register tone languages have a glide, it is an orthographic convention involving graphological elision.

This study aligns with the view that Igbo has three basic tones – the high tone, low tone and downstep tone and that each of them differentiates meaning. If downstep is not accepted as a toneme in Igbo, why does it differentiate meaning in the language? The toneme is a minimal distinctive sound pitch unit just as phoneme is a minimal distinctive sound unit. We also agree with Igwe (1975) that tone glides are phonetically motivated when two vowels appear contiguously either in the same word or in juxtaposed words with the second vowel, which constitutes a syllable, being either lower or higher than the one preceding it.

2.2 Empirical studies

Having reviewed the relevant concepts in this work, it is imperative that empirical works of scholars who have discussed phonological issues of languages and other dialects of Igbo related to this study are also reviewed. Specifically, previous works that have discussed the phonemes, phonological patterning of words and the phonological processes and secondary articulation features of languages and dialects of Igbo shall be examined in this section.

The Onwụ 1961 official standard Igbo orthography establishes 36 letters of the alphabet. They are:

a b ch d e f g gb gh gw h i i j k kp kw l
m n ñ nw ny o o p r s sh t u u v w y z

(Adapted from SPILC)

These 36 letters translate to 36 phonemes because the language is written as pronounced; thus each phoneme has only one letter representation and few digraphs in the alphabet system of the language. The SI thirty-six phonemes are twenty-eight consonants and eight vowels (Eme and Uwaezuoke, 2015). The consonants are made up of 10 plosives, 5 nasals, 7 fricatives, 2 affricates, 1 trill, 1 lateral and 2 approximants. All sonorants are voiced. They are presented and described below:

Consonants

/p/	voiceless bilabial plosive
/b/	voiced bilabial plosive
/t/	voiceless alveolar plosive
/d/	voiced alveolar plosive
/k /	voiceless velar plosive
/g /	voiced velar plosive
/kp/	voiceless labialvelar plosive
/gb/	voiced labialvelar plosive
/k ^w /	voiceless labializedvelar plosive
/g ^w /	voiced labializedvelar plosive
/m/	bilabial nasal
/n/	alveolar nasal
/ɲ /	palatal nasal
/ŋ /	velar nasal
/ŋ ^w /	labializedvelar nasal
/tʃ/	voiceless post alveolar affricate
/dʒ/	voiced post alveolar affricate

- /f/ voiceless labio-dental fricative
- /v/ voiced labio-dental fricative
- /s/ voiceless alveolar fricative
- /z/ voiced alveolar fricative
- /ʃ/ voiceless post alveolar fricative
- /ʒ/ voiced velar fricative
- /ɦ/ voiced glottal fricative
- /l/ alveolar lateral
- /r/ alveolar trill
- /j/ palatal approximant
- /w/ labial velar approximant

Table 2.1 Consonant chart of SI

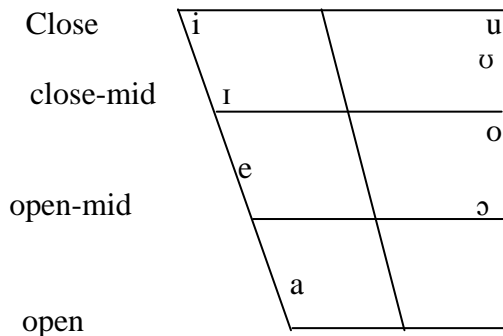
Place → Manner ↓	Bilabial	Labio-dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar	Glottal
Plosive	p b		t d			k g	kp gb	k ^w g ^w	
Nasal		m		n		ɲ		ɲ ^w	
Fricative		f v	s z	ʃ		ʒ			ɦ
Affricate				tʃ dʒ					
Trill			r						
Lateral			l						
Approximant					j		w		

(Adapted from Eme and Uwaezuoke, 2015)

Vowels

- /i/ close front unrounded vowel
- /ɪ/ close-mid front retracted vowel
- /e/ open-mid front unrounded vowel
- /a/ open front unrounded vowel
- /u/ close back rounded vowel
- /ʊ/ close back retracted rounded vowel
- /o/ open-mid rounded vowel
- /ɔ/ open-mid back retracted rounded vowel

Fig. 2.4 Vowel chart of SI



(Adapted from Nkamigbo and Eme, 2015)

The phoneme inventory of SI is considered relevant to this study as it will enable easy identification of the SI phonemes lacking in Ọmambala varieties. This study relies on the above consonant and vowel charts in placing the phonemes of Ọmambala varieties in their appropriate consonant and vowel charts.

Mba (2009) is a descriptive work on *A phonological study of Effium: A dialect of Korin*. She discovers that length contrasts word meaning. This phenomenon is perceived from her data in Effium as presented below:

25 (a) Vowel Length	(b) Consonant Length
i. /jɛ/ ‘interview(v)’	i. /kɛnɔ/ ‘desolation’
ii. /jɛ̃ɛ/ ‘help(v)’	ii. /kɛ̃nɔ/ ‘finger, paralysis’
iii. /lɔ/ ‘repair’	iii. /kɔ̃na/ ‘accept (inf)’
iv. /lɔɔ/ ‘deliver’	iv. /kɔ̃nna/ ‘earn (inf)’
v. /iwi/ ‘bambara nut’	v. /lɛ̃mɛ̃/ ‘inside’
vi. /iwii/ ‘oil bean’	vi. /lɛ̃mmɛ̃/ ‘belly’

She considers instances of vowel reduction as weakening of the vowel. She observes that in Effium, unstressed vowels are weakened to schwa in fast speech.

26. Normal Speech	Fast Speech	
a. /dʒɔ̃ɸ bɛ bɛrɛɸa/	/dʒɔ̃ bɛ bɛrɛɸə/	‘seventeen’
ten and seven		
b. /bila bila/	/ɔ̃bəlàbəlà	‘it is bad/ ugly’
bad bad		
c. /matʰià menàdi/	/matʰiàmənàdʰi/	‘how much’
how much		

Mba (2009) observes that Effium operates nine vowels /i e u o ɪ ε ʊ ɔ a/. According to her, the +ATR vowels are four /i e u o/ and the –ATR vowels are five /ɪ ε ʊ ɔ a/. She says that the vowel /a/ is a neutral vowel and constitutes the third vowel set in Effium, which co-occurs with both +ATR and –ATR vowel sets as shown below:

27.	+ATR		-ATR		NEUTRAL
a.	isò	‘darkness’	ɪkɔ	‘giant snail’	it ^j ēma ‘star’
b.	kuko	‘grinding stone’	lækɔɸ	‘navel’	iruɸa ‘blue’
c.	mèwo	‘soup’	lɔɸite	‘egg’	ɛbaɸo ‘agama lizard’
d.	ukike	‘guest’	ɔromɪɛ	‘friendship’	ilòlɔpi ‘bedbug’

Onuh (2010) studies *Phonology of the Erè language*. She discusses the distributional patterns of the phoneme, some of the suprasegmental features, syllable structure of the language and some identified phonological processes in the language. She uses MP to identify the phonemes of the language. The MPs are:

28 a.	/k/	èkɔ	‘war’
	/t/	etɔ	‘head’
b.	/n/	enɔ	‘vagina’
	/t/	etɔ	‘head’
c.	/t/	ɔdɔt	‘soup’
	/m/	ɔdom	‘work’
d.	/β/	ìβum	‘market day 1’
	/m/	ìmum	‘dumbness’
e.	/p/	ɔdɔp	‘chewing stick’
	/t/	ɔdɔt	‘soup’

She regards the sounds /k t n m β p/ as phonemes in Erè since they bring about a change in meaning of the word and occupy the same phonetic environment. She also uses the MP test to identify the vowels in the language as presented below:

29 a.	/i/	din	‘bravery’
	/ε/	dɛn	‘eye’
b.	/u/	usì	‘bag’
	/e/	esì	‘pig’
c.	/ɔ/	ɔsè	‘poison’
	/a/	asè	‘father’

With the analysis, /i ε u e ɔ a/ are distinctive vowel phonemes in the Erè language since they bring about meaning difference.

She identifies a unique tonal feature in the language called ‘tonal homophone’ where some lexical items with identical segmental and tonal element have different senses in terms of meaning e.g *εwòwòni* meaning ‘peace’ or ‘an eyesaw’, *εbàbàà* ‘to cook’ or to be sufficient’. She says that the meanings of the lexical items are contextual.

Onuh uses descriptive method to identify some phonological processes and secondary articulation features in the language, like nasalization, labialisation, assimilation and vowel deletion. She did not use any theory of phonology to analyse them. On labialisation, she discovers that the sounds /b ɓ t d k g n l/ are produced without lip rounding, but in certain environments, they are produced with certain amount of lip rounding when they are immediately followed by a rounded vowel. She illustrates with the following examples:

- 30 a. ɔb^wɔlà ‘lawlessness’
 b. εt^wɔk ‘small’
 c. εt^wɔsɔ ‘village’
 d. id^wùd^wul^wù ‘speech’
 e. εβ^wɔm ‘cow’
 f. ɔn^wɔk ‘salt’
 g. ul^wom ‘husband’
 h. εg^wɔn ‘bird’

Onuh (2010) observes that nasalization in the Erè language is phonemic. She also describes the direction of nasalisation in this language as being right-ward and therefore, perseverative, since the vowels are preceded by nasals.

- 31 a. m̃ɔm ‘hunger’
 b. εñɔm ‘famine’
 c. εdìnã ‘sheep’
 d. uβumō ‘wind’
 e. ìβemēñē ‘wing’

Onuh also observes in Erè, just as in Igbo, that though assimilation may involve consonants or vowels, vowel assimilation is common. The reason, according to Onuh is because most nouns usually start and end in vowels thereby providing an ideal site for vowel assimilation to take place.

Mba (2009) and Onuh (2010) above resemble the present study as they identify the phonemes and the phonological processes in the languages. However, this study differs from them in the sense that the languages they studied are two different languages from Igbo. Moreover, they are purely a descriptive study, while the current study uses theories of phonology for analysis in addition to using the descriptive method.

Utulu (2006) is a paper on *OCP effect and glide formation in Ewulu*. He presents some data to illustrate that in Ewulu dialect of Igbo, vowels *i* or *ɨ* and *u* or *ʊ* could change major class membership by converting to glide *-j-* and *-w-* respectively if they are immediately followed by a vowel depending on the rule of vowel harmony.

32.	Input	→	Output	Gloss
	a (i) ufie	→	uf ^j e	‘red’
	(ii) dibie	→	dib ^j e	‘doctor’ (native)
	b (i) isi + ewu	→	is ^j ewu	‘goat head’
	(ii) ozi + ɔma	→	oz ^j ɔma	‘good tiding’
	c (i) elue	→	el ^w e	‘mushroom’
	(ii) nue	→	n ^w e	‘swallow’
	d (i) oshu + ɛto	→	osh ^w ɛto	‘thirty’
	(ii) ku + okwu	→	k ^w ok ^w u	‘speak’

From the examples in (32), Utulu may have had labialization and palatalisation in mind while discussing glide. Ewulu, which he studied, is not in Ọmambala area. He has used OCP principle, which is part of the autosegmental phonology, for analysis, but this current study uses generative phonology and government phonology in addition to autosegmental phonology.

Ifediora (2011) is a study on *Phonology of Ụmū̀ndu dialect of Igbo*. She examines the phoneme, phonological processes and tonal processes in the dialect. She uses MP test to identify the phonemes in the dialect, as presented below:

33 a.	ezè	/ezè/	‘king’
	izè	/izè/	‘to dodge’
b.	̀mpu	/̀mpu/	‘compound entrance’
	èpu	/èpu/	‘germinating’

- c. ñta /ñta/ ‘today’
 àta /àta/ ‘chewing’
- d. nka /ŋka/ ‘old age’
 ẹka /ɛka/ ‘hand’
- e. ̀òkw à /ɔk^wà/ ‘partridge’
 àkwà /àk^wà/ ‘bed’

With the analysis, she establishes that the sounds /e i m n ɾa ɛ ɔ/ distinguish meaning in Ụmūn̄dụ dialect and are, therefore, phonemes in the dialect. Ifediora observes that the voiced velar fricative /ɣ/, which exists in many other dialects of Igbo, including the SI, does not exist in Ụmūn̄dụ dialect, consequent upon which speakers of the dialect replace it with voiced palatal approximant /j/. This is shown in the following examples:

34.	Words	SI/Other dialects	Ụmūn̄dụ
a.	agha	/aɣa/	/aja/ ‘war’
b.	ighā	/i [↓] ɣá/	/i [↓] já/ ‘to broadcast (seeds)’

She identifies some phonemes in Ụmū n̄dụ dialect which are in free variation. This involves the substitution of two separate phonemes of the language without affecting the meaning. The following examples are used to illustrate this:

35	a.	̀ishā	/iʃa/	‘crayfish’
		̀eshā	/ɛʃa/	‘crayfish’
	b.	̀apàtā	/àpàtā/	‘road’
		̀ɛpà tà	/ɛpàtā/	‘road’
	c.	azìzì	/azìzì/	‘maize’
		ɛzìzì	/ɛzìzì/	‘maize’

Ifediora uses descriptive method to discuss the phonological processes in Ụmūn̄dụ. She discovers assimilation in the dialect, but points out that it involves only vowel to vowel assimilation. She attributes it to the fact that the dialect does not permit consonant clusters and consonants do not end words in the dialect.

36	a.	/i [↓] ké ɛna/	→	[i [↓] kéɛna]	‘cunny’
	b.	/oɲe ɔbjà/	→	[oɲɔ ɔb ^j à]	‘visitor’
	c.	/ŋ ^w a ohə/	→	[ŋ ^w ooohə]	‘slave’

She observes in Ụmūn̄dụ dialect data that the demonstrative ‘a’ assimilates to the neighbouring vowel, while in some cases, the consonants at the initial positions of the second words are deleted first before the vowels that follow them become assimilated by the preceding vowel.

- 37 a. /èkɔ à/ → /èkɔ̀/ ‘this wealth’
 b. /ɛhɔ à/ → /ɛhɔ̀/ ‘this stomach’
 c. /èfwo à/ → /èfwò/ ‘this body’
 d. /oɲe à/ → /oɲè/ ‘this person’

Ifediora identifies vowel, consonant and syllable elisions in the dialect and notes that consonant elision in Ụmūn̄dụ involves the deletion of syllabic nasal [n] at the initial position of word and (the deletion of) palatal approximant [j] in certain words as can be seen below:

- 38 a. /nne/ → [ne] ‘mother’
 b. /òŋwo[↓]jé/ → [òŋwi[↓]é] ‘himself’
 c. /sɪ[↓]já/ → [sɪ[↓]á] ‘tell him’

From the examples in (38), there is the existence of syllabic nasal elision in Ụmūn̄dụ dialect. Ifediora also notes that consonant elision does not affect the tone of the word and the number of the syllable, but vowel and syllable elisions do. She also discovers that labialisation and palatalisation in the dialect are distinctive. Ifediora demonstrates the distinctiveness of labialisation and palatalisation in Ụmūn̄dụ using the minimal pair (MP) test as presented below:

39. labialisation: a. /ɛ^wa/ ‘market’
 /ɛfa/ ‘a kind of fish’
 b. /f^wa/ ‘washing of bitterleaf’
 /fa/ ‘them’
40. palatalisation: a. /p^ja/ ‘flog’ /m^ja/ ‘sneak’
 /pa/ ‘carry’ /ma/ ‘scoop’
 b. /b^ja/ ‘come’ /r^ja/ ‘grind’
 /ba/ ‘scold’ /ra/ ‘allow’

From the above minimal pairs, Ifediora concludes that /f^w/, /f/, /ɸ^w/ and /ɸ/ are phonemes in the dialect and that the palatalised segments as [p^j], [b^j], [m^j] and [r^j]. The scholar observes that besides the general labialised segments in the Igbo language, Ụmūn̄dụ dialect has additional two,

the voiceless labialised labio-dental fricative /f^w/ and the voiceless labialised palate-alveolar fricative /j^w/.

41. a. /ɛfɔj^wa/ 'grass'
 b. /ɔf^wɔ/ 'staff of justice'
 c. /f^wa/ 'washing of bitterleaf'

She describes coalescent assimilation in the dialect as 'the fusing together of two segments.' She exemplifies with the following data:

- 42 a. /gɔmaraka[↓]já/ → [gɔmarakɪ[↓]á] 'count it'
 b. /oβòlo[↓]gó[↓]jé/ → [oβòlo[↓]gó[↓]é] 'his/ her cassava'
 c. /ne[↓]jé/ → [ni[↓]é] 'his/ her mother'
 d. /sùle[↓]já/ → [sùli[↓]á] 'speak it'
 e. /nòma[↓]já/ → [nòmi[↓]á] 'check it'

Ifediora does not analyse the phonological processes with any theory of phonology, but she applies minimal pair test to identify the phonemes of the dialect. Ifediora points out that differences in the tonal patterns of Ụmūn̄dụ dialect and SI lies in the fact that in forming question in SI, the pronouns bear low tone while in the the affirmative, they bear high tones, but in Ụmūn̄dụ question formation, pronouns bear high tone and in the affirmative, they bear low tones. Below are her examples:

- | | | | |
|-----|----------|----------------------|-----------------------|
| 43. | | Affirmative | Interrogative |
| a. | Ụmūn̄dụ: | Ò sò chi | O sò chi? |
| b. | SI: | O sò chi | Ò sò chi? |
| | | 'He/she is with God' | 'Is he/she with God?' |

Ifediora (2011) is considered vital for this study since she discusses the phonemes and phonological processes and secondary articulation features of Ụmūn̄dụ. She also uses the minimal pair test, which this study uses, to identify the phonemes. However, their difference lies in the fact that Ụmūn̄dụ, which Ifediora (2011) has investigated, is not an Igbo variety spoken in Ọmambala area. Also, Ifediora (2011) is purely a descriptive study, while the current study also uses theories of phonology for analysis in addition to using descriptive method.

In a study, *Parameters of intersegmental co-ordination in speech: Insight from Igbo*, Eme (2008) uses the perceptual method and articulatory approach to discuss the phonological processes and secondary articulation features in Ezza and Amaezu in Northern Igbo dialect cluster and Akpo and Adazi Nnukwu in Inland West Igbo dialect cluster. She presents three different parameters

for explaining the phonological processes and secondary articulatory features, which are articulatory parameter, coarticulatory parameter and connected speech features parameter. She describes the articulatory parameter as what is used to discuss the articulatory processes involved in the production of a particular sound segment in a word as a result of the influence of another segment adjacent to it; they include features of aspiration, lengthening of sounds, vowel reduction, devoicing of sounds, ‘breathy-voiced’ segments, lenition and fortition. The co-articulatory parameter, which includes labialisation, palatalisation, homorganicity of nasals, nasalisation and voicing in double articulation, deals with articulation features involving the overlapping of adjacent articulations during intersegmental coordination. The connected speech features parameter covers all issues that are traditionally referred to as features of connected speech (Eme, 2008:81) which manifest across word boundaries and include neutralisation of phonotactic constraints, liaison, assimilation and elision.

The scholar observes that aspiration, labialisation, palatalisation and nasalisation are not phonemic in Akpo, Adazi-Nnukwu, Amaezu and Ezza dialects. The aspirated segments she discovers are the voiceless bilabial, alveolar and velar plosives [p t k] respectively. She identifies labialisation, palatalisation and homorganicity of nasals as instances of anticipatory co-articulation, while nasalisation and voicing in double articulation are perseverative co-articulation. She points out that anticipatory labialisation is prominent in Akpo and Amaezu dialects, but it is hardly noticed in Adazi-Nnukwu and Ezza dialects, while anticipatory palatalisation cuts across the four dialects. The consonants she perceived as being palatalised at specific environment are [b t d k g ɸ β s z l ɾ ɦ], e.g.

44. Akpo: [g^hɪ] ‘you’, [mmã^h ɪite] ‘first/ beginning/ initial’, [k^hɪtaã] ‘now’
 Adazi Nnukwu: [dʒɪ^hɪ] ‘using’, [aɖãz^hɪ] ‘Adazi’, [ɲwãtãk^hɪɪɪ] ‘young’, [kwãd^hɪ] ‘support’,
 Amaezu: [g^hɪ] ‘you’, [n^hɪ] ‘food’, [gos^hɪ] ‘show’, [nd^hɪ] ‘those’, [ɪ^h] ‘in’
 Ezza: [d^hɪkwànò] ‘is located’, [s^hɪdʒè] ‘manage to/ plan to’, [n^hɪɪ^h] ‘what’,

For liaison, Eme asserts that the vowel introduced must have the same phonetic quality as the preceding vowel thus suggesting that liaison in the Igbo involves vowel lengthening whereby the vowel assumes double length. She identifies five kinds of assimilation, which are complete assimilation, partial assimilation, coalescent assimilation, progressive assimilation and regressive assimilation. She notes that progressive assimilation is not a frequent occurrence in Igbo and that regressive assimilation is more prevalent in Akpo, Adazi-Nnukwu, Amaezu and Ezza data. She gives some examples of progressive assimilation from Adazi-Nnukwu, Amaezu and Ezza ,

which, according to her, most often involves complete assimilation of the demonstrative *a* ‘this’ by the last vowel of the preceding word e.g.

45. Adazi Nnukwu:	(i)	ndị à	→	ndị ì	‘these’
	(ii)	ebe à	→	ebe è	‘here’
Amaezụ:	(i)	èbido yā	→	èbido ō	‘starting it’
	(ii)	iphe à	→	iphe è	‘this thing’
Ezza:	(i)	ijē ya	→	ijē e	‘to go (it)’
	(ii)	bidòje yā	→	bidòje ē	‘to start it’

Eme notes that assimilation seems to be idiosyncratic in some environment since in an environment where one person may ordinarily assimilate a segment regressively, another person may not. She also notes that when two identical vowels and a word are involved in regressive assimilation, the two vowels are assimilated as exemplified below:

46	a.	/gbaa e ^l g ^w ú/	→	[gbee ee ^l g ^w ú]	‘to dance’
	b.	/bàlòk ^w aa ebe/	→	[bàlòk ^w ee ebe]	‘enter there’

Eme discovers that assimilation never causes the assimilated segment to lose its tone. She submits that none of the issues like labialisation, palatalisation, homorganicity of nasals, double articulation discussed under the co-articulatory parameter of intersegmental coordination has any perceivable effect on tones in Igbo. This is because tone is on a separate tier as Goldsmith (1976) submits. She also observes that neutralization of phonotactic constraints and assimilation do not affect tones in Igbo. She says that it is only liaison and vowel elision that have perceivable effects on tones in Igbo speech patterns. She says that the vowel or syllabic nasal added during the process of liaison affects the tone of a word by altering the syllabic structure of that word through increase in the number of elements that bear the tone in that word. She points out that everything about the tones of the speech pattern remains stable in consonant elision, but when a vowel or a syllabic nasal is elided, the segment and its tone drop off in most cases. She considers it as an indication that tone often delinks with its segment. If tone often delinks with its segment as observed by Eme, it then disproves the claim of autosegmental phonology that features are independent of one another and are represented on separate tiers.

Eme (2008) is considered important to this study since it also treats phonological processes and secondary articulation features in Igbo. Her grouping of these phonological processes and secondary articulation features into three different parameters is very interesting and the parameters serve as a guide to this study, especially in the presentation and analysis of data on

phonological processes and secondary articulation features. It is clear that Eme (2008) does not discuss Omambala varieties of Igbo. She uses the perceptual method of analysis, while this current study uses generative phonology, autosegmental phonology and government phonology to analyse the phonological processes and secondary articulation feature. Eme (2008) neither discusses the phonemes of the dialects she has investigated nor their phonological patterning of words, but this current study also discusses the phonemes and phonological patterning of word in Omambala varieties.

Umeh (1987) studies *Consonant variations of Orlu sub-dialects (Igbo)* and discovers that the nasalised vowels occur in the environment of both nasalised consonants and oral consonants. She also discovers that it is clearly evident that it is only vowels that are nasalised in the dialect. She discloses that nasal vowels contrast with their oral counterparts as exemplified below:

- 47
- a. /sʊ/ ‘pound’ (e.g fufu)
/sũ/ ‘clear’ (e.g grass)
 - b. /sa/ ‘turn over’
/sã/ ‘wash’
 - c. /zu/ ‘fill up’
/zũ/ ‘steal’
 - d. /βe/ ‘cry’
/βẽ/ ‘slice’

Igboeme (2012) is a study on *Phonology of Oghe*. She considers the phonemes, suprasegmentals and phonological processes. She uses MP analysis to identify the tonemes of Oghe dialect. With this analysis, she establishes that high tone, low tone and down step tone are distinctive in the dialect. Examples are presented below:

48. Tonal contrast
- a. ɸkà /ɸkà/ ‘church’
ɸka /ɸk[↓]á/ ‘sour’
 - b. imù /imù/ ‘to learn’
imũ /im[↓]ũ/ ‘to born a child’
 - c. ikù /ikù/ ‘to fish’
ikũ /ik[↓]ũ/ ‘to sow’
 - d. ntà /ntà/ ‘small’
nta /nta/ ‘hunting’

Igboeme submits that Oghè also operates nine vowels /i e u ɔ ʊ ɔ a ə/ as well as vowel harmony (VH). Unlike what happens in Effium, she discovers that in Oghè, the ninth vowel ə/ harmonizes with the –ATR vowels only. This is exemplified below:

49. +ATR Harmony	-ATR Harmony
a. ishi ‘head’	oḡù ‘hoe’
b. ile ‘tongue’	oḡda ‘basket’
c. oḡbo ‘cup’	uṭa ‘arrow’
d. ezē ‘teeth’	aka ‘hand’
e. edè ‘cocoyam’	ada ‘a fall’

She uses the descriptive method to discuss the phonological processes in the dialect. The phonological processes she discusses are assimilation, elision, vowel harmony and liaison. She presents homorganic nasal assimilation in the Oghè dialect of Igbo where the syllabic nasal agrees in harmony with the consonant following it.

50 a.	nkə	/ŋkə/	‘firewood’
	nka	/ŋka/	‘chewing stick’
	ntə	/ntə/	‘ashe’
	nta	/nta/	‘hunting’
	ḡkù	/ḡkù/	‘wing’
f	mvḡ	/ḡvḡ/	‘comb’

For liaison in Oghè, Igboeme says that the segment that is introduced links two words, but points out that liaison is optional since without the introduction of the element, the meaning of the word remains the same. She discloses that it is only the vowel that is involved in liaison and considers liaison as a case of vowel reduplication.

The dialects of Igbo, which Umeh (1987) and Igboeme (2012) have investigated, are not part of Qmambala varieties of Igbo; Orlu sub-dialects of Igbo are in Inland East dialects cluster and Oghè is in Northern Igbo dialects cluster, while Qmambala varieties are in Inland West dialects cluster. Therefore, the two studies are different from the current study. However, they are relevant to this study because they studied the phonemes and the phonological processes and both used the minimal pair test to identify the phonemes of the dialects. They also used the descriptive method, but this current study, in addition to using the descriptive method, also uses theories of phonology to analyse the phonological processes and secondary articulation feature.

Alozie (2015) does a contrastive analysis of the phonology of Ìkedurù dialect of Ikeduru Igbo and English. She uses a contrastive analysis approach. She identifies a total of fifty-three phonemic consonants in Ikeduru dialect and eight vowels as the SI against twenty-four consonants and twenty vowels in English. She observes that aspiration, breathy-voicing, and secondary articulation features such as palatalisation, labialisation and nasalisation are phonemic in Ìkedurù dialect of Igbo, but in English, they are not phonemic. She also observes that the eight diphthongs in English do not exist in Ìkedurù dialect and that Ìkedurù has bilabial implosives /ɓ/ and /ɓ̄/ which are not in English. She asserts that English speakers use /k/ and /b/ respectively to substitute the two phonemes (p. 112). Alozie identifies three tonal systems in Ikeduru – high tone (´), step tone (¨) and low tone (`).

Alozie (2015) differs from this present study in the sense that it is a contrastive study of two different languages, while this study is on phonology of varieties of one language. Moreover, Ikeduru, which is the Igbo dialect Alozie (2015) contrasts with English, is not part of Qmambala Igbo. Alozie (2015) does not use any theory of phonology for analysis, but this current study, in addition to using the descriptive method, also uses theories of phonology to analyse the phonological processes and secondary articulation features. Despite these differences between the two studies, Alozie (2015) is considered relevant to this study because it discusses the phonemes and phonological processes and secondary articulation features.

Within a language, the number of distinctive phonemes also varies among the dialects and variation could also exist in the patterning of words. Many scholars have through past studies confirmed this.

Emenanjo (1977) investigates Igbo dialects and discovers that it is in the area of phonology that Igbo dialects differ most considerably. He submits that Igbo phonemes vary from 66 distinct consonants in Ulu to 60 in Owere, 55 for Qhuhu, 28 in Enu Qnicha and 26 in Izii. He also points out that the situation where nasalisation and aspiration are phonemic in some dialects like Owere, Ulu and Qhuhu increases the total number as well as complexity of consonant phonemes recognised. None of the dialects Emenanjo (1977) studies is from Qmambala area.

In *A lexico-statistic study of northern Igbo dialects*, Ikekeonwu (1986) observes the presence of voiced and voiceless bilabial fricatives /β/ and /β̄/ as characteristic of the Awka group of dialects and considers the two sounds as allophones of /f/ and /v/ respectively existing in other dialects of Igbo. She has illustrated with the examples below:

- 51 a. /βa/ ‘they’
 b. /ŋβɔ/ ‘nail’
 c. /aφele ‘plate’
 d. /aφa/ ‘divination’

Ikekeonwu (1986) studies northern Igbo dialects, but this study investigates Igbo varieties in Inland West dialects cluster. They are, therefore, different. Awka group of dialects, which Ikekeonwu (1986) mentions in her study, is also not part of Omambala Igbo.

Lado (1957) compares the sound system of English and Portuguese and discovers that Portuguese does not have the phonemes /ʃ dʒ θ h r j w/ found in English as in /ʃu:/, /dʒʌmp/, /i:ðə/, /heuz/, /reuz/, /fiə/ and /wɜ:/. He also discovers that Spanish does not have some of the phonemes found in English such as /v ð z ʃ dʒ/. This is evidence that languages differ in their number of distinctive phonemes as well as in their patterning of words.

Lado (1957) differs from this present study in the sense that it compares the sound systems of two different languages, which do not include Igbo. This study is on the Igbo language only. The relevance of Lado (1957) to this study is because it discusses the sound systems of languages and has shown that there could be variations in the sound systems of different languages.

The comparison of English and Ika intonation pattern by Uguru (2006) reveals that Ika dialect operates twenty-nine consonant system which are /p b t d k g kw gw kp gb f v s z ʒ γ h ʃ dʒ m n ɲ ŋw ɾ l j w/, ten oral vowels. The result of this study suggests that the number of consonants in Ika Igbo and standard Igbo varies since there are twenty-eight consonants in standard Igbo. Ika Igbo is different from Omambala Igbo which this study investigates. Uguru (2006) is, however, relevant to this study since it discusses the phonemes.

Ikekeonwu (1987) and Nwaozuzu (2008) are different classifications of the Igbo dialects. They have made similar observations on variations in the number of phonemes and patterning of words among the dialects, on the basis of which they made their classifications.

Ikekeonwu (1987), for instance, classifies the Igbo dialects into five clusters using some linguistic criteria for this classification such as grammar and phonology readily available. The linguistic criteria she has used are: the negative suffix ghi [yi] / [yɪ], the perfective suffix -le / -la, the progressive marker, the vowel system, the vowel harmony patterns and some tonal patterns. The five clusters are:

1. Niger Igbo
2. Inland West Igbo
3. Inland East Igbo
4. Northern Igbo
5. Riverain Igbo

In this classification, Ikekeonwu regards the dialects which exhibit same characteristics with minor differences as one. The one with all the characteristics she regards as the main dialect (MD), while others around it are regarded as satellite dialects. Ikekeonwu does not consider their minor differences as making them separate dialects. The satellites differ from the main dialects in some minor phonological and syntactic details. Ikekeonwu does not mention the speech communities found in Omambala area, but from her explanations, we deduce that Igbo speech communities of Omambala area are grouped under the Onitsha Main dialect of the Inland West Igbo.

According to her, the Inland West Igbo dialects cluster are the varieties of Igbo spoken directly to the east of the Niger River. She states that these dialects lie to the west of the group spoken further inland in Owerre, Umuhia etc., and on this basis, she has chosen to classify them as Inland West. She says that the cluster has three main dialects namely; Onitsha, Oka and Aguata, each having its own satellites.

Ikekeonwu (1987) asserts that the Inland West cluster is more homogenous than the Niger Igbo cluster except for the Aguata dialects which, to her, seem to have been affected by the dialects of their Inland East Igbo neighbours. She says that the Enu-Onitsha satellite is to some extent distinct from the Onitsha group of satellites. She discovers that the difference exists in the individual phonemes and in the assimilatory possibilities in that dialect. She discloses that the Enu-Onitsha dialect does not have the velar fricative [ɣ] and the velar nasal [ŋ].

Ikekeonwu uses the General Onitsha dialect to represent the varieties spoken in the Onitsha immediate environs like Umoji and Obosi etc. She submits that the velar fricative [ɣ] and velar nasal [ŋ] are found in this dialect. Ikekeonwu notes that in both the General and Enu-Onitsha dialects, there is the /f/ ~ /h/ and /l/ ~ /r/ alternations with Owerre, Umuhia and other Inland East dialects. She provides a schematic representation of Inland West Igbo, thus:

Fig. 2.5 Ikekeonwu's (1987) schematic representation of Inland West Igbo

MD1 Onitsha Inland West Igbo		
MD1 S1		Enu-Onitsha dialect
MD1 S2		General Onitsha dialect
MD1 S2i		Obosi General Onitsha dialect
MD1 S2ii		Umuoji General Onitsha dialect
MD1 S3		Otu Onitsha dialect
MD1 S3i		Obosoid Otu Onitsha dialect
MD1 S3ii		Okaoid Otu Onitsha dialect
MD1 S3iii		Oweroid Otu Onitsha dialect
MD2 Oka Inland West Igbo		
MD2 S1		Enugwu-Ukwu Oka dialect
MD2 S2		Amobia Oka dialect
MD3 Aguata Inland West Igbo		
MD3 S1		Amaiya Aguata dialect
MD3 S2		Orumba Aguata dialect

Ikekeonwu (1987) has not mentioned any speech community in Qmambala in her classification although her groupings of Igbo dialects suggest that Qmambala Igbo is among the Onitsha Main dialect of the Inland West dialects cluster. Her claim that both the Enu-Onitsha and General Onitsha dialects exhibit /f/ /h/ and /l/ /r/ alternations with Owerri, Umuahia and other Inland East Dialects is not very true of Qmambala varieties as most of them do not possess /f/ and / phonemes and wherever they occur in Igbo words, they are replaced with /v/. Qmambala varieties possess the /l/ and /r/ phonemes. Also, Ikekeonwu's (1987) claim that /t/ and /n/ are found in the General Onitsha Dialect is not true of all the speech communities of Qmambala since /y/ is absent in Ayamelum and /ŋ/ is lacking in Ifite Ogwari speech community.

Nwaozuzu (2008), in her own classification using linguistic criteria also, identifies eight groups of dialects, namely:

1. West Niger Group of Dialects (WNGD)
2. East Niger Group of Dialects (ENGD)
3. East Central Group of Dialects (ECGD)
4. Cross River Group of Dialects (CRGD)
5. South Western Group of Dialects (SWGD)
6. North Eastern Group of Dialects (NEGD)
7. South Eastern Group of Dialects (SEGD)
8. Northern Group of Dialects (NGD)

She groups the Qmambala varieties into the East Niger Group of dialects. She submits that this dialect group has consonants ranging from 25 to 38 and vowels ranging from 8 to 10 (p.26). She says that the speech communities of Qmambala area have between 26 and 27 consonants while phonologically, they use the voiced post alveolar lateral approximant /l/ in place of the voiced alveolar roll /r/. This is exemplified below:

52	.	SI	Igbariam	Ogbunike	Nteje	
	a.	orụ	olụ	olụ	olụ	‘work’
	b.	ri	li	li	li	‘eat’
	c.	ero	elo	elo	elo	‘mushroom’
	d.	arụ	alụ	alụ	alụ	‘abomination’
	e.	ahụhụ	alụlụ	alụlụ	alụlụ	‘insect’

Nwaozuzu observes that in Qmambala speech communities, the voiceless labio dental fricative /f/ and the voiced glottal fricative ɦ/, are replaced with voiced labio dental fricative /v/. She illustrates with the data presented below:

53.		SI	Nãndò	Àññ	Àgùlerì	
	a.	efere	avele	avele	avele	‘bowl’
	b.	afọ	avọ	avọ	avọ	‘hcamots’
	c.	hãh̃h̃	aṽṽṽ	aṽṽṽ	aṽṽṽ	‘suffering’
	d.	ah̃ja	aṽja	aṽja	aṽja	‘market’
	e.	ihe	ive	ive	ive	‘thing’
	f.	ehi	evi	evi	evi	‘cow’

She says that the voiced velar fricative /ɣ/ is replaced with the voiced labio velar approximant /w/ in some situations as observed in the following examples:

54.		SI	Àññ	Ụm̃ulerì	
	a.	agh̃gh̃	aw̃w̃	aw̃w̃	‘ticed
	b.	igh̃ mkp̃r̃	iw̃ mkp̃l̃	iw̃ mkp̃l̃	‘to pluck fruit’

Nwaozuzu (2008) discloses that in lexical items , Ifite Oḡwarì, Ụm̃ēje and Ụm̃àsì differ to some extent from Añkù, Qm̃or, Um̃èlum̃, Igb̃akw̃ and Ụm̃umbõ.

55.	SI	Ìfite Ọgwarì Group	Anàkù Group	
a.	àhụ	àzì	àrì	‘body’
b.	azù	azì	arì	‘fish’
c.	ahịa	ahịa	avịa	‘market’
d.	nri	ndi	nli	‘food’
e.	ayiya	azì a hīā	azù avīā	‘crayfish’
f.	efere	afele	avele	‘plate’

Nwaozuzu submits that among the five communities in Ò yi, Nkwèlle È zùnakā and Ogbunikē speak the same dialect and their speech patterns resemble that of Onitsha dialect speakers. She says that at lexical level , while Nkwèlle È zùnakā and Ogbunikē replace the Standard Igbo /fi/ with /f/ or retain some where necessary , Ñtèjè, Awkuzu and Ụmūnyà replace the same sound with /v/. Below are examples from Nwaozuzu (2008:30):

56.	SI	Ñtèjè Group	Ogbunikē Group
a.	ahịa	afịa	avịa
b.	ehi	efi	evi
c.	efere	afele	avele

Nwaozuzu may have misplaced the examples in (56) as the ones under Ñ tètjè group should actually be for Ogbunikē group and vice versa. She identifies the following speech communities as having a 26 consonant and 8 vowel sound system each : Awkuzu, Ñtètjè, Ụmūnyà, Ogbunikē, Nkwèlle È zùnaka, Nañdò, Ìgbàriam̄, Ñsugbè, Àgùlerì, Ụmùlerì, Ụmūòba Añ m̄, Àñ m̄, Nzàm, Orumbà Nasaā, Anàkù, Ọmọr, Umùèrum̄, Igbàkwū, Ọmàsì, Ụmūēje and Ìvìte Ọgwarì. She later on page 36, mentions the following speech communities earlier said to have 26 consonants as belonging to same speech community phonologically and having 25 system of consonants : Ñtètjè, Awkuzu, Ụmūnyà, Ìgbàriam̄, Ụmùlerì, Àgùlerì, Anàkù, Ñsugbè, Àñ m̄, Nzàm, Ọmọr, Umùèlum̄ and Igbàkwū. This brings in confusion on the number of consonants existing in these speech communities. She submits that phonologically, these speech communities do not have voiceless labio dental fricative /f/ and that wherever it occurs, it is replaced with its voiced counterpart /v/.

57	a.	afịa	-	avịa
	b.	afere	-	avele
	c.	ehi	-	evi

She considers this as a case of sound shift, thus /fi/ → /f/ → /v/

58.	SI	Ogbunike/ Nkwèllè	Awkuzu/ Ntèjè etc	
	a. ahà	afà	avà	‘name’
	b. ahĩa	afĩa	avĩa	‘market’
	c. ehi	efi	evi	‘cow’
	d. ahụhụ	afufụ	avuvụ	‘suffering’
	e. ha	fa	va	‘they’
	f. afere	afele	avele	‘plate’
	g. otù	òfu	òvu	‘one’

She observes that where Ogbunike and others use /r/, Ntèjè and others in the group use /l/.

59.	Ogbunike etc		Ntèjè etc	
	a. arurụ	→	alulụ	‘insect’
	b. orù	→	olù	‘servant’
	c. àrụ	→	àlụ	‘body’

Nwaozuzu points out that the sound shift here involves moving from the glottal fricative /h/ of the SI to post-alveolar approximant roll /r/ to post-alveolar lateral approximant /l/.

60.	SI	Ogbunike	Ntèjè	
	a. ahụhụ	arurụ	alulụ	‘insect’
	b. ohù	orù	olù	‘servant’
	c. àhụ	àrụ	àlụ	‘body’
	d. ihu	iru	ilu	‘face’

Nwaozuzu (2008) discloses the absence of /h/, /r/ and /f/ sounds in Umūnyà, Ntèjè, Nsugbè, Awkuzu, Ìgbàriam, Umùlerì, Àgùlerì, Anàkù, Àà m, Nzàm, Qmọr, Umùòlum and Igbà kwū, while Nkwèllè Èzùnaka and Ogbunike have them. She says that all the consonants in the SI exist in Ìfite Qgwarì, Umūēje and Qmàsì except the /f/ sound. She also says that all these speech communities mentioned above have the eight vowels found in the SI. She observes that past time is formed in Ìfite Qgwarì, Umūēje and Qmàsì with the use of the form l + high vowel as past-time indicator (p.39).

It is noticed that Nwaozuzu (2008) discusses Qmambala varieties of Igbo in detail. It, however, differs from this study in the sense that it does not treat the phonological processes and secondary articulation features of Qmambala varieties, which this study also investigates. Neither has it discussed phonological issues of Qmambala varieties using theories of phonology. This study agrees with her, especially in her grouping of Qmambala varieties into the East Niger

Group of Dialects, but with modification. The scholar discusses the speech communities of Ọmambala on the basis of their Local Government Areas without pointing out their unifying feature(s) which would enable them to be a separate dialect group within the East Niger Group of Dialects. For example, Ọmambala varieties elide the consonants of the second syllable at VCVCV structure and in some cases the entire syllable. Also, in most speech communities, the SI phonemes /f/ and /h/ are replaced with /v/ in Igbo words. Nwaozuzu uses *Group of Dialects* for communities in some Local Government Areas and *Speech Communities* for others. This study will identify all the differences and similarities and use them as basis to reclassify/reposition Ọmambala varieties within the landscape of Igbo dialectology.

In a comparative phonology of consonants in Igboid, Edoid and Yoruboid languages, Ohiri-Aniche (1991) discovers the existence of /s/ and /dz/, which are among the consonants that have been used by some scholars to designate some varieties of Igbo as separate languages, in Ogidi dialect. She notes that Izii's /pf/, /bv/ and the /kf/, /gv/ of Ezza result from the affrication of the labialised velar /k^w/ and /g^w/ in the environment of back vowels /uɔ/ and, therefore, concludes that affrication cannot qualify Izii as a separate language from Igbo. She illustrates with the examples below:

61.	Izhii	Owere	Ọnicha	Ogidi	Ẹbiriaba	English gloss
a.	tse	to	so	tso	two	'grow'
b.	idzù	izù	izù	idzù	izù	'week'
c.	kwe	kwe	kwe	kwe	kwuo	'agree'
d.	mpfù	ńkwù	ńkwù	ńkwù	ńkḿù	'oil palm'
e.	obvu	ogwū	ogwū	ogwū	ogvū	'thorn'

Ohiri-Aniche (2003:49-70) also compares the initial consonants of Lower Cross and Igboid languages of Benue-Congo and observes that the alveolar sound **ɲ** in Nenwe (Lengwe) in Enugu State corresponds with the voiced palatal plosive /j/ in Ẹkpẹyẹ and to /ds/ elsewhere in Igbo. She illustrates with the following examples:

62.	Izhii	Ọnicha	Ọhaọzara	Nenwe	Ẹkpẹyẹ	English gloss
a.	n-dʒɔ(n)	dʒɔ ndʒɔ	ɲɔ ɲɔ	dʒɔ ndʒɔ	yɔɪyô	be bad, ugly
b.	dʒi	dʒu	ɲu	dʒu/ ɲu	yulu	be full

Ohiri-Aniche (1991 & 2003) discuss phonological patterning of words just as this study, but differ from this study in the sense that her studies are not on Ọmambala Igbo and they have not discussed phonological issues in the dialects using theories of phonology.

Eme and Mbagwu (2007) is a paper on *Phonological patterning on words in Akpo and standard Igbo*. They observe a consistent difference in the phonological patterning of words in the two variants of Igbo, which involve the substitution or alternation of the SI labialised velar nasal /ŋ^w/ or labial velar approximant /w/ with bilabial nasal /m/ in Akpo Igbo. They discover, among other things, that /ŋ^w/ is substituted with /m/ mostly when the verbroot ‘nwe’ is involved but only in some specified contexts..

63 a. S.I O nwèrè ihe o mere.

Akpo: O mèrè ihe o mere.

Gloss: ‘It matters’

b. S.I.: O nweghī ihe o mere.

Akpo: O mehē ihe o mere.

Gloss: ‘It does not matter’

The scholars also observe that when the verb root ŋ^we/ applies to mean ‘have’, the ŋ^we/ is not substituted with /m/.

64 a. S.I.: O nwèrè ọba jī.

Akpo: O nwèrè ọba jī.

Gloss: ‘He has a yam barn’

b. S.I.: Ànyị nwèrè otù ụl ọ̀

Akpo: Ànyị nwèrè otù ụl^wọ̀

Gloss: ‘We have a house’

Eme and Mbagwu (2007) differs from this study in the sense that Akpo, which the scholars have compared its phonological patterning of words with that of the standard Igbo, is not part of Ọmambala Igbo. They did not discuss the phonemes, the phonological processes and secondary articulation features of the dialects. However, Eme and Mbagwu (2007) is considered relevant to this study because it discusses phonological patterning of words which this study is also interested in.

Adjubee and Kammelu (2007) compare vowel harmony system of Igbo and Yoruba and discover that Igbo has mutually harmonic sets marked as [+ATR] /e i o u/ and [-ATR] /a ɪ ɔ ʊ/, while

Yoruba has four vowels in its harmonic sets as [+ATR] /e o/ and [-ATR] /ẹ ọ/. They submit that the vowel /a/ co-occurs freely with both sets. They also observe two significant differences: that the harmony set of Igbo is complete while that of Yoruba is incomplete, and that Yoruba has a neutral vowel /a/ which co-occurs with vowels in the two sets while Igbo does not have. This current study is not the same as Adjubee and Kammelu (2007) since Adjubee and Kammelu (2007) is a comparison of two different languages and the Igbo they have compared its vowel harmony system with that of the Yoruba language is the standard Igbo and not Ọmambala Igbo. This notwithstanding, it is relevant to this study because vowel harmony system it has studied is a phonological process and this study also focuses on phonological processes of Ọmambala Igbo.

Wachukwu (2008) has discovered that the velar nasal soundŋ/, which occurs in both Igbo and English, functions differently in both languages. She asserts that ŋ may occur in only word initial and medial positions in Igbo, but in English it occurs in word medial and final positions only. She has illustrated with the examples below:

65 (a.) Igbo:	Word initial	Word medial
i.	/ŋɔ/ ‘drink’	/a ¹ ŋɔ/ ‘bee’
ii.	/ŋa/ ‘grill’	/ɔŋɔ/ ‘joy’
iii.	/ŋòmi/ ‘imitate’	/aŋàrà/ ‘garden egg’
(b.) English:	Word medial	Word final
i.	/æŋgə/ ‘anger’	/rɪŋ/ ‘ring’
ii.	/streŋθ/ ‘strength’	/hʌŋ/ ‘hung’
iii.	/θɪŋk/ ‘think’	/sɔŋ/ ‘song’

This current study is not the same as Wachukwu (2008) because Wachukwu (2008) compares two different languages and the Igbo the scholar has discussed is the standard Igbo and not Ọmambala Igbo. It is considered relevant to this study because it discusses phoneme distribution, which is part of phonological patterning of words.

Anarado (2011) investigates the phonotactics of Adàzì-Nnukwù dialect of Igbo using descriptive method. She discovers that the dialect allows vowel sequence or clusters but with some restrictions: the close back rounded vowel /u/ and ʊ can only be the second vowel in sequence where they are also the first vowel, and /f/ can only precede /u/ and ʊ/ in a CV syllable structure while the opaque vowel /a/ co-occurs with [+ATR] vowel in word-initial position only. She discloses that the voiceless palato-alveolar fricative /ʃ/ and alveolar roll /r/, which are in the SI, are not in use in Adà zì Nnukwù dialect of the language, while /ɸ β hw/ are in Adazi Nnukwu

but not in S.I. She also identifies the absence of these sounds in Adàzì Nnukwù dialect, especially the voiced alveolar roll /r/ as the basic cause of the mispronunciation of words by the speakers of the dialect when they meet these sounds in other Igbo dialects or languages where they occur, especially in English words.

Adazi-Nnukwu dialect is not part of Qmambala Igbo. This is evidence that Anarado (2011) differs from the present study. It is, however, important to this study because it has discussed the phonological patterning of words in the dialect.

Ohiri-Aniche (2011) investigates some phonological and morphological differences she points out some scholars use to back their claims of some dialects being separate languages from Igbo. She notes that the additional ninth vowel ‘ẹ’/ɛ/ which Ẹkpẹyẹ, Ikwere, Izhii and Ụkwụanị have in addition to the eight vowels /i ị e a o ọ u ụ/ in Qwere, Qnịcha and other undisputed Igbo dialects in the Central Igbo area does not qualify them to be designated as separate languages because many other Igbo dialects, especially in the periphery such as Ẹbirịba also have the ninth vowel as shown below:

66.	Ẹkpẹyẹ	Ikwere	Ẹbirịba	Owere	Qnịcha	English gloss
	ɛkâ	à ^l ka ^h	ɛka	aka	aka	‘arm, hand’

She similarly notes that the occurrence of the voiced implosives /b d/ in Ẹkpẹyẹ cannot qualify it as a separate language since /b / occurs in many other Igbo speech varieties, and / d/ in, at least, one other variety as exemplified below:

67.	(a.)	Ẹkpẹyẹ:	ba ‘increase’, ɓa ‘write’, gba ‘run’				
	(b.)	Ẹkpẹyẹ	Ikwere	Qwere	Qnịcha	Ụkwụanị	Englishgloss
	i.	ịdâ	ɛra	ara	ala	ɛlâ	‘madness’
	ii.	uđ	ɔrò	ulò/ uyò	um	um	‘house’

In her dialectological survey of Oru West Igbo dialects, Chukwu (2014) observes that Oru West Igbo dialects have nine vowels a e ị i o ọ u ụ ẹ as against eight in SI and thirty-one consonants as against twenty-eight in SI. She identifies the unique sounds that bring about the differences as voiced nasalized glottal fricative ħ ãħ/, voiced palatal plosive jy ãj/, voiced nasalised alveolar roll ãr /ãr /, voiced alveolar tap ry /l/ and the open mid vowel ẹ /ɛ/.

Chukwu (2014) reveals that the previous classifications do not represent the Oru West Igbo dialects. She challenges Nwaozuzu’s (2008) claim that the East Central Group of Dialects have sixty-six consonants when her findings reveal that Oru West Igbo dialect which is a member of this group has only thirty one consonants. Continuing, she points out that Nwaozuzu provides

two forms as ‘-là/-lè’, ‘nà-/nè-’ in progressive construction excluding the form ‘-go’ which her findings reveal as also a perfective future of Oru West Igbo dialect. She also notes that Ikekeonwu (1987) says nothing concrete about Oru West Igbo dialect, consequent upon which she has declined comment on her work.

Ohiri-Aniche (2011) and Chukwu (2014) differ from the present study in the sense that they have discussed Igbo varieties that are different from Omambala Igbo. They are relevant to this study since they studied the phonemes of the dialects and this study also investigates the phonemes of Omambala Igbo.

In a study of government phonology of /ŋ/ in Igbo, Mbah (2007) identifies two forms of the velar nasal /ŋ/: the underlying or the psychological reality and the allophones which manifest as [m], [n] or [ŋ] in the surface form of the Igbo words like *mma*, *nne* and *nha* respectively. He considers these instances as a consequence of anticipatory articulation, which is conveniently accounted for by government phonology.

Oyebade and Mbah (2008) is a study of *Empty nuclei in the Igbo and Ga*. They examined how the government phonology can account for emergence of consonant clusters in the two languages. Their findings reveal that empty nuclei exists in the Igbo and Ga languages, thus, emphasizing that most African languages lack consonant clusters.

Edeoga (2013) is a work on *Government phonology of vowel harmony in Nsukka variety of Igbo*. She applied government phonology to analyse vowel harmony system of Nsukka dialect and concludes that vowel harmony system can be explained with the theory.

In a study *Government phonology of the Ubooma dialect of Igbo*, Nwokeiwu (2014) tests the applicability of the theory of government phonology in Ubooma dialect. He discovers that government phonology conveniently applies in handling vowel harmony and homorganic words in Ubooma dialect. Specifically, he identifies government in forming infinitive, participle, gerund, noun agent, past tense, imperative and homorganic words in the dialect. He also finds out that the determinant of government for vowel harmony are the vowels of the verb root, which must be obeyed by other constituents; while for homorganic words, government is determined by the consonants that form the root of a word which the prefixed must take to.

Mbah (2007), Oyebade and Mbah (2008), Edeoga (2013) and Nwokeiwu (2014) anchor their studies on government phonology theory, which is one of the theories chosen for this study. However, their studies do not discuss Omambala Igbo being investigated by this study. Apart from the homorganicity of nasals, empty nuclei and vowel harmony, which they have used

government phonology to analyse, this study analyses some other phonological processes and secondary articulation features like palatalisation, labialisation, nasalisation and assimilation using government phonology, in addition to generative phonology and autosegmental phonology. Their relevance to this study is that they discuss phonological processes and secondary articulation features.

From the empirical review, it is evident that all the works reviewed are relevant to this study as they individually discuss some or all the phonological issues this study has set out to discuss, which are the phoneme, the phonological patterning of words, the phonological processes and secondary articulation features. However, while this study focuses on Omambala Igbo, some of them investigated other dialects of Igbo, some studied different languages and some studied standard Igbo and other languages. The method of data collection is the same in each case since they are all corpus-based involving a discussion of the phonemes, the phonological patterning of words, the phonological processes and secondary articulation features are discussed, but the dialect and, in some cases, language of the corpora are different. Another major difference is that these past studies mostly used the descriptive method: Eme (2008) used perceptual method; only Mbah (2007), Oyebade and Mbah (2008), Edeoga (2013) and Nwokeiwu (2014) used government phonology. This present study, in addition to using descriptive method and government phonology for analysis, also uses generative phonology and autosegmental phonology.

2.3 Theoretical framework

The theoretical framework adopted for this study is eclectic in nature involving Trubetzkoy's (1939) theory of distinctive opposition, Chomsky's (1964) generative phonology, Goldsmith's (1976) autosegmental phonology, and Kaye, Lowenstamm and Vergnaud's (1985) government phonology.

2.3.1 Theory of distinctive opposition

Trubetzkoy's theory of distinctive opposition is an aspect of Classical Phonology which discusses the issue of the phoneme and how to identify phonemes in a language. Trubetzkoy (1939) views the phoneme as a linguistic concept or a phonological reality which should be considered purely in terms of its function in the system of a language. Through the theory of distinctive opposition, Trubetzkoy recommends three different kinds of opposition which sounds in human language can enter into. They are:

- (1.) Privative Opposition: This occurs when two phones are identical except that one has a phonetic mark which the other lacks as can be seen in the pairs /f/ ~ /v/, /p/~/b/, /k^w/~/g^w/, where each pair differs by voicing;
- (2.) Equipollent opposition: This is where phonemes differ from others as a result of certain feature each has which others lacks. Examples are /p/~/t/~/k/, /b/~/d/~/g/, /m/~/n/~/ŋ/; and
- (3.) Gradual Opposition: This deals with opposition brought about by the steep nature of the height of the tongue in producing some sounds, usually vowels such as /i/, /e/ and /æ/ where there is movement from high, mid to low.

The theory of distinctive opposition introduces some concepts used for explaining relationships among the phonemes such as the concepts of complementary distribution, free variation and minimal pair test. Complementary distribution is used to differentiate sounds which occur in mutually exclusive environments. Two sounds are in complementary distribution if they never occur in the same context (Bittner, 2013). Sounds of this nature are regarded as allophones of the same phoneme. For example, in English, the sounds [p] and [p^h] are allophones of the phoneme /p/ and they are in complementary distribution – where one occurs, the other does not occur. Bittner (2013) illustrates this concept with the phoneme /l/. He says that the phoneme is realised as a voiceless allophone [l̥] when it follows /p/, /t/ or /k/ at syllable initial position; when it precedes a vowel, it becomes ‘clear l’; and when it changes to ‘dark l’ it occurs elsewhere before a consonant or a pause. He notes that the three allophones stand for the various realisations of the /l/ phoneme and concludes that since they are members of the same phoneme, they are in complementary distribution.

Free variation (FV) is used for sounds which can be substituted for each other in the same environment without a change in meaning of the lexical item. This is illustrated with the following Igbo examples:

68. a. /l/ and /r/ in mmili or mmiri ‘water’; nli or nri ‘food’
- b. /z/ and /r/ in ézì or érì ‘pig’.

Bittner (2013) illustrates the phenomenon of FV with consonantal and vocalic phonemes. He points out that the phoneme /z/ in English word *zeal* can be realised as a voiceless, or devoiced allophone when whispered, or as a voiced allophone when pronounced ‘normally’. Similarly, he submits that speakers of some non-standard British accents can realise the phoneme /t/ as a glottal stop [ʔ] in English word *butter*, but when they target at producing a more standard pronunciation, they might realise it as [t]. The scholar also notes that the phonemes /i:/ and /e/

at initial positions of the English words *economics* and *evolution*, and /i:/ and /ɪ/ at initial position of the English word *either* is an evidence that vocalic phonemes could be in free variation. Barlow and Gierut (2002) demonstrate sounds in free variation with data from English:

69. [mæp]
[mæp̚]

The scholars point out that though the examples in (69) differ by released [p] and unreleased [p̚], their phonetic difference does not bring about a change in meaning because the two words mean exactly the same thing ‘map’ . With this, they conclude that they do not constitute MP and the sounds [p] and [p̚] are neither contrastive nor function as phonemes in English; but are rather allophones (phonetic variants) of the phoneme /p/.

With MP test, distinctive phones are identified. It is the contrasting phones that constitute phonemes of a language. This is exemplified with data from Igbo:

70. a. oche ‘chair’ b. ṭàa ‘chew’ c. isè ‘to draw (an object, water, etc)’
 ofe ‘soup’ bàa ‘enter, scold’ isò ‘to follow’

The differences in the meanings of the above pairs of words are a result of the differences in their medial, initial and final phonemes respectively, which function to differentiate the meanings of the words.

Barlow and Gierut (2002) illustrate the MP test with data from English:

- | | | | | | | |
|------|----|-------------|--------------|-------------|---------------|-------------------|
| 71 a | i. | ‘map’ [mæp] | ii. | ‘map’ [mæp] | iii. | ‘fashion’ [fæʃən] |
| | | ‘mat’ [mæt] | | ‘cap’ [kæp] | | ‘fasten’ [fæsən] |
| | b | i. | ‘spy’ [spaɪ] | ii. | ‘cats’ [kæts] | |
| | | | ‘sky’ [skaɪ] | | ‘caps’ [kæps] | |
| | c | i. | ‘map’ [mæp] | ii. | cap [kæp] | |
| | | | ‘mop’ [mɒp] | | keep [kip] | |

The scholars use the examples in 71(a) to show that contrast occurs at different contexts – initial, medial and final positions; for 71 (b), they demonstrate that contrast also takes place on cluster contexts; and finally, the examples in 71(c) are an indication that vowels also contrast. They equally discuss near MPs using cluster-singleton comparisons and vowel versus consonant final comparisons as exemplified below:

- 72 a. ‘play’ [plei] b. ‘boat’ [bout]
 ‘pay’ [pei] ‘bow’ [bou]

Mbah and Mbah (2010) uphold earlier views on the concept of MP, but further expanded it to cover tone languages. They argue that every word of a language has two tiers: the prosodic and the segmental, and that in determining MP, a perceptible rhythm generated both at the segmental and prosodic tiers whose form is contrasted by a single sound feature apiece must be considered. In their opinion, when pairs are identical at the autosegmental or prosodic tier, then the contrasting sound will be at the segmental tier and vice versa; and that while the latter is common with tone languages, the former is common with intonational languages (p.161). Mbah and Mbah (2010) differ from Ladefoged (1975) in his contention that in addition to segments of the MP, the words, the unit of analysis, has to rhyme. They argue that it is the actual sounds produced in speech that are used to determine minimal pairs, e.g.

- 73 (a) key (b) my (c) me (d) lie
 bee nigh knee why

These examples in (73), to Ladefoged (1975), do not constitute MP because more than one segment sets them apart, but Mbah and Mbah (2010) argue that since the sounds rhyme, they constitute MPs. Mbah and Mbah (2010) also submit that a minimum of pitch variation which results in meaning contrast as well as intonational patterns and tonemes which stretch over syntactic junctures or lexical items respectively but results in meaning contrast form MP, e.g.

- 74 a. John came.
 b. John came?

They also provide evidences from Igbo to buttress their point that words similar at the segmental tier without rhyming at the prosodic tier form MP, e.g.

- 75 a. akwa ‘cry’ b. oke ‘male’
 akwà ‘cloth’ okè ‘boundary’
 àkwa ‘egg’ òke ‘rat’
 àkwà ‘bed’ òkè ‘share’

In the examples in (75), Mbah and Mbah (2010) point out that *cry* and *bed*, *cloth* and *egg* are tonally equipollent because each segment has a tone which the other lacks. Emenanjo (2015) presents some Igbo data which validate Mbah and Mbah's (2010) position on MP in tone languages. Some of the data are as follow:

- 76
- | | | | | | |
|----|------------------------|----|-----------------|----|---------------|
| a. | akwa 'cry' | b. | isi 'head' | c. | igwè 'iron' |
| | akwà 'cloth' | | isì 'smell' | | ìgwè 'crowd' |
| | àkwa 'egg' | | ìsì 'blindness' | | igwē 'sky' |
| | àkwà 'bed/bridge' | | | | |
| d. | ọcha 'white' | e. | oke 'male' | f. | mma 'beauty' |
| | òcha 'whiteness' | | okè 'boundary' | | mmà 'knife' |
| | | | òke 'rat' | | mmā 'beauty' |
| | | | òkè 'share' | | |
| g. | idè 'flood/earthworm' | | | | |
| | ìde 'pillar/basket' | | | | |
| | ìdè 'raffia palm wine' | | | | |

(Adapted from Emenanjo, 2015:112)

For example 76(d), Emenanjo demonstrates that two apparently identical and even related words can differ in their parts of speech as stated below:

- 77
- | | | |
|----|---------------------------------|-----------|
| a. | òcha 'whiteness' (nominal) | noun |
| b. | ọcha 'white' (nominal modifier) | adjective |

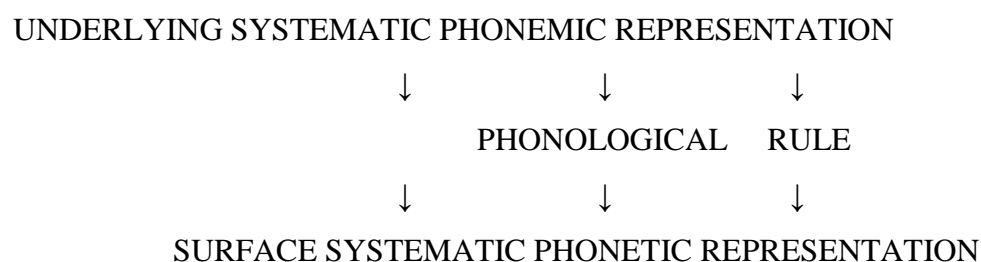
This study adopts the minimal pair (MP) aspect of Trubetzkoy's theory of distinctive opposition as further developed by Mbah and Mbah (2010) for this study since Igbo is a tone language and relying on it will enable the phonemes of the Qmambala Igbo to be established.

2.3.2 Generative phonology

Generative phonology is a theory of phonology which emphasizes rules generation. It posits that grammar contains finite set of rules used to generate infinite correct possibilities in human language. That is why Chomsky and Halle (1968:3) contend that 'a grammar is a system of rules that relate sound and meaning'. Among the tenets of generative phonology is its belief in fully explicit and algorithmic phonologies that are capable of generating the surface forms of language from underlying forms, employment of derivational means, developing of phonological representations through linear sequences only using matrices of features, and its strong adherence to the principle of deep rule ordering (Goldsmith and Laks, 2014).

Chomsky and Halle (1968) hold the view that there are several components of the grammar, which include a phonological component. This component comprises of three different modules: the underlying systematic phonemic representation, the surface systematic phonetic representation, and the phonological rule (Oyebade and Mbah, 2008), which serves as intermediary between the first two components. The representational structure is captured in the following diagram:

Fig. 2.6: Modules to the component of grammar called phonology



Fromkin, Rodman and Hyams (2011) write that the role of phonological rules in a grammar is to provide phonetic information required for the pronunciation of utterances. That is why Schane (1973) submits that phonological rule is used to state the exact condition in which a phonological process takes place. Schane (1973:62) categorises four types of rules in generative phonology, which are: the feature changing rules, deletion and insertion rules, permutation and coalescence rules, and rules with variables. Sommerstein (1977:115) summarises the effect of phonological rules, thus:

Phonological rules then apply, changing the values of features and possibly inserting or deleting segments, to convert this representation into a systematic phonetic representation of a degree of ‘narrowness’ such that, at the very least, any two sounds that are distinguished in any human language are differently represented.

Each of the rules performs one function as we now present below:

- A. Feature changing rule: Feature changing rule is a phonological rule that captures instances whereby features of a particular segment changes to the features of another segment either partially or completely. Three things puzzle the mind when such a change occurs, which are concerned with identifying the segments that change, how the change had occurred and the conditions under which the change had occurred (Schane, 1973:62). Sommerstein (1977:117) presents the process involved in ascertaining the three information where he says that the input and environment between them form the structural description (SD) of a rule, while the part of

the rule that shows what the input changes to represents the output or structural change (SC). He generalises this thus:

Fig. 2.7: Structural description (SD) and structural change (SC)

$$A \longrightarrow B / X \text{ ___ } Y$$

Schane (1973:62–64) presents some of the feature changing rules and their interpretations:

Rule 2. Feature changing rules

- a. [- sonorant] \longrightarrow [- voiced]
- b. V \longrightarrow [+nasal]

These rules, according to Schane, imply that all obstruents become voiceless in all positions and that all vowels become nasalised wherever they occur. These rules are context free rules – rules that do not require any environment to take place. There are some rules that must take place in certain environments which are referred to as context-dependent rules. Two types of rules are, therefore, distinguished: the context free rules and context dependent rules. Schane presents some context dependent rules:

Rule 3. Context dependent rule

$$V \longrightarrow [+nasal] / \text{ ___ } \left[\begin{array}{c} C \\ +nasal \end{array} \right] C$$

The above rule is a P-rule of nasalization. This rule is interpreted to mean that a vowel becomes nasalised in an environment before a nasal consonant followed by another consonant e.g.

78.	French		English
a.	/sɛ̃t/	‘saint’	/kæ̃nt/ ‘can’t’
b.	/gɑ̃sɔ̃/	‘boy’	/pæ̃nt/ ‘pant’

(Adapted from Mbah and Mbah, 2010:107)

Rule 4. Voicing rule

$$[- \text{sonorant}] \longrightarrow [+ \text{voiced}] / V \text{ ___ } V$$

This rule says that obstruents are voiced at intervocalic positions.

Rule 5. Umlauting rule

$$V \longrightarrow [- \text{back}] / \text{ ___ } \left[\begin{array}{c} V \\ +high \\ -back \end{array} \right]$$

This rule is interpreted to mean that vowels become fronted before zero or more consonants followed by a high front vowel. This is umlauting rule. C₀ is also interpreted as “irrespective of any number of consonants” (Mbah and Mbah, 2010:107).

Rule 6. Nasalisation rule

$$V \longrightarrow [+nasal] / __ \left[\begin{array}{c} C \\ +nasal \end{array} \right] \#$$

This rule is interpreted to mean that vowels become nasalised in an environment before a nasal consonant at word boundary e.g.

79. French
- | | | |
|---------|---------|----------|
| [garsõ] | garçon | ‘boy’ |
| [pwašõ] | poisson | ‘fish’ |
| [pwažõ] | poison | ‘poison’ |

(Adapted from Mbah and Mbah, 2010:108)

Rule 7. Nasalisation rule using brace

$$V \longrightarrow [-back] / __ \left[\begin{array}{c} C \\ +nasal \end{array} \right] \left\{ \begin{array}{l} C \\ \# \end{array} \right.$$

This rule is interpreted to mean that vowels become nasalised before a nasal consonant followed by another consonant or word boundary.

Emenanjo (2015) discusses glide formation in Igbo using P-rule. He points out that in Igbo, there is a disyllabification of i oṅ to become the semi -vowel (or approximant) /j/, leading to a glide formation. Some data he presented are:

80. a. isi + ewu → isjewū
- ‘head’ ‘goat’ ‘goat head’
- b. ùḍ rì + ù ò → ùḍirjùlò
- ‘type’ ‘house’ ‘type of house’

He provides a formal P-rule account of the above data as follows:

Rule 8. Emenanjo’s (2015) P-rule representation of disyllabification of the i or ì in Igbo

$$\left[\begin{array}{c} +syllable \\ +high \end{array} \right] \longrightarrow \left[\begin{array}{c} -syll \\ -cons \end{array} \right] / __ \left[\begin{array}{c} +syll \\ -high \end{array} \right]$$

Interpretation: A high vowel becomes desyllabified in an environment before a low vowel.

B. Deletion and insertion rules: This rule is used to represent deletion or elision of a segment in speech. According Schane (1973:65), it “is indicated by Ø, the null symbol.” He says that the segment that is deleted is on the left of the arrow, while the Ø appears on the right. He states some deletion rules, thus:

Rule 9. Deletion rule

$$\left[\begin{array}{c} C \\ +nasal \end{array} \right] \longrightarrow \emptyset / \left[\begin{array}{c} V \\ +nasal \end{array} \right] _$$

This rule is interpreted to mean that nasal consonants are deleted after nasalised vowels.

Rule 10. Deletion rule with brace

$$C \longrightarrow \emptyset / _ \# \left\{ \begin{array}{l} C \\ // \end{array} \right.$$

This rule says that word final consonants are deleted before a following consonant or in phrase final position.

Schane (1973) discloses that for insertion rule, the null symbol appears to the left of the arrow, while the segment to be inserted is on the right. He states insertion rule, thus:

Rule 11. Insertion rule

$$\emptyset \longrightarrow \left[\begin{array}{c} V \\ +high \\ +round \end{array} \right] / \# C _ C$$

This rule is interpreted that when two consonants begin a word, the vowel u is inserted to break up the consonant cluster.

C. Permutation and coalescence rules: Permutation rule is used to ensure that identical information does not have to be repeated on both sides. To ensure that only the one that changes is given information on, the element which appears to the left are specified and numbered and the same numbers are used on the right to refer to their relative positions. If one of the segments on the left undergoes a change, that change is indicated on the right along with that segment’s number. For elements which do not change, only their numbers appear on the right. According to Schane, this rule is also called transformational format similar to what is used for writing transformational rules of syntax. Below are some permutation rules:

Rule 12. Permutation rule showing nasalisation

$$V \left[\begin{array}{c} C \\ +nasal \end{array} \right] \# \begin{array}{c} 1 \\ 2 \\ 3 \end{array} \longrightarrow \left[\begin{array}{c} 1 \\ +nasal \end{array} \right] \begin{array}{c} 2 \\ 3 \end{array}$$

For deletion, a \emptyset appears in the right half of the rule in place of the segment which is to undergo deletion.

Rule 13. Deletion with permutation rule

$$C \# \begin{cases} C \\ | \\ | \\ 1 \ 2 \ 3 \end{cases} \longrightarrow \emptyset \ 2 \ 3$$

Schane says that for insertion the null symbol \emptyset is not needed, rather a specification of the segment to be inserted is indicated in the right half of the rule at the correct place in the sequence

Rule 14. Insertion with permutation rule

$$\begin{matrix} \# & C & C \\ 1 & 2 & 3 \end{matrix} \longrightarrow 1 \ 2 \begin{bmatrix} V \\ + \text{high} \\ + \text{round} \end{bmatrix} 3$$

This notation, according to schane (1973), is also applied in analysing metathesis and coalescent assimilation as presented below:

Rule 15. Metathesis and coalescence with permutation rule

a. Metathesis:
$$V \begin{bmatrix} - \text{consonantal} \\ - \text{continuant} \end{bmatrix} CV \longrightarrow 1 \ 3 \ 2 \ 4$$

$$\begin{matrix} 1 & 2 & 3 & 4 \end{matrix}$$

b. Coalescence:
$$C \begin{bmatrix} - \text{syllabic} \\ - \text{consonantal} \\ + \text{round} \end{bmatrix} \longrightarrow \begin{bmatrix} 1 \\ + \text{round} \end{bmatrix} \emptyset$$

$$\begin{matrix} 1 & 2 \end{matrix}$$

For metathesis, the cluster glottal stop and consonant in Hanunoo becomes consonant and glottal stop when it is internal to the word i.e. between vowels. In coalescence, the primary segment is modified while the secondary one is deleted and the modifications are shown in the right half of the rule. So, in the coalescent rule above, a consonant followed by *w* coalesces to a labialised consonant.

D. Rules with variables: These are single rules used to replace two rules which are identical except the values of the same feature (Schane, 1973). Schane says that variable is another way of saying “has the same value as” or “agrees in value with”. What is inferred from this is that rules with

variables are used to collapse more than one rule applied in analysing a phonological phenomenon. For example:

Rule 16. Assimilation rule

$$\left[\begin{array}{c} - \text{sonorant} \end{array} \right] \rightarrow \left[\begin{array}{c} + \text{voiced} \end{array} \right] / \text{---} \left[\begin{array}{c} - \text{sonorant} \\ + \text{voiced} \end{array} \right]$$

Interpretation: Obstruent becomes voiced in an environment before a voiced obstruent.

Rule 17. Assimilation rule

$$\left[\begin{array}{c} - \text{sonorant} \end{array} \right] \rightarrow \left[\begin{array}{c} - \text{voiced} \end{array} \right] / \text{---} \left[\begin{array}{c} - \text{sonorant} \\ - \text{voiced} \end{array} \right]$$

Interpretation: Obstruent becomes voiceless in an environment before a voiceless obstruent.

These two rules can be collapsed to a single rule with variables as follow:

Rule 18. Rule with variables

$$\left[\begin{array}{c} - \text{sonorant} \end{array} \right] \rightarrow \left[\begin{array}{c} \alpha \text{voiced} \end{array} \right] / \text{---} \left[\begin{array}{c} - \text{sonorant} \\ \alpha \text{voiced} \end{array} \right]$$

Interpretation: The first obstruent takes the same value for the feature [+voiced] as is found in the second obstruent.

Mbah and Mbah (2010) provide the following examples to demonstrate the application of rules with variables in English:

- | | | | | | |
|----|----|------------------|---|----------|----------|
| 81 | a. | gs as in bæg-s | → | [bægz] | ‘bags’ |
| | b. | dgs as in bædʒis | → | [bædʒiz] | ‘badges’ |
| | c. | kd as in ask-ed | → | [askt] | ‘asked’ |

Emenanjo (2015) uses rule with variables to account for homorganic nasal assimilation in Igbo. He points out that any consonant that follows the syllabic nasal /N/ is assimilated to it by homorganicity. He describes it as a kind of regressive assimilation and uses P-rule to account for it as presented below:

Rule 19. Emenanjo’s (2015) P-rule account of homorganic nasal assimilation

$$[+ \text{nasal}] \left[\begin{array}{c} x \text{ anterior} \\ \beta \text{ coronal} \\ \gamma \text{ high} \\ \epsilon \text{ back} \end{array} \right] / \text{---} \left[\begin{array}{c} x \text{ anterior} \\ \beta \text{ coronal} \\ \gamma \text{ high} \\ \epsilon \text{ back} \end{array} \right]$$

Emenanjo (2015) interpretes this rule to mean that any time a syllabic nasal is followed by a consonant within a word, the nasal consonant takes on the place of articulation of the following consonant. He illustrates with the examples below:

82.	a.	/nnà/	>	[nnà]	‘father’
	b.	/nmà/	>	[mmà]	‘knife’
	c.	/nkɔ/	>	[ŋkɔ]	‘wood’
	d.	/nkpa/	>	[ŋkpà]	‘importance’
	e.	/nvɔ/	>	[mɔvɔ]	‘finger nail’
	f.	/ñzè/	>	[nzè]	‘title’

Generative phonology is relevant in this study. Its relevance stems from its provision of statement of principles responsible for the processes involved in the use of language; the phonological rules specify minimal modifications of the underlying forms in order to bring them in line with the surface constraints. The phonological rules, organized in a linear manner, are used to analyse lengthening, labialisation, palatalisation, homorganic nasal assimilation, nasalisation, neutralisation, assimilation, elision, insertion, vowel harmony and metathesis.

2.3.3 Autosegmental phonology

The Autosegmental Phonology (AP) model was developed as a result of reactions to generative phonology in the 70s as because of some proposals of the theory or some of its basic assumptions. There was controversy over the issue of abstractness as SPE refused to adopt a totally abstract formalist logic (Goldsmith and Laks, 2014:12). The generative phonology was attacked for specifying underlying segments and proposing distinctive feature as the minimal as well as its assumption that utterances are bundles of unordered features arranged in an ordered sequence (Oyebade and Mbah, 2008). Another major problem generative phonology had is the issue of linearity which makes it difficult for it to handle supra-segmental issues.

The AP model was enunciated by Goldsmith (1976). It is a deviation from the use of linear segmental rules to analyse the phonology of a language. It lays emphasis on the analysis of suprasegmental features which, according to Goldsmith (1976), could not be handled by segmental phonology. The model is highly acknowledged for its development of a multi-linear phonological analysis where features are represented on separate tiers rather than being viewed as a string of segments. Each of the tiers is regarded as independent or autonomous. Goldsmith (1979) distinguishes the AP from the generative phonology by saying that it:

mainly differs from generative phonology by its development of a multi linear phonological analysis where features may be placed on separate tiers with various tiers organized by ‘association lines’ and Well-Formedness Condition; and analysis of phonological phenomena less in terms of feature changing rules as such, and more in terms of rules that delete and organize the various autosegments, through the readjustment of the association lines.

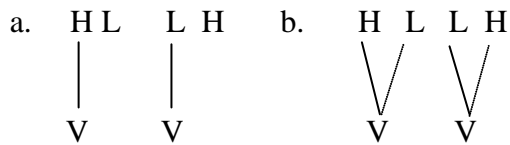
The foregoing suggests that phonological rules can apply to one tier without affecting other tiers. Goldsmith (1976) applies this model to analyse Igbo tone system. Goldsmith (1974) in a paper *Autosegmental Tonology* throws light on what eventually metamorphosed as autosegmental phonology in 1976. He presents a phonological derivation as a sequence of representations with each representation being a sequence of feature bundles (segments) and each pair of adjacent representations related by a phonological rule. He considers the first in the sequence as the underlying representation while the last is the final derived representation. Goldsmith discloses that Leben (1973) and Williams (1976) initiated the moves to break away from a strictly linear representation with the generative grammar by suggesting that the representation underlying some particular sequence of ‘phonetic’ segments could consist of two separate and quite independent sequences of phoneme-type segments; one sequence providing the tonal information and the other sequence containing anything else. Goldsmith, however, faults their proposals for providing for ‘feature’ (mapping rule) which merges the tonemic and phonemic sequences as well as their system of representing a contour tone as a strictly linear system would. He considers the merger too strong and therefore suggests that the two tiers (the phonemic and the tonemic tiers) remain separate throughout the derivation (Goldsmith, 1973:4). In place of ‘mapping rule’, he suggests ‘correspondence rule’.

Goldsmith (1976) suggests that there is the ‘stability’ of tone due to the resistance of the tonal features of a vowel to deletion, even when the vowel bearing the tonal feature is deleted or de-syllabified. In the opinion of the scholar, the association line is introduced at some points in the derivation by a rule after the underlying representation. He suggests a convention known as the ‘Well Formedness Condition’ (WFC), which has the effect of adding or deleting association lines at any point throughout the derivation (Goldsmith, 1976; 1990). The convention states:

1. Each vowel must be associated with ‘at least’ one toneme.
2. Each toneme must be associated with ‘at least’ one vowel.
3. No association line may cross.

With the WFC, where a tone associated with a vowel is adjacent to another tone that is unassociated with a vowel, a universal convention automatically spreads the tone to the toneless vowels (Katamba, 1993:158). This is shown below:

Fig.2.8 Tone spreading



The notations used by autosegmental phonology are explained by Katamba (1993:175) thus:

- a. | An unbroken association line indicates pre-linking i.e. prior association in the lexicon of elements on separate tiers.
- b. /- A broken association line indicates linking i.e. the creation of an association line.
- c. ⊥ A crossed through association line shows delinking, i.e. the severance by rule of an association line linking elements on different tiers.
- d. [] A left bracket shows the left boundary and a right bracket shows a right boundary.
- e. ○ A circle around an item indicates that the item has been deleted.

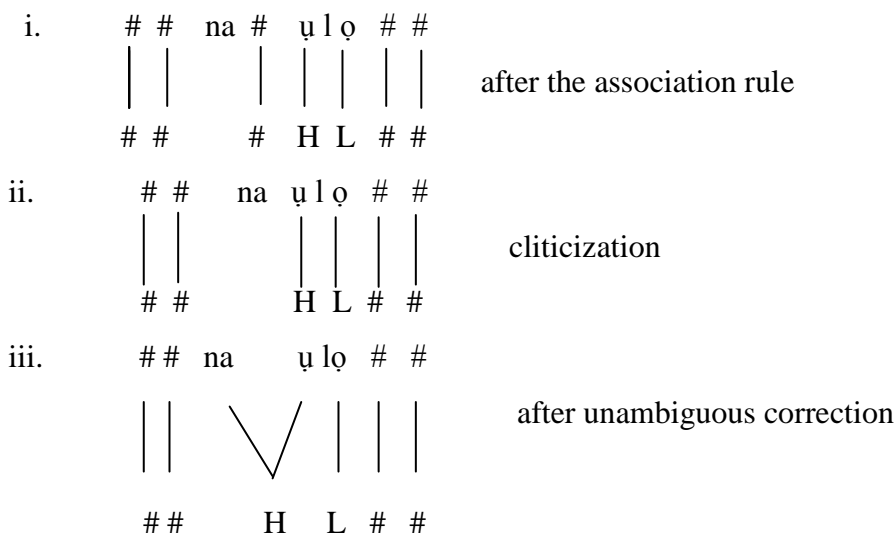
Following AP, in analyzing tone in Igbo or any other tone language, phonological representation should not be less than two tiers, and the different tiers are linked by association lines while the WFC guides the association lines to ensure the derivation of correct forms in the surface representation based on the language’s phonotactic constraints. Below is an illustration of application of AP model:

Goldsmith (1974) uses AP principle to analyse cliticisation in Igbo where he discloses that the preposition *na*, which is toneless, cliticises to its object as shown below:

- 83 a. Ọ nọ na ụlọ ‘he is in the house’
- b. Ọ nọ nà àlà ‘it is on the ground’

Autosegmental derivation:

Fig 2.9 Goldsmith’s (1974) autosegmental phonology analysis of cliticisation in Igbo

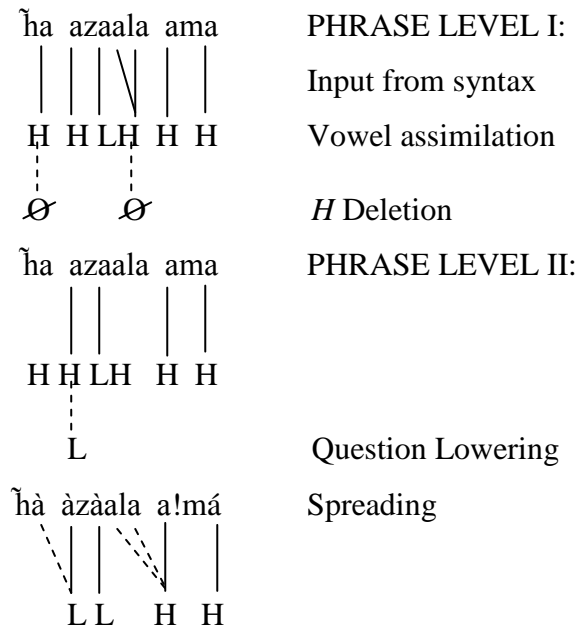


(adapted from Goldsmith, 1974: 10)

Mbah and Mbah (2010) disclose that the AP model has been expanded to cover or take care of other features than tone, such as nasalization and vowel harmony.

Clark (1990) discusses the tonal system of Igbo. She says that spreading is assigned to Phrase Level II on grounds of ordering. She illustrates with the derivation of the question *Hà àzàálá ámá* ‘Have they swept the path?’ (*há* ‘they’ + *á-zà-á-lá* ‘have swept’ (aff. non-Factative) + *ámá* ‘path’ (assoc.)’) which is demonstrated below:

Fig. 2.10 Clark’s (1990) analysis of tone spreading in Igbo



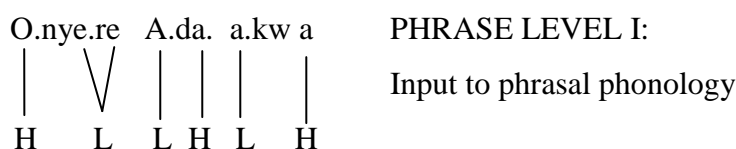
Clark points out that spreading is assigned to Phrase level II so that when the form enters the Level II phonology, it meets the structural description of both Question Lowering and Spreading, and the two rules apply simultaneously, to yield the correct output.

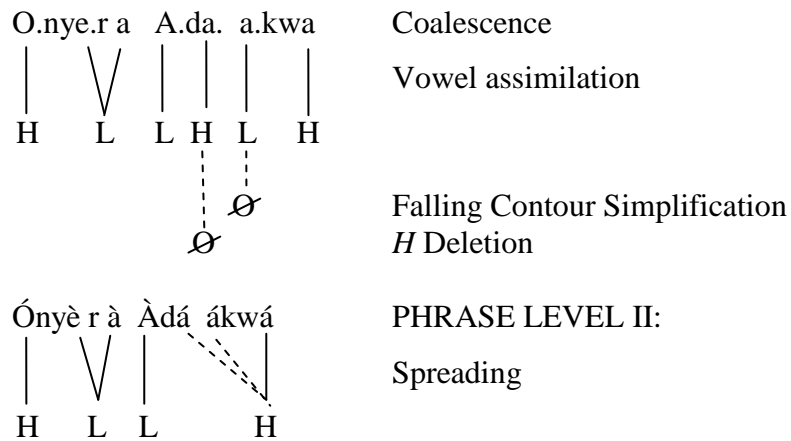
Clark also discusses falling contour simplification where she observes that the concatenation of words usually creates a vowel sequence because Igbo words normally begin and end with vowels. She points out that in normal conversation, such sequences are blended into a single syllable, by a rule of coalescence and when the coalesced syllable carries a HL contour, the low tone is deleted by rule of Falling Contour Simplification, where; $L \rightarrow \emptyset$ [H ____ .

σ

This rule is demonstrated below as follows:

Fig. 2.11: Clark’s (1990) analysis of falling contour simplification in Igbo

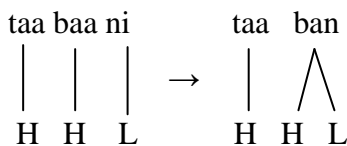




Clark demonstrates that when the structural description of the rule is met across a word boundary, it applies at Phrase Level I, and feeds into the rule of H deletion. What Clark has not disclosed is the representation of the contour tone before simplification. However, Katamba (1993) clearly states that contour tones are instances of rising tones or falling tones and that they manifest when elements at any one tier may be linked one-to-many with elements at another tier.

Leben (2006) describes the model as providing an explicit way of framing analysis. He presents what he considers an elegant capturing of Hausa contraction rule by the model.

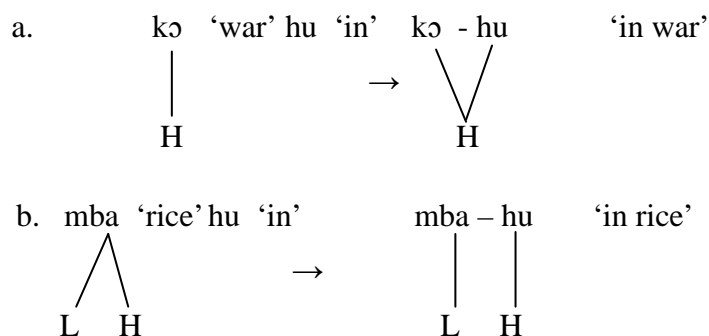
Fig. 2.12 Leben's (2006) autosegmental phonology account of contraction in Hausa



Leben points out that the rule neither affects tone nor is conditioned by tone, but pronouns like *ni* lose their vowel in some cases. He notes that at the deletion of the vowel, its tone remains and because of a general principle in Hausa, rather than remaining unassociated or a floating tone, it now links up to some Tone Bearing Units and the general constraints of the AP provides *banas* the only available TBU candidate.

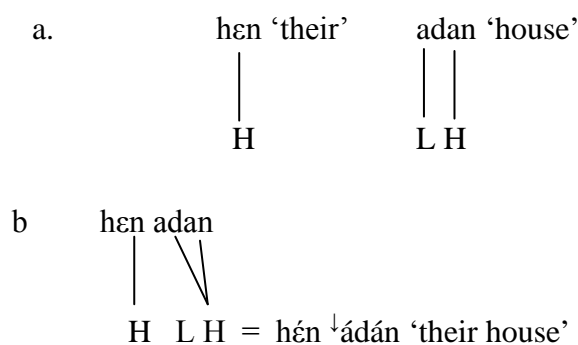
Leben (2006) also illustrates the application of the AP model to spreading in the Mande language in Sierra Leone as presented below:

Fig 2.13 Leben's (2006) autosegmental phonology analysis of spreading in Mande



He points out that the model is also reputed by its ability to capture a connection between down step and low tone by delinking the low tone yet retaining it in the tonal tier so that it would be present to cause a following high tone to down drift.

Fig. 2.14 Leben's (2006) autosegmental phonology account of down drift in Mande

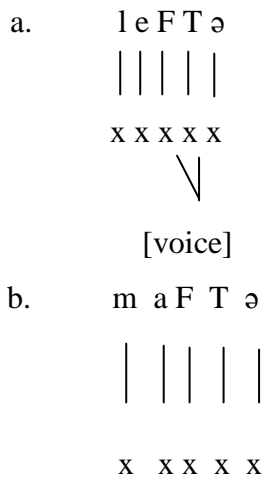


In figure 2.14(b), the low tone is not associated but its effect leads to having a downstep on the following word. Oostendorp (2005) applies the model in the analysis of assimilation in Dutch. He discloses that the Dutch plural past tense suffix has two allomorphs: -də and -tə and that while the former is chosen after a stem ending in a voiced segment, the latter is chosen after a stem ending in a voiceless obstruent.

84. i. lee[vd]en 'lived'
ii. ma[ft]en 'slepped'

Oostendorp states that the AP model would analyze the above structures as represented below:

Fig. 2.15 Oostendorp's (2005) autosegmental analysis of assimilation in Dutch



The AP model is considered relevant for this study because of its primary objective of accounting for suprasegmental issues in language. The interesting aspect of the theory is its proposal that features are represented on separate tiers and independent rather than being viewed as a string of segments or functioning as a unit as the generative phonology would present. With this, the theory provides a clear explanation of suprasegments. It is used in this study to analyse lengthening, labialisation, palatalisation, homorganic nasal assimilation, nasalisation, neutralisation, assimilation, elision, insertion, vowel harmony and tone gliding.

2.3.4 Government phonology

Government phonology is a phonological theory that is based on universal principles common to human language against the parameters held by individual language. It was inspired by Chomsky's (1981) principles and parameters theory of universal grammar (UG) and a shift from generative phonology theory which is concerned with generating rules that have the ability to explain every linguistic form across languages. With government phonology, phonological processes and secondary articulation features of human language are no longer explained by generating rules, rather, the relationship between phonological elements of language and the natural relationship existing among languages are considered vital. Polgardi (1998) notes that in government phonology, the principles are inviolable while parameters which express language specific facts are inevitable. This shows that the relationship of the phonological elements of language represents language specific parameter while natural relationship among languages has to do with the universal principles.

The theory made its debut in the 1980s through Kaye and subsequently Lawenstamm and Vergnaud joined. This resulted in the joint efforts of the three scholars and subsequent emergence of Kaye, Lowenstamm and Vergnaud (1985) where they projected a phonology that demonstrates

a relation of government; there are the governor and the governee and for government to occur, certain conditions and principles must be adhered to.

Crystal (2008:215) succinctly summarises the operations of government phonology in the following way:

A model of non-linear phonology in which the notion of government is central, also called government-based phonology or government and charm phonology. Government is here defined in terms of headedness – a binary asymmetric relation holding between two skeletal positions. Certain segments within syllable structure are seen to have governing properties, and associated to governing skeletal positions. Other segments are governable, and are associated to skeletal positions that are governees. Headedness is seen as local (i.e., between adjacent segments) and directional (head-initial).

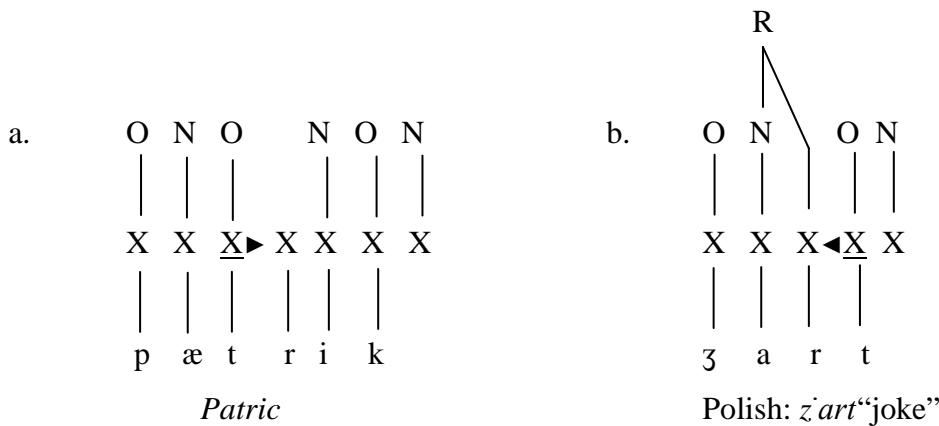
With government phonology, Kaye, Lowenstamm and Vergnaud argue that the initial and external structures need to be described fully. They also claim that the relationship between phonological elements of language arise from natural relationships among languages which makes them form natural groups, where each element has the same governing relationships with other; and the governor and the governee observe certain conditions of co-occurrence (Mbah and Mbah, 2010:183).

There are certain conditions that are required for a governing relation. These conditions are:

- a. Formal condition: This is the kind of condition that involves the notions of locality (adjacency) and directionality. Here, there are the strict locality condition and the strict directionality condition. Under the strict locality condition, the governor is required to be obligatorily adjacent to the governee at the projection without any position intervening. P refers to the projection containing every skeletal point. The strict conditionality condition, on the other hand, emphasizes that the directionality of government at the skeletal level is universal and devoid of any parametric variation. This is maintained by observing binarity theorem whereby no constituent may dominate more than two positions. The foregoing explanation shows that the theory recognizes that phonological processes as well as secondary articulatory features of language take place at certain context and unarbitrarily too. Context is seen to be emphasized here. For phonological processes or secondary articulatory features to occur, there must be context. The context determines the governor and governee which are the basis for government phonology. The two skeletal points must be in a binary asymmetric relation, thus, supporting Cyran's (1995) claim that there is a direct relation between a phonological process and context of its occurrence.

- b. Substantive condition: This condition deals with the governing properties of segments which motivate/initiate governing relations. Citing Kaye, Lowenstamm and Vergnaud (1985), Cyran (1995) points out that these properties were originally viewed in terms of charm which have three values: positive (+), negative (-) and neutral (°); and which governors became positively (vowels) or negatively (obstruents and fricative) charmed and governees were charmless (sonorants). Also, citing Harris (1990), Cyran (1995) says that charm theory was later replaced with the notion of segmental complexity under which governing relation must be in such a way that the governor is more complex than the governee. With this, the sounds in phonological string may either form a head-initial governing or head-final governing domain as represented below:

Fig. 2.16 Head-initial and head final governing domain



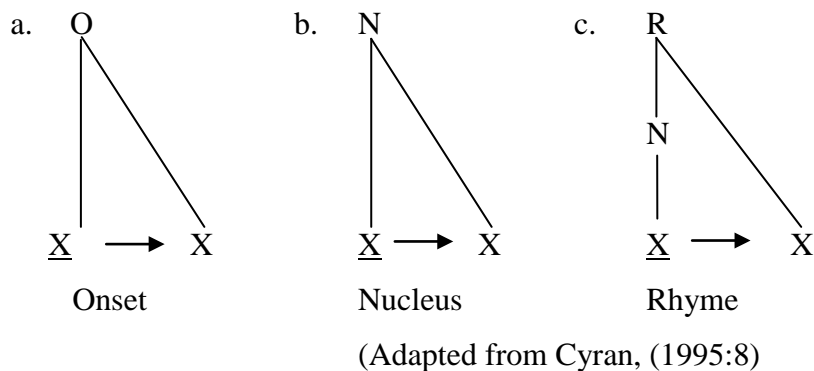
(Adapted from Cyran, 1995:10)

Polgardi (1998) mentions three kinds of government in phonology, which are: (1.) Constituent government, (2.) Interconstituent government, and (3.) Projection government. Cyran (1995), however, notes that constituent and interconstituent governments are the two governments that basically exist.

Constituent government is the kind of government involving only constituent which represents a syllable. It occurs between two binary asymmetric skeletal slots in a single constituent (Mbah, 2007; Charette, 1990; Cyran, 1995). Constituent government adheres to strict locality as well as strict directionality conditions. Charette (1990) succinctly discloses that constituent government involves a maximally binary branching constituent which has an internal governing domain where the head governs the complement from left to right. This left to right governor-governee relation is attested to by Cyran (1995) and Brockhaus and Ingleby (1998). As noted by Nwokeiwu (2014:24), "constituent government can be said to be head-initial and defines syllabic constituents, which are the onset (O), the nucleus (N) and the rhyme (R)." (See also Cyran,

1995:8). Cyran (1995) further discloses that government phonology forbids coda from being a possible constituent, thus, suggesting that constituent government involves members of the same syllable. Constituent government can better be explained with the figures below:

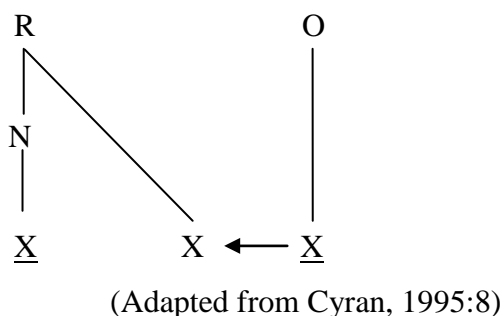
Fig. 2.17 Constituent governing domains



The figure 2.17(a-c) clearly shows the direction of government. The underlined element is the head. According to Cyran (1995), depending on parametric variation with languages, the syllabic constituents may or may not branch and all branching constituents are head-initial. Figure 2.17(c) shows that the left branching of every rhyme is the nucleus constituent.

Interconstituent government, from its name, refers to government involving two constituents. This is attested to by Crystal (2008:216) where the scholar describes interconstituent government as government across constituent boundaries. In this kind of constituent, the two skeletal slots at adjacency position involve syllables. One important aspect of this kind of government is that it is head-final and the governor-governee relation is from the right to left. Just as the strict locality and strict conditionality conditions apply to constituent government, they also apply to interconstituent government such that the two skeletal slots must be adjacent and no constituent may dominate more than two positions. Interconstituent government is illustrated below:

Fig. 2.18 Interconstituent government



Cyran ((1995) cited Kaye, Lowenstamm and Verdnaud (1990), Kaye (1990) and Charette (1991) as noting that apart from the rhyme-onset interconstituent relation, government phonology recognizes government relation between nuclei or onsets at their projection.

Projection government is the kind of government that occurs at the level of nuclear projection between two heads of nuclear constituents. Unlike constituent and interconstituent governments, projection government is local but not strictly local. This is because at the level of projection, the two nuclear constituents are adjacent but at lower levels, there may be other intervening elements. Strict conditionality condition does not apply to projection government because it is language specific. What this suggests is that governor-goveree relation here could either be left to right or right to left. It also implies that the head can be at the initial or final position. Nwokeiwu (2014:26), citing Kaye (1990), notes that projection government handles the phenomena of stress, tone and harmony and that its domain can either be binary or unbounded as illustrated below:

Fig. 2.19 Government at the nuclear projection (binary projection on government)

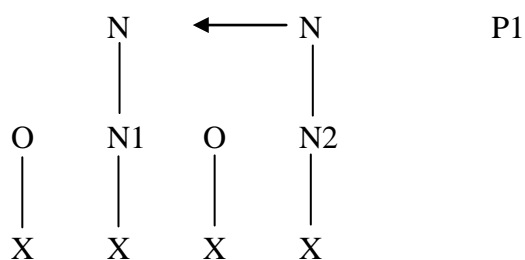
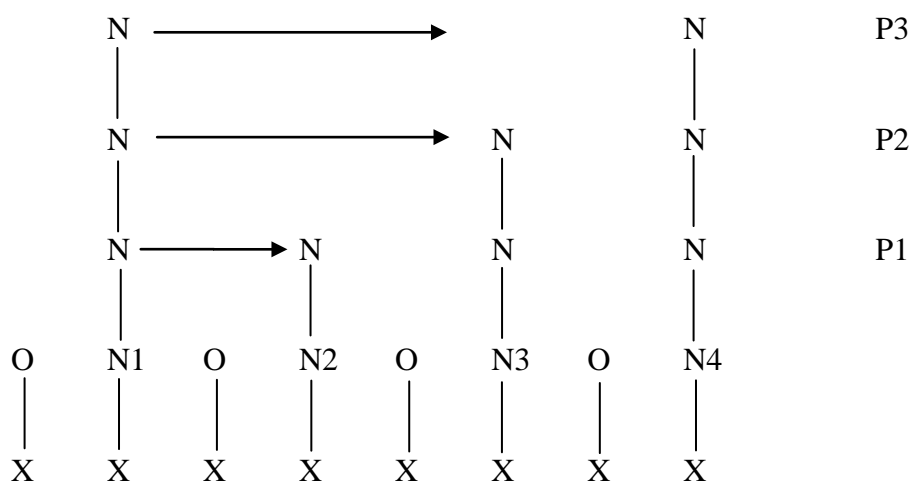


Fig. 2.20 Government at the nuclear projection (Unbounded projection government)



(Adapted from Nwokeiwu, 2014:26-27)

The above representations show that the governor which is N1 governs all its governees in a local manner but each of the governees is governed on the next level of projection. In this respect, the unlicensed nuclei are projected to the next higher level which in this case is P1 in order to be in government relation. For the unbounded government, N1 can only govern N2 as that is the only position that is adjacent to it and that will make it licensed and not to be projected to the next higher level. It is the N3 which is still unlicensed and N4 that can be projected to the next higher level where it (N3) can be governed by N1. The N3 with N2 will not further be projected to the next higher level P3 as it has been licensed. It is only the N4 that will be projected to the next higher level of P3 to be governed by N1 and licensed.

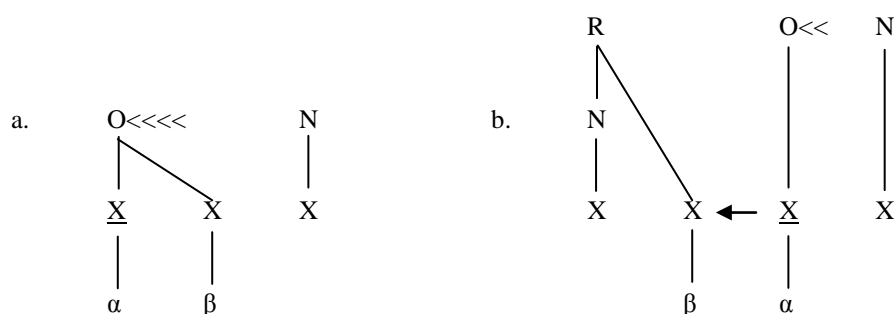
One important aspect of projection government is proper government (Cyran, 1995:10; Scheer, 1998:43; Nwokeiwu, 2014:27). Proper government takes place where a segment is said to properly govern another segment if both of them are adjacent on the relevant projection and the governor is neither itself licensed nor there being a governing domain that separates the governor and the governee. It is inferred from this that a properly governed position cannot govern any other position. As stated by Cyran (1995:10), “proper government is strictly related to the phonological Empty Category Principle (ECP) in that a properly governed nuclear position remains phonetically null, while in the absence of such a relation, the position has to be licensed.” There are rules that guide proper government, which Nwokeiwu (2014) enumerates as:

- a. A governs B from right to left where no governing domain intervenes between the governor and the governee.
- b. Proper government cannot enter a governing domain, ie. Long vowels are no possible targets.
- c. Proper government applies to empty nuclei thus, when the empty nuclei are properly governed, they remain inaudible, and if they escape proper government, they are subject to a language specific epenthesis.
- d. A proper government position cannot govern any other position.

One important feature of government phonology is principle of licensing. Licensing, in the opinion of Brockhaus (1995), serves as the motor that drives phonology. Principle of licensing requires that apart from the head of a domain, all phonological position must be licensed within a domain. Licensing takes place both within and across constituents and requires that licensing relation should be local and directional (Harris, 1994:156). Two basic licensing exists in government phonology: prosodic (p-licensing) and autosegmental (a-licensing).

Under prosodic licensing are constituent and interconstituent relations where licensing may be subject to locality and directionality conditions and in the former, licensing is head-initial, while in the latter, it is head-final. Under interconstituent relation are coda licensing principle and government licensing principle. In coda licensing principle, post-nuclear rhymal positions must be licensed by the following onset. The government licensing principle was proposed by Charette (1990) to license non nuclear heads by their nuclei and it states that for a governing relation to hold between a nuclear head α and its complement β , α must be government-licensed by its nuclei (Charette, 1990:242). This is illustrated below:

Fig. 2.21 Government licencing



Government phonology theory has been considered relevant for this study. This is because of its proposal that phonological processes and secondary articulation features are a result of natural relationship existing among sounds at adjacency position. It is a non-linear phonology unlike the generative phonology. It is specifically used to analyse labialisation, palatalisation, homorganic nasal assimilation, nasalisation, neutralisation, assimilation, elision and vowel harmony.

2.4 Summary of literature review

Some available literatures related to this study have been reviewed in three parts: The first part dealt with the conceptual studies; in part two was the empirical studies; and finally, in part three, the theoretical framework was discussed.

In the conceptual studies, the concepts of phoneme, minimal pair/set, phonological processes and secondary articulation features were reviewed, looking at views of past scholars concerning them. We note three perspectives to the study of the phoneme, such as the psychological reality, phonetic reality and phonological reality, and each of these views has what it holds firm concerning the phoneme. We were able to find out that minimal pair/set is a vital tool for identifying sounds in opposition in language. Texts on minimal pair/set were discussed from where Mbah and Mbah's (2010) view was finally adopted because of their effective handling of

MP in tone languages, since the varieties being investigated are Igbo, which is equally a tone language. Scholars' views concerning the phonological processes and secondary articulation features were reviewed and we saw that the processes and features both involve speech sounds coming together in speech. We adopted Emenanjo's (2015) definition of phonological processes because of his subtle way of identifying the original states of the speech sounds and what they are in actual usage with other sounds in speech. The study reveals that the phonological processes and secondary articulation features could be grouped along the three parameters of intersegmental coordination in speech adapted from Eme (2008) such as the articulatory parameter, coarticulatory parameter and connected speech feature parameter. On the basis of these parameters, the phonological processes and secondary articulation features are discussed in chapter five.

In the empirical studies, we reviewed past works that used MP test to identify the phonemes of some dialects of Igbo and some languages. The review showed that a lot of past studies have used the MP test to identify the phonemes of languages and dialects of languages. This study will equally use the MP test to identify the phonemes of Omambala varieties of Igbo.

Also studied were works on phonological patterning of words, phonological processes and secondary articulation features. It is discovered that generative phonology conveniently handles most of the phonological phenomena using algorithmic principle. These rules abound in Schane (1973). However, on the issue on tone, the AP model proved a better option. The autosegmental phonology model was comfortably used by many scholars, including its proponent, John Goldsmith, to discuss tone in tone languages and phonological processes/features. The government phonology is also observed to be an indispensable theory for handling issues of sounds in context, especially sounds at contiguous position.

The review revealed that the phonological patterning of words in the Igbo language varies among Igbo dialects. Ikekeonwu (1987) and Nwaozuzu (2008), in their classifications of Igbo dialects, are extensive in their discussion of Igbo dialects. However, Ikekeonwu (1987) makes no mention of Igbo speech communities of Omambala, but Nwaozuzu (2008) discusses them but differs from this study because she did not discuss the phonological processes and secondary articulation features of Omambala varieties, which this study also investigates. She did not also use any theory of phonology to discuss phonological issues of Omambala varieties. This study agrees with Nwaozuzu (2008), especially in her grouping of Omambala varieties into the East Niger Group of Dialects, but with modification as the unifying feature(s) of Igbo varieties of Omambala would have enabled them to be a separate dialect group within the East Niger Group of Dialects. Other past works reviewed discuss the phonological processes and secondary articulation features of

dialects of Igbo that are not among Qmambala varieties and they mostly used the descriptive method. Of all the works reviewed, only Mbah (2007), Oyebade and Mbah (2008), Edeoga (2013) and Nwokeiwu (2014) used government phonology to analyse some phonological processes in Igbo, but the dialects they investigated are different from Qmambala varieties. Hence, it is necessary that this study descriptively investigates the phonological processes and secondary articulation features of Qmambala varieties as well as applies the generative phonology, autosegmental phonology and government phonology theories in analysing the data described. Through this, it will be established whether the theories apply to Qmambala data or not and the extent of their application. This will be a way of filling the existing gaps.

Chapter Three

Methodology

3.1 Research design

This study adopts descriptive and theoretical methods; it also involves comparison of data from Omambala varieties. This approach enabled the researcher to describe the data collected from the different Igbo speech communities of the Omambala area and apply three different phonological theories to analyse them. It also enabled a comparison of the data to find out the differences and similarities among the varieties.

3.2 Population of the study

The population of this study was drawn from three communities in each of the four LGAs of Omambala, except in Ayamelum LGA which has four speech communities because one speech community was previously used for pilot study. On the whole, thirteen speech communities were studied, consisting of the local government headquarters and two other communities in each LGA. The choice of the local government headquarters was based on convenience as it was easier to access the local government headquarters. The other two communities were selected based on random sampling technique where names of all the communities were written down on sheets of paper, folded and put in a basket from where two speech communities were picked. This method did not eventually work for Anambra West LGA as the headquarters, Nzàm, and Ùkwàlà selected based on the random sampling technique were later discovered to speak Ìgalà as their L 1 and Igbo as their L 2. Consequent upon this, the data collected from both Nzàm, and Ùkwàlà were finally dropped, leaving the number of the speech communities finally used for analysis at eleven. In Oyi LGA, Ogbunikē speech community was purposely chosen since the researcher hails from Ogbunikē. For Ànàm speech variety, data was collected from Ùmūèze Ānàm and Ùmùdìòrà in Ezi Ànàm community.

From each of the speech communities, three respondents were chosen without reference to gender as their selection was based on our conviction by our guides that they are competent speakers of their speech communities. The respondents were youths below 40 years old and adults from 40 years old and above. On the whole, there were thirty-three respondents.

3.3 Sources of data

Linguistic data were collected from both primary and secondary sources. The primary source of data for this study was oral interview. The oral interview was a semi-structured one. We used Swadesh 100 wordlist, researcher-adapted 138 wordlist and 70 phrase and sentence list for data elicitation. The respondents were equally asked to explain a cultural or occupational activity of their choice. This enabled the researcher to gather other data which were added to or compared with data from wordlist, phrase and sentence lists. A digital video recorder was initially used during the interview session, but there was difficulty in charging its battery, which easily gets discharged, consequent upon which it was substituted with a digital audio recorder which does not require charging the batteries. Secondary data, on the other hand, include data collected from the existing body of knowledge such as textbooks, seminar papers, research findings and academic journals found in the library, internet and other sources relevant to the study.

3.4 Method of data presentation

The compact disc plates and memory card used to store the data collected during interview were played repeatedly in a quiet room in order to sieve the information. This enabled the writing of the information orthographically as well as accurately transcribing it. Sometimes, the data are presented in tables. Analysis is done on the data written down on paper and transcribed before findings are made manifest. The data are presented according to the information intended for elicitation and as concerned all the speech communities investigated before they were compared.

3.5 Method of data analysis

For data analysis, we applied Trubetzkoy's (1939) theory of distinctive opposition to analyse the speech sounds and elicit the phonemes of the speech communities investigated. In this regard, we first applied basically the minimal pair/set test as further expanded by Mbah and Mbah (2010) in identifying the phonemes in each of the speech communities. We applied the descriptive method first to examine more closely the phonological patterning of words, phonological processes and secondary articulation features before we compared them to find out their differences and similarities. The phonological processes and secondary articulation features are also analysed using the generative phonology theory, autosegmental phonology model and government phonology theory. Discussion of the phonological processes and secondary articulation features is done along the three parameters of intersegmental co-ordination in speech – articulatory parameter, coarticulatory parameter and connected speech features parameter as exemplified in Eme (2008).

3.6 Method of transcription and tone-marking convention

The data are phonemically transcribed and tone-marked using the symbols of the International Phonetic Alphabet (IPA) (revised to 2005); and Achebe, Ikekeonwu, Emenanjo, Eme & Ng'ang'a's (2011) *A Composite Synchronic Alphabet of Igbo Dialects (CSAID) and Guidelines for Data Transcription* where necessary. We adopt Green and Igwe's (1963) tone marking convention of leaving high tone unmarked and low tone marked with grave accent [ː]. The downstep tone is marked orthographically with a macron [̄] and phonemically with a down pointing arrow before the syllable that bears the tone followed by an acute accent on the tone bearing unit [↓ˊ].

Chapter Four

Presentation and analysis of data on phonemes and phonological patterning of words

4.0 Introduction

This chapter concentrates on analysing the speech sounds of the eleven speech communities to ascertain the distinctive sounds in each of them. The phonological patterning of words in the eleven speech communities shall also be discussed and the specifics of each of them as well as their area of uniformity identified. Identifying the phonemes in these speech communities is achieved using Trubetzkoy's (1939) theory of distinctive opposition whereby the MP/MS test as further developed by Mbah and Mbah (2010) is used. For each speech community, consonant chart is presented. The phonological patterning of words is discussed with descriptive method.

4.1 Phonemes of Qmambala varieties of Igbo

Under this section, distinctive sounds of the speech communities in Qmambala area are identified using the MP/MS test. The analysis is done speech community by speech community except the speech communities with the same lexical items forming minimal pairs/sets, and they are grouped based on the Local Government Areas.

4.1.1 Consonants

The numbers of the SI consonants present in the speech communities of Qmambala area vary. They are discussed under this sub-section.

4.1.1.1 Consonants of Àgùlerì, Ñsugbè and Ìkem speech communities

The consonants of the three speech communities were identified using the MP/MS analysis.

Analysis 1: Minimal pair analysis of speech sounds of Àgùlerì, Ñsugbè and Ìkem

a.	ìtò	/ìtò/	'three'	/t/
	ìnò	/ìnò/	'four'	/n/
b.	isi	/isi/	'head'	/s/
	imi	/imi/	'nose'	/m/
c.	òdū	/ò [↓] d [↓] ò/	'horn'	/d/
	ònū	/ò [↓] n [↓] ò/	'mouth'	/k/
d.	anya	/a [↓] na/	'eyes'	/j/
	aka	/a [↓] ka/	'hand'	/k/
	ala	/a [↓] la/	'breast'	/l/
	agha	/a [↓] ga/	'war'	/y/

e.	nwụ	/ŋ ^w ɔ/	‘drink/die’	/ŋw/
	wụ	/wɔ/	‘pour’	/w/
f.	oyī	/o ^l ji/	‘cold’	/j/
	ori	/o ^l ri/	‘steal’	/r/
g.	p̣ià	/p̣ia/	‘flog’	/p/
	ḅià	/ḅia/	‘come’	/b/
h.	àkpà	/àkpà/	‘bag’	/kp/
	àgbà	/àgbà/	‘jaw’	/gb/
	àpà	/àpà/	‘scar’	/p/
	àgà	/àgà/	‘barren’	/g/
i.	kwu	/k ^w u/	‘say/talk’	/k ^w /
	gwu	/g ^w u/	‘dig’	/g ^w /
j.	ji	/dʒi/	‘yam’	/dʒ/
	chi	/tʃi/	‘god’	/tʃ/
k.	avù	/avù/	‘penny’	/v/
	abù	/abù/	‘armpit’	/b/
l.	avà	/avà/	‘name’	/v/
	arà	/arà/	‘weaver bird’	/r/
m.	ma	/ma/	‘know’	/m/
	ta	/ta/	‘chew’	/t/
	za	/za/	‘swell/answer’	/z/
	sa	/sa/	‘wash’	/s/
	gha	/ɣa/	‘cast’	/ɣ/
n.	bàga	/bàga/	‘enter/go in’	/g/
	bàta	/bàta/	‘come in’	/t/
o.	tàlì	/ta/	‘chew’	/t/
	dàlì	/da/	‘worm’	/d/
p.	che	/tʃe/	‘wait’, chi /tʃi/	/tʃ/
	je	/dʒe/	‘go’, ji /dʒi/	/dʒ/
q.	onwa	/ɔŋ ^w a/	‘moon/month’	/ŋw/
	onyà	/ɔŋa/	‘sore’	/ŋ/
r.	àwòlò	/àwòlò/	‘skin peels’	/w/
	àyòlò	/àyòlò/	‘cowrie shell’	/j/
s.	kè	/kè/	‘divide’	/k/
	gè	/gè/	‘listen’	/g/
t.	anùlì	/anùlì/	‘joy’	/ŋ/
	apùlì	/apùlì/	‘used to go out’	/p/

The MP/MS analysis reveals that there are twenty-five consonants in each of the three speech communities comprising ten plosive /p b t d k g kp gb k^w g^w/, five nasal /m n ŋ ŋ^w/, two

affricate /tʃ dʒ/, one trill /r/, four fricative /v s z ʎ/, one lateral /l/ and two approximant /j w/. The consonants are the same in quality. They are:

/p b t d k g kp gb k^w g^w m n ɲ ɲ^w tʃ dʒ r v s z ʎ l j w/

The consonants of the three speech communities are presented in a chart below:

Table 4.1 Consonant chart of speech sounds of Àgùlerì, Ñsugbè and Ìkem

Place → Manner ↓	Bilabial		Labio-dental		Alveolar		Post Alveolar		Palatal		Velar		Labial Velar		Labialized Velar	
Plosive	p	b			t	d					k	g	kp	gb	k ^w	g ^w
Nasal		m				n			ɲ			ɲ				ɲ ^w
Fricative			v		s	z						ʎ				
Affricate							tʃ	dʒ								
Lateral						l										
Trill						r										
Approximant									j				w			

The analysis shows that the voiceless labio-dental fricative /f/, voiceless alveolar fricative /s/ and voiced glottal fricative /h/ found in the SI do not exist in Àgùlerì, Ñsugbè and Ìkem speech communities. Where /f/ and /h/ phonemes appear in any SI word, they are most often realised as /v/; and where there is /ʃ/, it is realised as /r/.

85.	SI	Àgùlerì	Ñsugbè	Ìkem	
	/f/, /h/	~	/v/		
a.	afò /afò/	avò /avò/	avò /avò/	avò /avò/	‘stomach’
b.	afere /afere/	avele /avele/	avele /avele/	evele /evele/	‘plate’
c.	àfò /àfò/	àvò /àvò/	àvò /àvò/	àvò /àvò/	‘third market day in Igboland’
d.	ha /fa /	va /va /	va /va /	va /va /	‘3 rd person plural’
e.	ahĩa /afĩa/	avĩa /avĩa/	avĩa /avĩa/	avĩa /avĩa/	‘market’
f.	ohĩa /ohĩa/	ovĩa /ovĩa/	ovĩa /ovĩa/	ovĩa /ovĩa/	‘bush’

	SI	Àgùlerì/ Ñsugbè/ Ìkem
	/ʃ/	~ /r/
g.	ashà /afà /	arà /arà/
h.	ìsha /ìfà/	ìra /ìra/

4.1.1.2 Consonants of Ànà` speech community

Below is the MP/MS analysis of data from Ànà` speech community:

Analysis 2: Minimal pair/set analysis of speech sounds of Ànà`

a.	p̣ià	/p̣ià/	‘flog’	/p/
	ḅià	/ḅià/	‘come’	/b/
b.	tàḷì	/ṭa/	‘chew’	/t/
	dàḷì	/ḍa/	‘worm’	/d/
c.	chi	/ṭi/	‘a god’	/ṭ/
	ji	/ḍʒi/	‘yam’	/ḍʒ/
	ti	/ti/	‘beat/flog’	/n/
	li	/li/	‘eat’	/l/
d.	kwu	/ḳ ^w u/	‘say/talk’	/kw/
	gwu	/g̣ ^w u/	‘dig’	/gw/
e.	àkpà	/àḳpà/	‘bag’	/kp/
	àgbà	/àg̣bà/	‘jaw’	/gb/
f.	nẉu	/ṇ ^w u/	‘die’	/ṇ ^w /
	nỵu	/ṇu/	‘defecate’	/ṇ/
	ṇu	/ṇu/	‘drink’	/ṇ/
	g̣u	/g̣u/	‘read’	/g/
g.	aṿù	/aṿù/	‘penny’	/v/
	aḅù	/aḅù/	‘armpit’	/b/
h.	sa	/ṣa/	‘wash (e.g. plate)’	/s/
	za	/ẓa/	‘answer/swell’	/z/
i.	nèe	/ṇe/	‘look’	/n/
	vèe	/ṿe/	‘fry/fly’	/v/
j.	ẉo	/ẉo/	‘pluck’	/w/
	ỵo	/j̣o/	‘plead’	/j/
k.	kè	/ḳè/	‘divide’	/k/
	gè	/g̣è/	‘listen’	/g/
l.	imi	/imi/	‘nose’	/m/
	isi	/isi/	‘head’	/s/
m.	or̄ī	/o ^l r̄i/	‘steal’	/r/
	oȳī	/o ^l j̄i/	‘cold’	/j/

From the MP/MS tests, there are twenty-four consonants in Ànàm comprising ten plosives /p b t d k g kp gb k^w g^w/, five nasals /m n ɲ ŋ ŋ^w/, three fricatives /v s z/, two affricates /tʃ dʒ/, one trill /r/, one lateral /l/ and two approximants /j w/. The consonants of Ànàm are:

/p b t d k g kp gb k^w g^w m n ɲ ŋ ŋ^w tʃ dʒ r v s z l j w/

The consonant chart of Ànàm speech community is presented below:

Table 4.2 Consonant chart of speech sounds of Ànàm

Place → Manner ↓	Bilabial	Labio-dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar
Plosive	p b		t d			k g	kp gb	k ^w g ^w
Nasal	m		n		ɲ	ŋ		ŋ ^w
Affricate				tʃ dʒ				
Fricative		v	s z					
Trill			r					
Lateral			l					
Approximant					j		w	

The analysis shows that all the consonants in the SI are found in Ànàm speech community except /f ʃ ɣ fi/. Where the phoneme /fi/ occurs in SI word, it is realised as /v/ in Ànàm. Ànàm speech community also realises the voiceless labio-dental fricative /f/ and voiced velar fricative /ɣ/ as voiced labio-dental fricative /v/. In Ànàm, the phonemes /ʃ/ is realised as /r/ wherever it occurs in SI word. Examples:

86. **S.I.** **Ànàm**
- /f fi/ ~ /v/**
- a. afɔ /afɔ/ avɔ /avɔ/ ‘stomach’
- b. afere /afere/ àvele /àvele/ ‘plates’
- c. ha /fia / va /va / ‘3rd person plural’
- d. ahia /afia/ avia /avia/ ‘market’
- e. ɔhia /ɔfia/ ɔvia /ɔvia/ ‘bush’
- f. ahà /afia/ avà /avà/ ‘name’
- g. òhèrè /òfièrè/ òvèlè /òvèlè/ ‘chance’

/ɣ/ ~ /j/

- h. ghèe /ɣèe/ vèe /jèe/ ‘fry’
 i. oghère /o^hɣère/ ovèle /ovéle/ ‘hole’
 j. ughelè /uɣe^hlé/ uvelè /uve^hlé/ ‘yawning’

/l/ ~ /r/

- k. ìsha /ìʃa/ ìra /ìra/ ‘crayfish’
 l. ashà /aʃà/ arà /arà/ ‘weaver bird’

In some cases, the phoneme /ɣ/ is realised as voiced labialised velar approximant /w/ in Ànàm as found in the following words:

87. **S.I** **Ànàm**
 a. aghùghò /aɣò ɣò/ awùwò /aàwò/ ‘cunning’
 b. ghò /ɣò/ wò /wò/ ‘pluck’

4.1.1.3 Consonants of Nteje, Awkuzu and Ogbunike speech communities

Analysis 3 and 4 are the MP/MS analysis used to identify the consonants in Nteje, Awkuzu and Ogbunike:

Analysis 3: Minimal pair/set analysis of speech sounds of Ntèjè and Awkuzu speech communities

- a. ta /t̪a/ ‘chew’ /t/
 da /d̪a/ ‘warm (e.g. food)’ /d/
 b. nyà /ɲà/ ‘drive’ /ɲ/
 bà /b̪à/ ‘enter’ /b/
 c. chi /tʃi/ ‘God’ /tʃ/
 ji /dʒi/ ‘yam’ /dʒ/
 d. kwu /k̪^wu/ ‘say/talk’ /kw/
 gwu /g̪^wu/ ‘dig’ /gw/
 e. àkpà /àk̪p̪à/ ‘bag’ /kp/
 àgbà /àg̪b̪à/ ‘jaw’ /gb/
 f. ɔnwa /ɔɲ^wa/ ‘moon/month’ /ɲw/
 ɔnya /ɔɲa/ ‘sore’ /ɲ/
 g. ne /n̪e/ ‘look’ /n/
 le /l̪e/ ‘sell’ /l/
 pe /p̪e/ ‘small’ /p/
 me /m̪e/ ‘do’ /m/

h.	sè	/sè/	‘draw’	/s/
	zè	/zè/	‘dodge’	/z/
	kè	/kè/	‘divide’	/k/
	gè	/gè/	‘listen’	/g/
i.	anya	/a _ɲ a/	‘eyes’	/ɲ/
	ala	/a _l a/	‘breast/madness’	/l/
	agha/aya	/a _ɣ a, a _j a/	‘war’	/ɣ, j/
j.	arà	/a _r à/	‘weaver bird’	/r/
	avà	/a _v à/	‘name’	/v/
k.	àwòlò	/à _w òlò/	‘scale’	/w/
	àyòlò	/à _j òlò/	‘cowrie shell’	/j/
l.	̀̀ǹ̀ǹ̀ò̀ò̀	/̀̀ǹ̀ǹ̀ò̀ò̀/	‘this one’	/ŋ/
	ǹ̀ǹ̀ò̀ò̀	/ǹ̀ǹ̀ò̀ò̀/	‘welcome’	/n/

Analysis 4: Minimal pair analysis of speech sounds of Ogbunikē speech community

The MP/MS analysis of consonants of Ntèjè and Awkuzu applies to Ogbunikē speech community except that *ǹ̀ǹ̀ò̀ò̀* does exist in Ogbunikē. The following MPs and near minimal pair in Ogbunikē are used to identify the remaining sounds in Ogbunikē:

a.	arà	/a _r à/	‘weaver bird’	/r/
	afà	/a _f à/	‘name’	/f/
b.	̀̀sha	/̀̀ʃa/	‘crayfish’	/ʃ/
	̀̀mā	/̀̀mā/	‘to know’	/m/
c.	agha	/a _ɣ a/	‘war’	/ɣ/
	aka	/a _k a/	‘hand’	/k/

From the three speech communities, Ntèjè and Awkuzu have twenty-five consonants each and they comprise ten plosives /p b t d k g kp gb k^w g^w/, five nasals /m n ɲ ŋ ŋ^w/, one trill /r/, two affricates /tʃ dʒ/, four fricatives /v s z ɣ/, one lateral /l/ and two approximants /j w/; while Ogbunikē has twenty-six which include the same number of plosives, nasals, trill, affricates, lateral and approximants found in the other two speech communities. It is only on fricative that it contains five /f s z ʃ ɣ/ instead of four existing in the other two. The following consonants exist in Ntèjè, Awkuzu and Ogbunikē:

Ntèjè and Awkuzu: / p b t d k g kp gb k^w g^w m n ɲ ŋ ŋ^w tʃ dʒ r v s z ɣ l j w/
 Ogbunikē: / p b t d k g kp gb k^w g^w m n ɲ ŋ ŋ^w tʃ dʒ r f s z ʃ ɣ l j w/

The consonant of Ñtèjè and Awkuzu speech communities are presented below in a chart:

Table 4.3 Consonant chart of speech sounds of Ñtèjè and Awkuzu speech communities

Place → Manner ↓	Bilabial	Labio- dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar
Plosive	p b		t d			k g	kp gb	k ^w g ^w
Nasal	m		n		ɲ	ŋ		ŋ ^w
Affricate				tʃ dʒ				
Fricative		v	s z			ɣ		
Trill			r					
Lateral			l					
Approximant					j		w	

Below is the consonant chart of Ogbunikè speech community.

Table 4.4 Consonant chart of speech sounds of Ogbunikè speech community

Place → Manner ↓	Bilabial	Labio- dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar
Plosive	p b		t d			k g	kp gb	k ^w g ^w
Nasal	m		n		ɲ	ŋ		ŋ ^w
Affricate				tʃ dʒ				
Fricative		f	s z	ʃ		ɣ		
Trill			r					
Lateral			l					
Approximant					j		w	

It is observed from the study that the voiceless labio-dental fricative /f/, voiceless alveolar fricative /ʃ/, and voiced glottal fricative /ɦ/ found in the SI do not exist in Ñtèjè and Awkuzu speech communities. The phonemes /f/ and /ɦ/ are most often realised as /v/ in these speech communities whenever they appear in any SI word; where /ʃ/ appears in any SI word, the two speech communities realised it as /r/. Ogbunikè speech community has the phoneme /f/ and /ʃ/, but does not have /v/ found in Ñtèjè and Awkuzu, and /ɦ/ found in SI. In any SI word where /ɦ/ & /v/ phonemes appear, /ɦ/ is most often realised as a voiceless labio-dental fricative /f/ in Ogbunikè and sometimes as alveolar trill /r/, while /v/ is realised as voiced bilabial plosive /b/. Ñtèjè,

Awkuzu and Ogbunike realize /v/ as /b/ in the SI word *mvọ* /m̩vɔ/ ‘nail’, which they have as *mbọ* /mbɔ/. The voiced velar fricative ʋ/ is found to be used in free variation with /j/ in the English word ‘war’ in Ntèjè and Awkuzu speech communities. Also, /f/ and /r/ are in free variation in Ogbunike in the English word ‘year’.

88.	S. I.	Ntèjè	Awkuzu	Ogbunike	
	/f/, /fi/	~	/v/		
a.	afọ /afɔ/	avọ /avɔ/	avọ /avɔ/	afọ /afɔ/	‘stomach’
b.	afere /afere/	evele /evele/	evele /evele/	afele /afele/	‘plate’
c.	òfọ /òfɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òfọ /òfɔ/	‘Igbo symbol of authority’
d.	ihe /ife/	ive /ive/	ive /ive/	ife /ife/	‘thing’
e.	ha /fia/	va /va/	va /va/	fa /fa/	‘3 rd person plural’
f.	ehi /efi/	evi /evi/	evi /evi/	efi /efi/	‘cow’
g.	ahia /afia/	avia /avia/	avia /avia/	afia /afia/	‘market’
h.	ohia /ofia/	ovia /ovia/	ovia /ovia/	ofia /ofia/	‘bush’
i.	ahà /ahà/	avà /avà/	avà /avà/	afà /afà/	‘name’
j.	ahò /ahò/	avò /avò/	avò /avò/	arò/afò /arò, afò/	‘year’
	/j/	~	/r/		
k.	ashà /afà/	arà /arà/	arà /arà/	arà /arà/	‘weaver bird’
l.	ìsha /ifa/	ìra /ira/	ìra /ira/	ìsha /ifa/	‘crayfish’
	/v/	~	/b/		
m.	mvọ /m̩vɔ/	mbọ /mbɔ/	mbọ /mbɔ/	mbọ /mbɔ/	‘nail’

4.1.1.4 Consonants of Anàkù, Ụmùòlũm, Ụmùmbò and Ìfite Ọgwarị speech communities

The consonants were identified for Anàkù, Ụmùòlũm and Ụmùmbò speech communities using the MP/MS analysis as follows:

Analysis 5: Minimal pair/set analysis of speech sounds of Anàkù, Ụmùòlũm and Ụmùmbò Speech communities

a.	ọna /ɔna/	‘moon’	/ŋ/
	onyà /ɔna/	‘sore’	/j/
b.	awò /awò/	‘toad’	/w/
	akò /akò/	‘cultivating’	/k/
c.	ta /ta/	‘chew’	/t/
	da /da/	‘warm’	/d/
	ya /ja/	‘cast’	/j/
	ra /ra/	‘answer/swell’	/r/
	sa /sa/	‘wash’	/s/

d.	pu	/pu/	‘germinate’	/p/
	bu	/bu/	‘carry’	/b/
	kwu	/k ^w u/	‘say/talk’	/k ^w /
	gwu	/g ^w u/	‘dig’	/g ^w /
e.	kè	/kè/	‘share’	/k/
	gè	/gè/	‘listen’	/g/
	vè	/vè/	‘worship’	/v/
	sè	/sè/	‘draw’	/s/
	rè	/rè/	‘dodge’	/r/
f.	me	/me/	‘do’	/m/
	ne	/ne/	‘look’	/n/
	che	/tʃe/	‘wait’	/tʃ/
	je	/dʒe/	‘go’	/dʒ/
g.	gu	/gu/	‘read’	/g/
	nwū	/ŋ ^w u/	‘drink/die’	/ŋ ^w /
	wū	/wu/	‘bath’	/w/
h.	si	/si/	‘cook’ (Anàkù & Ụmụ̀òlũ̀m)	/s/
	shi	/ʃi/	‘cook’ (Ụmụ̀mbòo)	/ʃ/
	ti	/ti/	‘flog/beat’	/t/
	chi	/tʃi/	‘god’	/tʃ/
	ji	/dʒi/	‘yam’	/dʒ/
	li	/li/	‘eat’	/l/
i.	àkpà	/àkpà/	‘bag’	/kp/
	àgbà	/àgbà/	‘jaw’	/gb/
	àbà	/àbà/	‘fat’	/b/
	ànà	/ànà/	‘ground’	/n/
	àpà	/àpà/	‘scar’	/p/
	àgà	/àgà/	‘barren’	/g/
j.	anya	/anya/	‘eyes’	/j/
	aka	/aka/	‘hand’	/k/
k.	alā	/a ^l lā/	‘breast’	/l/
	ajā	/a ^l já/	‘sand’	/dʒ/
l.	evi	/evi/	‘cow’	/v/
	eri	/eri/	‘road’	/r/
m.	onū	/o ^l nū/	‘mouth’	/n/
	odū	/o ^l dū/	‘horn’	/d/
n.	okū	/okū/	‘fire/hot’	/k/
	onwū	/o ^l ŋ ^w u/	‘death’	/ŋ ^w /
o.	ìtọ	/ìtọ/	‘three’	/t/
	ìnọ	/ìnọ/	‘four’	/n/
p.	imi	/imi/	‘nose’	/m/
	isi	/isi/	‘head’ (Anàkù & Ụmụ̀òlũ̀m)	/s/
	ishi	/iʃi/	‘head’ (Ụmụ̀mbòo)	/ʃ/
q.	agū	/a ^l gū/	‘leopard’	/g/
	anwū	/a ^l ŋ ^w u/	‘sun/bee’	/ŋ ^w /

For Ifite Oḡwari speech community, the MP/MS analysis of consonants is established as presented below:

Analysis 6: Minimal pair/set analysis of speech sounds of Ifite Oḡwari speech community

a.	anyi	/aṅi/	‘we’	/ɲ/
	aji	/aɖʒi/	‘hair’	/ɖʒ/
b.	anya	/aṅa/	‘eyes’	/ɲ/
	aka	/aka/	‘hand’	/k/
c.	àkpà	/àkpà/	‘bag’	/kp/
	àgbà	/àgbà/	‘jaw’	/gb/
	àbà	/àbà/	‘fat’	/b/
d.	ìtọ	/ìtọ/	‘three’	/t/
	ìnọ	/ìnọ/	‘four’	/n/
e.	òrọ	/òrọ/	‘work’	/r/
	òhọ	/òhọ/	‘seing’	/fi/
f.	ezi	/ezi/	‘road’	/z/
	eli	/eli/	‘rope’	/l/
g.	akwọ	/akwọ/	‘leaf’	/kw/
	ahọ	/ahọ/	‘stomach’	/fi/
h.	ọkpụ	/ọkpụ/	‘bone’	/kp/
	ọnwụ	/ọnwụ/	‘death’	/ɲw/
i.	isi	/isi/	‘head’	/s/
	imi	/imi/	‘nose’	/m/
j.	òta	/òta/	‘chew/bite’	/t/
	òcha	/òtʃa/	‘white’	/tʃ/
k.	ozī	/o [↓] zī/	‘theft’	/z/
	oyī	/o [↓] jī/	‘cold’	/j/
l.	shi	/ʃi/	‘god’	/ʃ/
	ji	/ɖʒi/	‘yam’	/ɖʒ/
m.	kwu	/k ^w u/	‘say’	/k ^w /
	gwu	/g ^w u/	‘dig’	/g ^w /
n.	anwū	/a [↓] ɲ ^w ū/	‘bee/sun’	/ɲ ^w /
	agū	/a [↓] gū/	‘leopard’	/g/
o.	fùọ	/fùọ/	‘give chance’	/f/
	chùọ	/tʃùọ/	‘wash (e.g. clothe)’	/tʃ/
	wùọ	/wùọ/	‘bathe’	/w/
p.	pe	/pe/	‘small’	/p/
	je	/ɖʒe/	‘go’	/ɖʒ/
q.	sa	/sa/	‘wash’	/s/
	za	/za/	‘answer/swell’	/z/
	da	/da/	‘worm’	/d/
r.	ahù	/ahù/	‘penny’	/fi/
	avù	/avù/	‘armpit’	/v/

Anàkù and Ụmùòlũm̄ speech communities have twenty -three consonants each made up of ten plosive /p b t d k g kp gb k^w g^w/, five nasal /m n ɲ ɳ ɳ^w/, one trill /r/, two affricate /tʃ dʒ/, two fricative /v s/, one lateral /l/ and two approximant /j w/. Ụmùmboō has twenty -four consonants with ten plosives /p b t d k g kp gb k^w g^w/, five nasals /m n ɲ ɳ ɳ^w/, one trill /r/, two affricates /tʃ dʒ/, three fricatives /v s ʃ/, one lateral /l/ and two approximants /j w/. In Ìfite Ọgwarì are twenty-six consonants consisting of ten plosive /p b t d k g kp gb k^w g^w/, four nasal /m n ɲ ɳ^w/, one trill /r/, two affricate /tʃ dʒ/, six fricative /f v s z ʃ h/, one lateral /l/, two approximant /j w/. The consonants of Anàkù and Ụmùòlũm̄, Ìfite Ọgwarì and Ụmùmboō speech communities are as follows:

Anàkù and Ụmùòlũm̄: /p b t d k g kp gb k^w g^w m n ɲ ɳ ɳ^w tʃ dʒ v s r l j w/

Ụmùmboō: /p b t d k g kp gb k^w g^w m n ɲ ɳ ɳ^w tʃ dʒ v s ʃ r l j w/

Ìfite Ọgwarì: /p b t d k g kp gb k^w g^w m n ɲ ɳ ɳ^w tʃ dʒ f v s z ʃ h r l j w/

The consonants of Anàkù, Ụmùòlũm̄, Ụmùmboō and Ìfite Ọgwarì speech communities are presented in the consonant charts below:

Table 4.5 Consonant chart of speech sounds of Anàkù and Ụmùòlũm̄ speech communities

Place → Manner ↓	Bilabial	Labio-dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar
Plosive	p b		t d			k g	kp gb	k ^w g ^w
Nasal	m		n		ɲ	ɳ		ɳ ^w
Affricate				tʃ dʒ				
Fricative		v	s					
Trill			r					
Lateral			l					
Approximant					j		w	

Table 4.6 Consonant chart of speech sounds of Ụmù̀̀mbõ speech community

Place → Manner ↓	Bilabial	Labio- dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar
Plosive	p b		t d			k g	kp gb	k ^w g ^w
Nasal	m		n		ɲ	ŋ		ŋ ^w
Affricate				tʃ dʒ				
Fricative		v	s	ʃ				
Trill			r					
Lateral			l					
Approximant					j		w	

Table 4.7 Consonant chart of speech sounds of Ìfite Ọgwarì speech community

Place → Manner ↓	Bilabial	Labio- dental	Alveolar	Post Alveolar	Palatal	Velar	Labial Velar	Labialized Velar	Glotal
Plosive	p b		t d			k g	kp gb	k ^w g ^w	
Nasal	m		n		ɲ			ŋ ^w	
Affricate				tʃ dʒ					
Fricative		f v	s z	ʃ					h
Trill			r						
Lateral			l						
Approximant					j		w		

Anàkù and Ụmù̀̀oluṃ speech communities do not have the SI phonemes /f z ʃ ɣ fi/. Ụmù̀̀mbõ has all the consonants in Anàkù and Ụmù̀̀oluṃ speech communities plus the voiceless post - alveolar fricative /ʃ/. It does not have the SI phonemes /f z ɣ fi/. All the consonants in Anàkù, Ụmù̀̀oluṃ and Ụmù̀̀mbõ speech communities exist in Ìfite Ọgwarì . The only consonants not witnessed in Ìfite Ọgwarì are /ŋ ɣ/. Other consonants of the SI not in Anàkù and Ụmù̀̀oluṃ speech communities which are in Ìfite Ọgwarì are /f ʃ fi z/.

The study shows that the SI consonants common to the four speech communities are /p b t d k g kp gb k^w g^w m n ɲ ŋ^w r tʃ dʒ v s l j w/. It is also discovered that the phonemes /ŋ f z ʃ v fi/ do not completely exist in each of the speech communities. For example, the phonemes /f z fi/ are not seen in Anàkù, Ụmù̀̀oluṃ and Ụmù̀̀mbõ speech communities , but they are found in Ìfite Ọgwarì ; the voiceless post alveolar fricative /ʃ/ does not exist in Anàkù and Ụmù̀̀oluṃ speech communities, but it is witnessed in Ìfite Ọgwarì and Ụmù̀̀mbõ ; and the consonant /ŋ/ is

lacking in Ìfite Ọgwàrì, but it is present in Anàkù, Ụmùòlũm̄ and Ụmù̀mboō speech communities. Where /f/ and /h/ phonemes appear in any SI word, they are most often realised as /v/ in Anàkù, Ụmùòlũm̄ and Ụmù̀mboō speech communities; the phoneme /z/ is also realised as /r/ in these three speech communities. The /j/ phoneme is also realised as /r/ in Anàkù and Ụmùòlũm̄. None of the speech communities has the SI voiced velar fricative /ɣ/ as it is most often realised as /j/ e.g.

89.	S.I	Anàkù	Umùòlum̄	Ìfite Ọgwàrì	Ụmù̀mboō	gloss
a.	àfò /àfò/	àvò /àvò/	àvò /àvò/	àhò /àhò/	àvò /àvò/	‘3 rd market day in Igboland’
b.	afọ /afọ/	avọ /avọ/	avọ /avọ/	ahọ /ahọ/	avọ /avọ/	‘stomach’
c.	afere /afere/	avele /avele/	avele /avele/	ahele /ahele/	avele /avele/	‘plate’
d.	ahà /ahà/	avà /avà/	avà /avà/	ahà /ahà/	avà /avà/	‘name’
e.	ha /fia/	va /va/	va /va/	ha /fia/	va /va/	‘3 rd person plural’
f.	ahĩa /ahĩa/	avĩa /avĩa/	avĩa /avĩa/	ahĩa /ahĩa/	avĩa /avĩa/	‘market’
g.	ọhĩa /ọhĩa/	ọvĩa /ọvĩa/	ọvĩa /ọvĩa/	ọhĩa /ọhĩa/	ọvĩa /ọvĩa/	‘bush’
<i>/z/, /j/ ~ /r/</i>						
h.	azù /azù/	arì /arì/	arì /arì/	azì /azì/	arì /arì/	‘fish’
i.	nzùkọ /nzùkọ/	nrùkọ /nrùkọ/	nrùkọ /nrùkọ/	nzùkọ /nzùkọ/	nrùkọ /nrùkọ/	‘meeting’
j.	ezē /e [↓] zé/	erē /e [↓] ré/	erē /e [↓] ré/	ezē /e [↓] zé/	erē /e [↓] ré/	‘tooth’
k.	ezì /ezì/	erì /erì/	erì /erì/	ezì /ezì/	erì /erì/	‘Pig’
l.	zàa /zàa/	ràa /ràa/	ràa /ràa/	zàa /zàa/	ràa /ràa/	‘sweep’
m.	ìsha /ìsha/	ìra /ìra/	ìra /ìra/	ìhĩa /ìhĩa/	ìra /ìra/	‘crayfish’
n.	ashà /afà/	arìà /arìà/	arìà /arìà/	ahìà /ahìà/	arìà /arìà/	‘weaver bird’
<i>/ɣ/ ~ /j/</i>						
o.	ìghā /r [↓] yá/	ìyā /r [↓] já/	ìyā /r [↓] já/	ìyā /r [↓] já/	ìyā /r [↓] já/	‘to disperse’
p.	ghèe /ɣèe/	yèe /jèe/	yèe /jèe/	yèe /jèe/	yèe /jèe/	‘fry’
q.	ughelē /uɣe [↓] lé/	uyelē /uje [↓] lé/	uyelē /uje [↓] lé/	uyelē /uje [↓] lé/	uyelē /uje [↓] lé/	‘yawning’
r.	agha /aya/	aya /aja/	aya /aja/	aya /aja/	aya /aja/	‘war’
<i>/ŋ/ ~ /ŋ^w/</i>						
s.	nùọ /ŋ̀ùọ/	nwùọ /ŋ ^w ̀ùọ/	nwùọ /ŋ ^w ̀ùọ/	nwùọ /ŋ ^w ̀ùọ/	nwùọ /ŋ ^w ̀ùọ/	‘drink/die’
t.	anùlì /aǹùlì/	anwùlì /an ^w ̀ùlì/	anwùlì /an ^w ̀ùlì/	anwùlì /an ^w ̀ùlì/	anwùlì /an ^w ̀ùlì/	‘joy/happiness’
u.	onwa /on ^w a/	onã /onã/	onã /onã/	onwa /on ^w a/	onã /onã/	‘moon’

Sometimes, Ìfite Ọgwàrì realises the SI phoneme /r d/ as [dz] before a high front vowel as in *agiri* [agirdzi] ‘intimate girl friend’, SI word *ndi inyòm̄* [ndziò̀m̄] ‘women’.

4.1.2 Vowels of Ọmambala varieties of Igbo

The vowels are established with the use of the MP/MS analysis as presented below:

Analysis 7: Minimal pair/set analysis of vowels of Àgùlerì, Ñsugbè, Ìkem, Ànàm , Ñtèjè, Awkuzu, Ogbunikè, Anàkù, Ụmùḅ uḿ, Ìfite Ọgwarì and Ụmùḅḅḅ speech communities

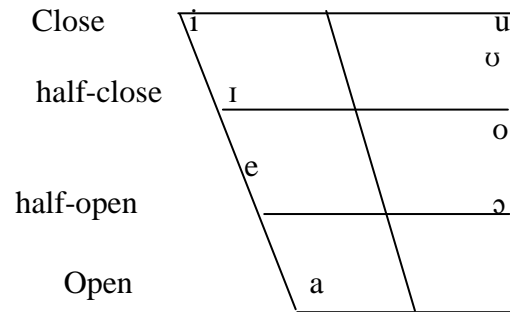
	Àgùlerì	Ñsugbè	Ìkem	Ànàm	Ñtèjè	Awkuzu	Ogbunikè	Anàkù	Ụmùḅ uḿ	Ìfite Ọgwarì	Ụmùḅḅḅ	gloss
i. a	avja	avja	avja	avja	avja	avja	afja	avja	avja	ahja	avja	'market'
ii. ọ	ovja	ovja	ofja	ovja	ovja	ovja	ovja	ovja	ovja	ohja	ovja	'bush'
iii. a	anya	anya	anya	anya	anya	anya	anya	anya	anya	anya	anya	'eyes'
iv. ọ	onya	onya	onya	onya	onya	onya	onya	onya	onya	onya	onya	'wound'
v. e	kwe	kwe	kwe	kwe	kwe	kwe	kwe	kwe	kwe	kwe	kwe	'agree'
vi. u	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	'say/talk'
vii. ụ	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	kwu	'pay'
viii. e	che	che	che	che	che	che	che	che	che	che	che	'wait'
ix. u	chu	chu	chu	chu	chu	chu	chu	chu	chu	chu	chu	'fetch'
x. o	osè	osè	osè	osè	osè	osè	osè	osè	osè	osè	osè	'pepper'
xi. i	isè	isè	isè	isè	isè	isè	isè	isè	isè	isè	isè	'to draw'
xii. ì	lì	lì	lì	lì	lì	lì	lì	lì	lì	lì	lì	'climb'
xiii. ụ	lụ	lụ	lụ	lụ	lụ	lụ	lụ	lụ	lụ	lụ	lụ	'work'
xiv. e	ezè	ezè	ezè	ezè	ezè	ezè	ezè	erè	erè	ezè	erè	'king'
xv. i	ezi	ezi	ezi	erì	ezi	ezi	ezi	ezi	erì	ezi	erì	'pig'
xvi. a	va	va	va	va	va	va	fa	va	va	ha	va	'they'
xvii. ụ	vụ	vụ	fụ	vụ	vụ	vụ	fụ	vụ	vụ	vụ	vụ	'see'
xviii. a	zà	zà	zà	zà	zà	zà	zà	rà	rà	zà	rà	'sweep'
xix. e	zè	zè	zè	rè	zè	zè	zè	rè	rè	zè	rè	'dodge'

There are eight vowels in the eleven speech communities. These vowels are the same as the SI vowels both in quantity and quality. The vowels are:

/a e i ɪ o ɔ u ʊ/

The vowels of the eleven speech communities are presented in the following vowel chart:

Fig. 4.1 Vowel chart of Àgùlerì, Ñsugbè, Ìkem, Ànàṁ , Ñtèjè, Awkuzu, Ogbunikè, Anàkù, Ụmùḅ uṁ, Ìfite Ọgwarì and Ụmùṁbḅ



4.1.3 Comparison of phonemes and phonological patterning of words in all the speech communities

The study reveals that the eleven speech communities used for analysis have twenty-one phonemes of the SI in common. The phonemes are;

/p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r s l j w/

Àgùlerì, Ìnsugbè, Ìkem, Ìtèjè and Awkuzu speech communities have twenty five consonants out of the twenty-eight consonants existing in the SI ; Ogbunikè and Ìfite Ọgwarì each has twenty-six consonants; there are twenty-four consonants each in Ànàm and Ụmùmbòò ; while Anàkù and Ụmùòluṃ speech communities have twenty-three consonants. All the speech communities have the eight vowels of the SI without any additional vowel.

The study clearly discloses that Àgùlerì , Ìnsugbè, Ìkem, Ìtèjè, Awkuzu, Ànàm, Anàkù and Ụmùòluṃ speech communities do not have voiceless labio-dental fricative /f/, voiceless post-alveolar fricative /ʃ/ and voiced glottal fricative /ɦ/. In addition to not having these phonemes , the voiced velar fricative /ɣ/ does exist in Ànàm , Anàkù, Ụmùòluṃ, Ụmùmbòò and Ìfite Ọgwarì ; other consonants lacking in Anàkù, Ụmùòluṃ and Ụmùmbòò are voiceless labio-dental fricative /f/ and voiced alveolar fricative /z/. Other speech communities where the voiced glottal fricative /ɦ/ does not exist are Ụmùmbòò and Ogbunikè. It is found only in Ìfite Ọgwarì. Ogbunikè is also the only speech community where voiced labio-dental fricative /v/ is not found; and /ɲ/ is in all the speech communities except Ìfite Ọgwarì.

Some of the speech communities exhibit tonal differences with others in some words. For example, while Anàkù, Ụmùòluṃ, Ìfite Ọgwarì and Ụmùmbòò speech communities would realise the English word ‘breast’ as *alā* /a¹lá/ with a high – down step tone sequence, other speech communities have it as *ala* /ala/ with a high – high tone sequence. There are also some lexical differences among the speech communities; the SI word *nwaànyị* ‘woman’ is called *nwaànyị* in Ìnsugbè, Ànàm and Ogbunikè; it is called *nwaànyà* in Àgùlerì, Ìkem, Ìtèjè and Awkuzu ; Anàkù, Ụmùmbòò and Ụmùòluṃ call it *naànyà*; but Ìfite Ọgwarì calls it *ndziòmù*. Also, the word *onwa* ‘moon’ in SI remains so in Àgùlerì , Ìkem, Ìnsugbè, Ìtèjè, Awkuzu, Ogbunikè and Ìfite Ọgwarì ; but Anàkù, Ụmùmbòò and Ụmùòluṃ call it *ọna*; it is known as *onye ivè* in Ànàm . However, discussion of lexical differences is beyond the scope of this study.

Nwaozuzu (2008:28) claims that the dialects of Ọyi, Anambra East, Anambra West and Ayamèlùm LGAs have between twenty-six and twenty-seven consonant sounds and on page 36 she notes that the dialects of Omambala have each 26 consonants and later says that Ìtèjè, Awkuzu, Àgùlerì,

Anàkù, Ñsugbè and Ụmùòluṁ with some other dialects operate a 25 system of consonants, including the voiceless labio-dental fricative /f/ consistently replaced with its voiced counterpart /v/. This study discovers that Ñtèjè, Awkuzu, Àgùlerì and Ñsugbè operate 25 consonants but Anàkù operates 23. It is also discovered that Ogbunikē has 26 consonants excluding /fi/ and including /f/. Nwaozuzu also discloses that Ìfite Ọgwarì, Ụmēje and Ọmàsì operate 27 consonants without the /f/ sound, but this study reveals that Ìfite Ọgwarì operates 26 consonants including the /f/ sound as seen in *fùo* ‘give chance’. The consonants not found in Ìfite Ọgwarì are the voiced velar fricative ɣ usually replaced with /j/, and the velar nasal ŋ , which is usually replaced with the labialised velar nasal ŋ^w . Nwaozuzu (2008) also submits that the alveolar trill /r/ does not exist in Ñtèjè and Ñsugbè, but the study has through the minimal pair presented below shown a clear evidence of its distinctiveness in both speech communities.

- 90 a. arà /arà/ ‘weaver bird’ /r/
avà /avà/ ‘name’ /v/
- b. oyī /o^ljí/ ‘cold’ /j/
orī /o^lrí/ ‘steal’ /r/

From the analysis of the phonemes using the MP/MS, some similarities and differences in the phonological patterning of words were discovered among the dialects investigated. The similarities and differences involve the retention or substitution of some of the SI phonemes in some words in some speech communities.

It has been observed that the labialised velar nasal / ŋ^w / in the SI exists in all the speech communities investigated, but in Anàkù, Ụmùṁboḍ and Ụmùòluṁ, it is realised as / ŋ ^w/ only when it precedes the high back rounded vowel u/ù; when it does not precede u/ù, it is realised as / ŋ /. The phoneme / ŋ / does not exist in Ìfite Ọgwarì. Below are some examples:

91. SI	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Ogbunikē	Ìfite Ọgwarì	Anàkù	Ụmụ̀mboō	Ụmụ̀oluṃ	gloss	
a.	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋwa/	/ŋŋa/	/ŋŋa/	/ŋa/	‘child’	
b.	/ŋ ^w aàjì/	/ŋ ^w aàjà/	/ŋ ^w aàjà/	/ŋ ^w aàjì/	/ŋ ^w aàjà/	/ŋ ^w aàjà/	/ŋ ^w aàjì/	/ŋ ^w a òndziòm/	/ŋa ŋaàjà/	/ŋa ŋaàjà/	/ŋa ŋaàjà/	‘woman’	
c.	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	/aŋ ^w olò/	‘smoke’	
d.	/ɔŋ ^w a/	/ɔŋ ^w a/	/ɔŋ ^w a/	/ɔŋ ^w a/	/oŋe ivè/	/ɔŋ ^w a/	/ɔŋ ^w a/	/ɔŋ ^w a/	/ɔŋ ^w a/	/ɔŋa/	/ɔŋa/	/ɔŋa/	‘moon’
e.	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	/a ^l ŋ ^w ’ò/	‘sun/bee’	
f.	/ŋòɔ/	/ŋ ^w òɔ/	/ŋ ^w òɔ/	/làa/	/ŋ ^w òɔ/	/ŋ ^w òa/	/ŋ ^w òa/	/ŋ ^w òa/	/ŋ ^w òɔ/	/ŋ ^w òɔ/	/ŋ ^w òɔ/	/ŋ ^w òɔ/	‘drink/die’
g.	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	/ɔŋ ^w ’ò/	‘death’

In any environment where Àgùlerì , Ìkem, Ñsugbè, Ànàm, Ñtèjè, Awkuzu, Anàkù, Ụmụ̀mboō and Ụmụ̀oluṃ would use the voiced labio -dental fricative /v/, Ogbunikē uses its voiceless counterpart /f/ and Ìfite Ọgwarì uses voiced glottal fricative ɦ/. Finally, the voiceless labio -dental fricative /f/ is not found in all the speech communities investigated except in Ogbunikē and Ìfite Ọgwarì. The occurrence of voiceless labio -dental fricative in Ìfite Ọgwarì is very limited . Therefore, where Àgùlerì, Ìkem, Ñsugbè, Ànàm, Ñtèjè, Awkuzu, Anàkù, Ụmụ̀mboō and Ụmụ̀oluṃ would use /v/ and Ogbunikē uses /f/, Ìfite Ọgwarì most often uses /ɦ/ and in rare occasions uses /j/. Few instances from our data are presented below:

92.	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Ogbunikē	Anàkù	Ụmụ̀mboō	Ụmụ̀oluṃ	Ìfite Ọgwarì	gloss
a.	/ɔvò ^l ’ò/	/ɔvò ^l ’ò/	/ɔvò ^l ’ò/	/ɔvò ^l ’ò/	/ɔvò ^l ’ò/	/ɔvò ^l ’ò/	/ɔfò ^l ’ò/	/ɔ ^l vò/	/ɔ ^l vò/	/ɔvò ^l ’ò/	/ɔ ^l ɦò/	new
b.	/avà/	/avà/	/avà/	/avà/	/avà/	/avà/	/afà/	/avà/	/avà/	/avà/	/afà/	name
c.	/avija/	/avija/	/avija/	/avija/	/avija/	/avija/	/afija/	/avija/	/avija/	/avija/	/afija/	market
d.	/avele/	/evele/	/avele/	/avele/	/evele/	/evele/	/àfele/	/evele/	/aveleje/	/avele/	/àfele/	plate
e.	/avò/	/avò/	/avò/	/avò/	/avò/	/avò/	/afò/	/avò/	/avò/	/avò/	/afò/	penny
f.	/avɔ/	/avɔ/	/avɔ/	/avɔ/	/avɔ/	/avɔ/	/afɔ/	/avɔ/	/avɔ/	/avɔ/	/afɔ/	stomach
e.	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l fé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l vé/	/mà i ^l jé/	know something

Instances such as above is referred to as a case of sound shift by Nwaozuzu (2008), where; /h/ → /f/ → /v/.

In some cases where some other speech communities would use voiced labio-dental fricative /v/ at medial position, Ogbunikē and Ìfite Ògwarì use voiced labial plosive /b/. This usually occurs at CVCV syllable structure as can be found in the examples below:

93.	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Anàkù	Ụmụ̀mboō	Ụmụ̀òluṃ	Ogbunikē	Ìfite Ògwarì	gloss
a.	/dʒève/	/pòva/	/dʒève/	/dʒève/	/dʒève/	/dʒève/	/dʒève/	/pòva/	/dʒève/	/dʒèbe/	/dʒèbe/	depart
b.	/mève/	/mève/	/mève/	/mève/	/mève/	/mève/	/mève/	/mève/	/mève/	/mèbe/	/mèbe/	do

Anàkù, Ụmụ̀mboō and Ụmụ̀òluṃ are the only speech communities studied where there is complete absence of voiced alveolar fricative /z/; where other speech communities would use /z/, Anàkù, Ụmụ̀mboō and Ụmụ̀òluṃ use voiced alveolar trill /r/. Examples are presented below:

94.	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Ogbunikē	Anàkù	Ụmụ̀mbō	Ụmụ̀òluṃ	Ìfite Ògwarì	gloss
a.	azù	azì	azù	azù	azù	azù	azù	arì	arì	arì	azì	fish
b.	ezē	ezē	ezē	ezē	ezē	ezē	ezē	erē	erē	erē	ezē	tooth
c.	ezi	ezi	ezi	uzò	ezi	ezi	ezi	iri	eri ọ̀rọ̀	eri	ezi	road
d.	zàchaa	zàa	zàa	zàa	zàa	zàa	zàa	ràchaa	ràchaa	ràchaa	zàa	sweep
e.	izè	izè	izè	izè	izè	izè	izè	irè	irè	irè	izèeli	to avoid/dodge
f.	izā	izā	izā	izā	izā	izā	izā	irā	irā	irā	izā	to swell/answer
g.	zèe	zèelì	zèe	zèe/zèli	zèeli	zèe	zèe/zèelụ	rèe	rèelì	rèe	zèeli	avoid/dodge
h.	ezi	ezi	ezi	ezi	ezi	ezi	ezi	erì	erì	erì	ezi	pig
i.	ọ̀zọ	ọ̀zọ	ọ̀zọ	ọ̀zọ	ọ̀zọ	ọ̀zọ	ọ̀zọ	ọ̀rọ	ọ̀ጥ	ọ̀rọ	ọ̀rọ	again

In Umùmboō speech community, where SI word have /z/ at intervocalic position involving two ɔ̄, the /z/ is replaced with voiced alveolar plosive /d/; while Ifite Ọgwarī would have /t/. This is manifest in the SI word ọzọ ‘again’.

Ntèjè and Ogbunikē speech communities sometimes realize the labial velar nasal /ɲ/ where SI has the velar nasal /ŋ/ as seen in anyàsì /aɲàsì/ ‘night’ as against anàsì /aŋàsì/ found in SI as well as in Àgùlerì , Ìkem, Awkuzu and Anàkù speech communities; for Ànam and Ifite Ọgwarī , the consonant of the second syllable is elided to realise ààsì /ààsì/ and aàsì /aàsì/ respectively. N̄sugbè calls it ùchichì /ùtʃitʃi/ ‘night’.

At CVV syllable structure, where the vowels are from –ATR group and some speech communities would have ɔ̄ at final position following ‘u’, some speech communities have ‘a’, but when the vowels are from +ATR group and some speech communities would have ‘o’ at final position following ‘u’, some speech communities have ‘e’. Examples are presented below:

95.	Àgùlerì	Ìkem	N̄sugbè	Ànam	Ntèjè	Awkuzu	Anàkù	Umùmbo -	Umùòlun̄	Ogbunikē	Ifite Ọgwarī	gloss
a.	gùọ	gùọ	gùà	gùọ	gùà	gùà	gùọ	gùà	gùọ	gùà	gùọ	read
b.	kwùọ	kwùọ	kwùè	kwùọ	kwùè	kwùè	kwùọ	kwùè	kwùọ	kwùè	kwùọ	say
c.	gbùọ	gbùọ	gbùè	gbùọ	gbùè	gbùè	gbùọ	gbùọ	gbùọ	gbùè	gbùè	kill
d.	mùọ	mùọ	mùà	mùọ	mùà	mùà	mùọ	mùọ	mùọ	mùà	mùọ	give birth
e.	gwùọ	gwùọ	gwùè	gwùọ	gwùè	gwùè	gwùọ	gwùèbe	gwùọ	gwùè	gwùọ	dig
f.	nyùọ	nyùọ	nyùà	nyùọ	nyùà	nyùà	nyùọ	nyùọ	nyùọ	nyùà	nyùọ	defecate
g.	gùọ	gùọ	gùà	gùọ	gùà	gùà	gùọ	gùà	gùọ	gùà	gùọ	read
h.	kwùọ	kwùọ	kwùà	kwùọ	kwùà	kwùà	kwùọ	kwùọ	kwùọm	kwùà	kwùọ	pay
i.	sùọ	chùọ	sùà	sùọ	sùà	sùà	chùọ	chùọ	chùọ	sùà	shùọ	wash (plates)
j.	wùọ	wùọ	wùà	wùọ	wùọ	wùọ	wùọ	wùà	wùọ	wùà	wùọ	bathe

We also discover from our data that at VCV syllable structure where in other speech communities /b/ is at medial position followed by the final vowel /ɔ/ or /ʊ/, Ìfite Ọgwarì would have /v/ e.g.

96.	Others	Ìfite Ọgwarì	
a.	mbɔ /mbɔ/	mvɔ /mvɔ/	‘nail’
b.	abù /abù/	avù /avù/	‘armpit’

Where in the same environment Àgùlerì, Ìkem, Ñsugbè, Ànà m, Ñtèjè, Awkuzu, Anàkù, Ụmù̀mboō and Ụmù̀oluṃ speech communities realise /v/ and Ogbunikē speech community realises /f/, but Ìfite Ọgwarì uses /h/ as seen in the example below:

97.	Àgùlerì& others	Ogbunikē	Ìfite Ọgwarì	
a.	avɔ /avɔ/	afɔ /afɔ/	ahɔ /ahɔ/	‘stomach’
b.	avù /avù/	afù /afù/	ahù /ahù/	‘penny’
c.	òvɔ /òvɔ/	òfɔ /òfɔ/	òhɔ /òhɔ/	‘Igbo symbol of authority’

It is also observed from our data that at intervocalic position of VCV syllable structure involving the phonemes /i/ and /e/ respectively, Ìfite Ọgwarì realises /j/ where Àgùlerì, Ìkem, Ñsugbè, Ànà m, Ñtèjè, Awkuzu, Anàkù, Ụmù̀mboō and Ụmù̀oluṃ speech communities would realise /v/, while Ogbunikē speech community realises /f/. Example:

98.	Àgùlerì	Ìkem	Ñsugbè	Ànà m	Ñtèjè	Awkuzu	Anàkù	Ụmù̀mboō	Ụmù̀oluṃ	Ogbunikē	Ìfite Ọgwarì	gloss
	/màlɪ i [↓] vé/	/ɪ [↓] má ive/	/ɪ [↓] má ive/	/ɪ [↓] má ive/	/màlʊ i [↓] vé/	/màlɪ i [↓] vé/	/ɪ [↓] má ive/	/ɪ [↓] má ive/	/ɪ [↓] má ive/	/ɪ [↓] má ife/	/ɔma ije/	know sth

For the English word ‘we/us’, SI ‘anyi’ /àɲɪ/, some of the speech communities investigated realise the phoneme /ɲ/ and others realise the phoneme /j/. In this sense, Àgùlerì, Ìkem, Ñsugbè, Ànà m, Ñtèjè, Awkuzu and Ìfite Ọgwarì would say ànyɪ /àɲɪ/, while Anàkù, Ụmù̀mboō, Ụmù̀oluṃ and Ogbunikē say àyɪ /àjɪ/.

In Àgùlerì, Ñsugbè and Ànàm speech communities, /n/ changes to [r] in SI word *ogonogo*, but it is not like that in the other speech communities investigated. Example:

99.	Àgùlerì, Ñsugbè & Ànàm SCs	Others
	ogorogo	ogonogo

In some cases, Ûmù̀mboō realises the voiceless post -alveolar fricative /ʃ/, but the other speech communities would realise the voiceless alveolar fricative /s/ especially at word medial position. Instances of this occurrence are noticed at word medial position. Examples are presented below:

100.	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Anàkù	Ûmù̀mboō	Ûmù̀ò uṁ	Ogbunikē	Ìfite Ògwarì	gloss
a.	oisi	osisi	oisi	oosi	osisi	osisi	osisi	oshi	osi	oisi	oosi	tree
b.	isi	isi	isi	isi	isi	isi	isi	ishi	isi	isi	isi	head
c.	ṅsì	ṅsì	ṅsì	ṅsì	ṅsì	ṅsì	ṅsì	ṅshì	ṅsì	ṅsì	ṅsì	faeces
d.	isì	isì	isì	isì	isì	isì	isì	ishì	isì	isì	isì	smell
e.	isì	isì	isì	isì	isì	isì	isì	ishì	isì	isì	isì	blindness

It is also observed that where some speech communities investigated would use voiced velar fricative /v/, others use /j/. There is also evidence of Ànàm speech community using /v/. Examples are presented below:

101.	Àgùlerì	Ìkem	Ñsugbè	Ànàm	Ñtèjè	Awkuzu	Anàkù	Ûmù̀mboō	Ûmù̀òluṁ	Ogbunikē	Ìfite Ògwarì	gloss
a.	ye	ghe	ye	ve	ye	ghe	ye	ye	ye	ye	ye	fry
b.	gha	gha	gha	va	gha	gha	ya	ya	ya	gha	ya	cast
c.	oghēle	oghēle	oghēle	ovēle	oyēle	oghēle	ntapu	ntapu	oyēle/ṁpu	oyēle	oyēle	hole
d.	agha	agha	agha	ògù	aya	agha	aya/ògù	aya	aya	agha/ògù	aya	war
e.	mmeghe	mmeghe	mmeghe	mmeve	mmeghe	mmepe	mmeye	mmepe	mmeye	mmeye	ṁmeye	development
f.	ùghelē	ughelē	ughelē	uvelē	uyelē	ughelē	uyelē	uyelē	uyelē	uyelē	uyelē	yawning

Chapter Five
Presentation and analysis of data on phonological processes
and secondary articulation features

5.0 Introduction

The data collected for this study have shown some evidence of phonological processes as well as secondary articulation features that take place when sounds occur in company in speech. This chapter presents and describes the manifestations of these processes and features identified in the eleven speech communities investigated. In doing this, the three parameters of intersegmental coordination in speech as in Eme (2008) - articulatory parameter, coarticulatory parameter and connected speech features parameter serve as a guide. One linear phonology theory, the generative phonology, and two non-linear phonology theories, autosegmental phonology and government phonology are used for analysis. Specifically, the generative phonology and autosegmental phonology are used to analyse lengthening and insertion; labialisation, palatalisation, homorganic nasal assimilation, nasalisation, neutralisation, assimilation, elision and vowel harmony violation and obedience are analysed using the generative phonology, autosegmental phonology and government phonology; metathesis is analysed using the generative phonology and finally, only the autosegmental phonology is used to analyse gliding tone. The only process not analysed with a theory is weakening (lenition) and strengthening (fortition) because of their nature in that where a variety will use a particular sound, another variety uses a different sound in the same environment to express the same meaning.

5.1 Articulatory parameter

The phonological processes discussed under the articulatory parameter are lengthening and weakening and strengthening of sounds.

5.1.1 Lengthening of sounds in Qmambala varieties

From some of the data, there are perceived instances of sounds lengthenings. Some of our data show that lengthening of sounds involve the vowel sounds and it is witnessed at word medial position. The lengthened sounds are realized at the same pitch level. Examples are seen in the table below:

Table 5.1 Lengthening in speech communities of Qmambala area

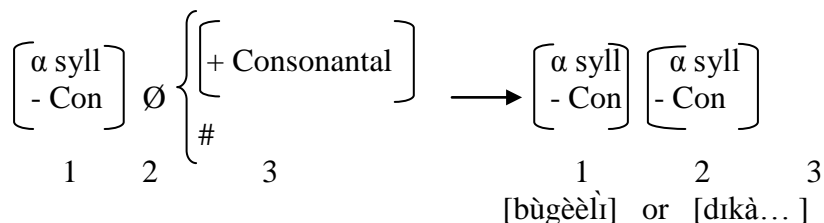
Respondent	Lines	Lengthening	Gloss
Ìkem man 1	34	[bùgèèl̩]	have taken
	40	[d̩nl̩]	is/was
Ñsugbè man	4	[ŋ ^w ɛ̃ è d̩]	is married
Ogbunike man	21	[ŋ ^w áj̩ɔ̩]	Easy
Anàkùm an	29	[kɔf̩aa]	finished introduction
	36	[ɔ̃ dàná̃ a]	if agreed
	41	[ŋã ñãàñã n̩ò]	that woman
Anàkù woman	54	[àlɔkɪl̩]	do most
Anàkù youth	15	[a gbanã̀ àre egb̩]	once there is gun shot
Umuolum man	34	[mèèlɔ]	Do
Umùmboō	54	[nã̀ àlɔkeel̩]	mainly do

Lengthening of sounds can occur as a result of pulse in speech, hesitation or speech mannerism while searching for the right word. This is perceived in lines

102. 13 of Anàkù man's speech e.g. d̩kà... [d̩kà...]
 16 of Anàkù man's speech e.g. j̩a yā... [d̩^waa já...]
 22 of Anàkù man's speech e.g. ì b̩ja n̩'ibe... [ɪ b̩'aa n̩'ibe...]
 11 of Ìkem man 1's speech e.g. ɔ̩n̩ɛg̩... ego àyòlò [ɔ̩n̩ɛ^lg̩ó:: ega àyòlò]
 1, 2, 10 & 51 of Ñsugbè man 1's speech e.g. [abò m̩ò...]
 2 of Ñsugbè man 1's speech e.g. [kà ñk̩ ɔ̩lu un̩'ive...]
 8 of Ñsugbè man 1's speech e.g. bù nã̀ n̩wany̩... m̩gbè gboo [bù nã̀ ŋ^wã̩j̩... m̩gbè gboo]
 51 of Ñsugbè man 1's speech e.g. [um̩ònnã̀ gɪ...]
 1 of Umùòlum̩ man's speech e.g. [avà m̩ bù ... ive e]

Lengthening can formerly be explained with P-rule. The P-rule analysis of lengthening is presented below:

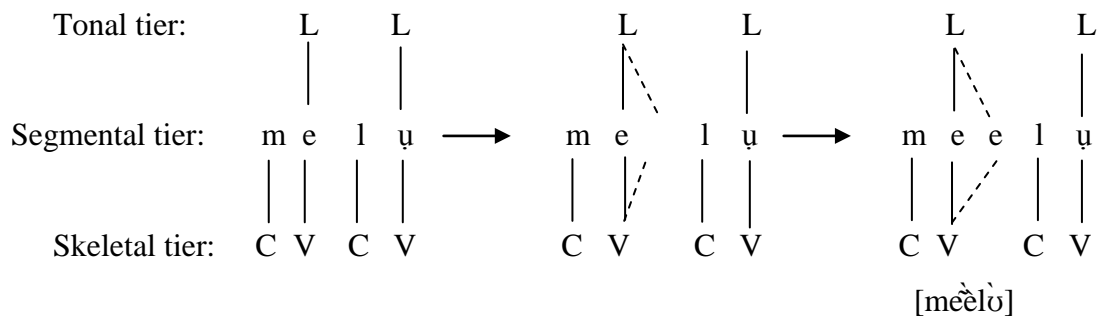
Rule 20: P-rule analysis of lengthening in Qmambala Igbo



Interpretation: This rule is interpreted to mean that a vowel before a consonant or at word boundary is lengthened.

Lengthening can also be explained using autosegmental phonology analysis. This is illustrated below:

Fig. 5.1 Autosegmental phonology account of lengthening



In this analysis, column two shows that a new association line branches from the vowel of the first syllable to a null position. Also, another new association line branches from the tone of the first syllable to the same null position. In column three, another vowel of the same quality as vowel of the first syllable is introduced into the null position, thus indicating that the vowel of the first syllable has been lengthened and at the same pitch level.

Only the generative phonology and autosegmental phonology could be used comfortably to account for lengthening. The analysis using the autosegmental phonology could be said to be simpler.

5.1.2 Weakening and strengthening of sounds in Qmambalā varieties

Some SI words sometimes have some sounds in them replaced with other sounds in the Igbo variants of Qmambalā . Some scholars, including Eme (2008) consider this as instances of weakening and strengthening of sounds. Eme (2008:38) has provided a good means of differentiating between stronger and weaker sounds in Igbo. According to her, the closer the articulators during the production of a consonant, the stronger the consonant produced while the more open the articulators, the weaker the consonant. She further discloses that voiceless consonants are stronger than their voiced counterparts, while fricatives are stronger than glides. She also cites Udoh (2003) as pointing out a format whereby; stop > affricate > continuant > nasal > approximant (p.47). We adopt these criteria but add that for continuant, [+distributed] is stronger than [-distributed]. Based on these yardsticks, we have identified the stronger and weaker sounds used in free variation in the speech communities investigated, which we represent below:

In Àgùlerì, Ñsugbè, Ìkem, Ànà m̄, Ñtèjè, Awkuzu, Anàkù, Umùòlum̄ and Ụmùmboō speech communities, the SI phonemes /f/ and /h/ replaced with /v/ wherever they occur in any word. This will be considered by some scholars as sound weakening.

103. SI	Àgùlerì	Ìsugbè	Ìkem	Ànàm	Ìtèjè	Awkuzu	Anàkù	Umùòlun̄	Umùmbō	gloss	
a.	efere /efere/	avele/avele/	avele /avele/	evele /evele/	àvele /àvele/	avele /avele/	avele /avele/	avele /avele/	avele /avele/	avele /avele/	‘plate’
b.	afọ /afɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	avọ /avɔ/	‘stomach’
c.	àfọ /àfɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	àvọ /àvɔ/	‘third market day in Igboland’
d.	òfọ /òfɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	òvọ /òvɔ/	‘Igbo symbol of authority’
e.	ha /fa /	va /va /	va /va /	va /va /	va /va /	va /va /	va /va /	va /va /	va /va /	va /va /	‘3 rd person pl’
f.	ahĩa /afia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	avĩa /avia/	‘market’
g.	ohia /ɔfia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	ovia /ɔvia/	‘ bush’
h.	ehi /efi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	evi /evi/	‘cow’

The SI phonemes /f/ is also replaced with /r/ in any word in Àgùlerì, Ìsugbè, Ìkem, Ànàm, Ìtèjè and Awkuzu speech communities.

104.	SI	Àgùlerì, Ìsugbè, Ìkem, Ànàm , Ìtèjè, Awkuzu speech communities
a.	ashà /afà /	arà /arà/ ‘a kind of bird’
b.	ìsha /ifa/	ìra /ira/ ‘crayfish’

In Àgùlerì, Ìsugbè and Ànàm speech communities, the SI phoneme /n/ is replaced with [r] in the word *ogonogo* ‘long’. Example:

105.	SI	Àgùlerì & Ànàm speech communities
	ogonogo	ogorogo ‘tall/long’

The phonemes /ɣ/ in SI is replaced with /v/ wherever it appears in a word in Ànam speech community. This, to some scholars, is a case of sound strengthening. Examples are:

106.	SI	Ànam	
a.	ghèe /ɣèe/	vèe /vèe/	‘fry’
b.	òghèrè /òɣèrè/	òvèlè /òvèlè/	‘chance’

In some cases, the phoneme /ɣ/ is replaced with labialised velar approximant /w/ in Ànam speech community. Examples are presented below:

107.	S.I	Ànam	
a.	aghùghò /aɣò ɣò/	awùwò /aàwò/	‘cunning’
b.	ghòò /ɣòò/	wòò /wòò/	‘pluck’

The SI phonemes /h/ and /v/ do not exist in Ogbunikē speech community . While /h/ is replaced with voiceless labio-dental fricative /f/, /v/ is replaced with voiced bilabial plosive /b/. Examples are as presented below:

108.	SI	Ogbunikē	
a.	ahja /afia/	afja /afia/	‘market’
b.	ahà /afà/	afà /afà/	‘name’
c.	mvọ /mɣvọ/	mbọ /mbọ/	‘nail’

The phoneme /ɣ/ is also replaced with /j/ in Anàkù speech community as we can see from these examples:

109.	SI	Anàkù	
a.	ìghā /ɪ [↓] ɣá/	ìyā /ɪ [↓] já/	‘cast’
b.	ghèe /ɣèe/	yèe /jèe/	‘fry’
c.	ughelē /uɣe [↓] lé/	uyelē /uje [↓] lé/	‘yawning’
d.	agha /aya/	aya/ògù /aja, ògò/	‘war’

In Anàkù, Umùòlum̄ and Umùmbō speech communities, the SI phoneme /z/ is replaced with /r/. Instances of this are illustrated below:

110.	SI	Anàkù, Umùòlum̄ & Umùmbō	speech communities
a.	azù /azò/	arì /arì/	‘fish’
b.	nzùkọ /nzùkọ/	nrùkọ /nrùkọ/	‘meeting’
c.	ezi /ezi/	eri /eri/	‘road’
d.	ezè /ezè/	erè /erè/	‘king’

The SI phoneme /ɲw/ is also replaced in these speech communities with /ɲ/ between two unrounded vowels or two vowels in which the first is rounded and second is unrounded as can be seen below:

111.	SI	Anàkù, Umùòlum̄ & Ụmù̀mbò	
a.	[ɲwã]	[ɲã]	‘child’
b.	[ɲwãɲ ^l ɲwã]	[ɲãɲ ^l ɲã]	‘grand child’
c.	[ɔɲwã]	[ɔɲã]	‘moon’

These speech communities together with Ìfite Ọgwàrì have the SI phoneme /ɲ/ replaced with /j/ wherever it occurs in any word. Examples are presented below:

112.	SI	Anàkù, Umùòlum̄, Ụmù̀mbò & Ìfite Ọgwàrì	
a.	agha /aya/	aya /aja/	‘war’
b.	ghèe /yèe/	yèe /jèe/	‘fry’

There is the replacement of the phoneme /ɲ/ with /ɲ^w/ in Ìfite Ọgwàrì speech community as we can see below:

113.	SI	Ìfite Ọgwàrì	
a.	nùọ /ɲòɔ/	nwùọ /ɲ ^w òɔ/	‘drink’
b.	ònùnù /òɲɔɲɔ/	ònwùnù /òɲ ^w ɔɲ ^w ɔ/	‘drinking’

Ụmù̀mbò ̄ data shows that at intervocalic position involving two vowels, the phoneme /z/ which is usually replaced with /r/ is replaced with voiced alveolar plosive /d/. Example:

114.	SI	Ụmù̀mbò ̄	
	òzọ	òdọ	‘again’

Ụmù̀mbò ̄ speech community also has the SI phoneme /s/ replaced with /ʃ/ in some cases, especially at word medial position. Instances of this are presented below:

115.	SI	Ụmù̀mbò ̄	gloss
a.	osisi	oshi	tree
b.	isi	ishi	head
c.	̀nshì	̀nshì	faeces

In all the speech communities investigated, the phoneme /ʃ/ is replaced with [r]. Specifically, this is perceived in Àgùlerì , Ñsugbè, Ìkem, Ànà m̄, Ñtèjè, Awkuzu, Ogbunikè, Anàkù, Umùòlum̄ and Ụmù̀mbò ̄ speech communities. At intervocalic position between the vowel [o], the SI phoneme /n/ is replaced with [r] in Àgùlerì and Ànàm̄ speech communities in any word . In Anàkù , Umùòlum̄ and Ụmù̀mbò ̄, the phoneme /z/ is replaced with [r]. Ụmù̀mbò ̄ speech community

replaces the SI phoneme /s/ with [ʃ] at medial position of word. Among the speech communities investigated, it is only in Ụmùmb̄ ȳ that this kind of phonological process manifests . Anàkù, Umùòlum̄ and Ụmùmb̄ ȳ speech communities sometimes replace the phoneme ɣ^w/ with [ŋ]. Finally, Ànam̄ speech community replaces the phoneme /ɣ/ with [w].

Conversely, the phonemes /f fi/ are replaced with [v] in all the speech communities investigated except Ogbunikē where /fi/ is replaced with [f] and /v/ is replaced with [b], Ìfite Ọgwarì where /f v/ are replaced with [fi]. In Anàkù and Ìfite Ọgwarì , the phoneme /ɣ/ is replaced with [j], while in Ànam̄ it is sometimes replaced with [v]. In Ìfite Ọgwarì , the phoneme ɣ/ is replaced with [ŋw], while the phoneme /z/ is replaced with [d] when it occurs between the vowel [o].

The sound /v/ appears in Ọmambala Igbo in both names and verbs unlike in the SI where it appears only in names as observed by Achebe, Ikehawu, Emenanjo, Eme and Ng'ang'a (2010:5).

5.2 Co-articulatory parameter

The phonological processes and secondary articulation features discussed under coarticulatory parameter are labialisation, palatalisation, homorganic nasal assimilation and nasalisation. They are discussed in this order.

5.2.1 Labialisation

When a consonant precedes a high back rounded vowel, it becomes labialised in anticipation of the vowel. This has been pointed out in Eme (2008) and Mbah and Mbah (2010). Labialisation takes place both within and across word boundary.

When this occurs, the high vowel sometimes assimilates the vowel following it when they have the same tone. There are instances of labialisation in all the speech communities investigated. In some of the speech communities, there are instances of labialisation within a word. In some cases, labialisation occurs at word medial position and sometimes at word final position. Examples of where labialisation occurs within a word are perceived in the formal speech pattern of Anàkù man's speech in lines:

116 a. 14 tolue [tol^wee], 16 jua [dʒ^waa], 23 juo [dʒ^woo] 36 ruo [r^woo]

b. Umùòlum̄ man's speech in lines

18 mènnyualu m̄ [mèn^wãal^lm̄], 27 àbụwolu [àb^woolu]

c. Ìfite Ọgwarì man's speech in line

38 ègbuo [ègb^woo]

d. Umùmboō woman's speech in line

29 gbuō [g^lb^wúo]

e. Ìkem man 1's speech in lines

19 umùàgbòò [um^wá àgbòò], bue [b^wee], 36,37 àlò mmuō [àlò mm^wó]

When the vowel coming after a high back rounded vowel does not have the same tone as that of the vowel after it, the high vowel 'u/ù' does not assimilate the vowel following it after making the preceding consonant to be labialised as seen in Anàkù man's speech in lines 23 jùò [dʒ^wúò], 36 rùò [r^wúò], Ìkem man 1's speech in lines 36 and 37 àlò mmuō [àlò mm^wó]. When the high back rounded vowel and the vowel following it have the same quality of tone as in Anàkù man's speech in lines 14 tolue [tol^wee], 16 jua [dʒ^waa], Umùòlum̄ man's speech in lines 18 mènɣalɣ m̄ [mèn^wá alɣ^lm̄], 27 àbɣwolu [àb^woolu], Ìfite Ọgwarì man's speech in line 38 ègbuo [ègb^woo], Ìkem man 1's speech in lines 19 umùàgbòò [um^wá àgbòò], the high vowel easily assimilates features of the vowel next to it after making the consonant sound before it to be labialised.

Where there are two words, the first vowel of the second word will regressively assimilate the last vowel of the first word. If a high back rounded vowel appears before the first vowel of the second word, tone also plays a role in determining whether the high back rounded vowel will be affected by assimilation or not. Where the high back rounded vowel does not have the same quality of tone with the vowel that follows it, after causing the preceding consonant to be labialised, it is not affected by assimilation. The speech pattern of Umùmboō woman's speech contains this instance:

117. Umùmboō woman's speech in lines

2, 3 and 4 nòdù ànò [nòd^wò ànò]

Where the high vowel has the same quality of tone with the vowel next to it as in Umùmboō woman's speech in lines 50 lùlù àtì [lùl^wa àtì] "is dirty", 51 mkpùlù akwù [mkpòl^wa a^lkwù] "palm fruits", the vowel is equally affected by assimilation. Instances of these are also perceived in the data in lines 27 of Awkuzu woman's speech gbànyua ọkū [gbàɲ^wɔ ɔk^lú], 23 of Ntèjè man's speech bue àmànwùlù [b^wee àmàɲ^wòlù], 14 of Ntèjè man's speech igbue igbègùlù [igb^wee igbègùlù], 30 of Ntèjè girl's speech gbanyua ọkū [gbàɲ^wɔ ɔk^lú], 39 àbɣoru [àb^wɔɔrɔ], 17 of Ogbunikē man's speech gbànyua ọkù à [gbàɲ^wɔ ɔkù à], 18 of Anàkù woman's speech gbànyuọ ọkū [gbàɲ^wɔ ɔ^lkú], 25 Ìfite Ọgwarì man's speech gbànyuọ ọkū [gbàɲ^wɔ ɔk^lú], 17 of Umùmboō woman's speech gbanyuọ ọkū [gbàɲ^wɔ ɔ^lkú], 17 of Àgùlerì woman's speech gbànyuọ ọkù

[gbàɲ^wɔ ɔkɔ], 17 of Àgùlerì girl's speech mè nyuɔ ɔkū [mèɲ^wɔ ɔ[↓]kú], 11 of Ìkem man 2's speech mènnyua ɔkū [mèɲ^wɔ ɔ[↓]kú], 16 of Ñsugbè man 2's speech gbànyua ɔkū [gbàɲ^wɔ ɔ[↓]kú], 17 of Àa m̄ (Umudora) man's speech gbànyuɔ ɔkū [gbàɲ^wɔ ɔ[↓]kú], 16 of Àa m̄ (Umuziàm) man's speech gbànyuɔ ɔkū [gbàɲ^wɔ ɔ[↓]kú] (Appendix VI).

It could be seen that where a high back rounded vowel is the last vowel of the first word at boundary position and it does not have the same tone as the first vowel of the second word, it will not assimilate the first vowel of the second word. Instances of this are perceived in the speech pattern of Àgùlerì woman's speech in lines 58 anūò gù [a[↓]nú ɔgò], 60. ozu àvụ [oz^wu àvụ], Àgùlerì girl's speech in lines 7 tòlù aka [tòl^wù aka], 61 dā ghàlù ɲjō [ɔ dáɣàl^wò ɔ[↓]dʒɔ], Awkuzu youth's speech in lines 9 tɛlù aka [tɛl^wù aka], 25 tòlù ogonogo [tòl^wù ogoɲgɔ], Ñtèjè man's speech in lines 19 àmànwùlụ àvụ [àmàn^wù^lw ɔvụ], 21 zulu èzù [zul^wu èzù], Ñtèjè girl's speech in lines 3 èjemụ òkù [èdʒem^wù òkù], 11 nru òkù [n[↓]rú òkù], Ogbunike man's speech in lines 5 jèbèlù afia [dʒèbèl^wù afia], 7 tɛlù aka [tɛl^wù aka], Anàkù man's speech in lines 41 èdu òkù [èd^wu òkù], 46 òvu àkpà [òv^wu àkpà], 47, 50 & 58 òdudu òkù [òd^wud^wu òkù], Anàkù youth's speech in lines 11 nɛlù obele [ɲɛl^wù obele], Anàkù woman's speech in lines 3,4,5 nòlụ ànìnɔ [nɔl^wù ànìnɔ], Umùòlum man's speech in lines 3 nòdu ànɔ [nɔd^wù ànɔ], 5 jèlù avia [dʒèl^wù avia], Ìfite Oḡwarì man's speech in lines 13. nòlụ ànɔ [nɔl^wù ànɔ], Umùmboō woman's speech in lines 2, 3 & 4. nòdu ànɔ [nɔd^wù ànɔ] (Appendix VI).

Where the tone of the high back vowel and that of the vowel that follows it are the same, the back vowel will assimilate the first vowel of the second word after labialising the consonant preceding it. Below are examples:

118. (Appendix VI)

- a. Awkuzu boy's speech in lines 21 kwùlụ ɔtō [kwòl^wɔ ɔ[↓]tɔ], 44 àrụ adīrō [àr^wa ad[↓]író]
- b. Ñtèjè man's speech in lines 11 nwèlù òmenànì [ɲ^wè[̀]lù òmɛ[̀]nànì]
- c. Ñtèjè girl's speech in lines 11 òkù àvụ [òkù àvụ], 43 larụ ɲlā [lar^wù ɲ[↓]lā]
- d. Ogbunike man's speech in lines 8 kèdu afà [kèd^wa afà], 51 mkpùlụ akwū à [mkpòl^wa a[↓]kwú à]
- e. Anàkù man's speech in lines 16 kèdu avà [kèd^wa avà] 17 kèdu onye [kèd^wo ɔjɛ]
- f. Anàkù youth's speech in lines 1 mmadù ànwùlụ [m[̀]ma[̀]d[̀]ù à[̀]ɲ^wùlù], 16 kuru egwu [kòr^weegwu]
- g. Umùòlum man's speech in lines 7 àlụ ɔlụ [àl^wɔ ɔ[↓]lù], 26 àtụ amà [àt^wa amà], 31 sùlùè vè [sùl^wè èvè]
- h. Ìfite Oḡwarì man's speech in lines 3 pē rụ aka [p[↓]ér^wa aka], 58 kpùlù àtì [kpòl^wà àtì]
- i. Umùmboō woman's speech in lines 50 lùlù àtì [lùl^wà àtì], 51 mkpùlụ akwū [mkpòl^wa a[↓]kwú]
- j. Àgùlerì woman's speech in lines 7 àlụ ɔlụ [àl^wɔ ɔ[↓]lù], 46 àrụadīrō [àr^wa a[↓]díró]
- k. Àgùlerì girl's speech in lines 45 àrụadīrō [àr^wa a[↓]díró], 49 lùlù àtìtì [lùl^wà àtìtì]

- l. Ìkem man 1's speech in lines 5 bù àkwālī [b^wà àkwá^lí], 23 and 50 buru ɔnwa [bɔr^wɔ ɔŋ^wá]
- m. Ìkem man 2's speech in lines 5 jèèlù àvɔ Ìkem [dʒèèl^wà àvɪ ìkem] 10 vū ānyị [↓v^wá ↓ájɪ]
- n. Ñsugbè man 1's speech in lines 16 bulu onye [bɔl^wo ɔjɛ], 32 anàgwolu egō [aná^w g^wol^we e^lgól]
- o. Ñsugbè man 2's speech in lines 8 kèdù avà [kèd^wa avà], 44 àrù adīrɔ [àr^wa a^ldírɔ]
- p. Àn àm̄ (Ụmụdọra) man's speech in lines 2,3 &4 nọrụ ọdù [nɔ̄r^wɔ ɔdù], 49 lùlù àtì [lùl^wà àtì]
- q. Àn àm̄ (Ụmụziàm) man's speech in lines 45 àrù adīrɔ [àr^wa a^ldírɔ], 50 mkpụlụ akwū [mkpɔl^wa a^lk^wú].

Where a high back rounded vowel is preceded by a labialised velar stop, as in line 56 of Awkuzu boy's speech e.g. nnekwu ewū [nnekwe e^lwú] “a big goat” and line 56 of Ụmùòlũm̄ man's speech e.g. nnekwu avīa [nnekwa a^lv^ɪia] “big market”, and its tone and the tone of the vowel next to it are the same, the high back vowel assimilates the vowel following it. Assimilation does not take place if the tones of the high back vowel and the vowel that follows it are not the same as in line 33 of Awkuzu woman's speech e.g. ukwù osisi [ukwù os^lisⁱ] “the tree is very long”. This could be the reason Emenanjo (1987; 2015) presents this kind of behaviour as an instance of conditional assimilation where, according to him, there could be assimilation or not.

Labialisation in the speech communities of the Mbala area can informally and formally be represented with phonological rule. Two rules are applied: (1) labialisation rule and (2) Assimilation rule. This is an example of rule ordering where generative phonology specifies the order of applying more than one rules required for analyzing a phenomenon. In this case, labialisation rule applies before assimilation rule.

The two rules can informally be represented as follow:

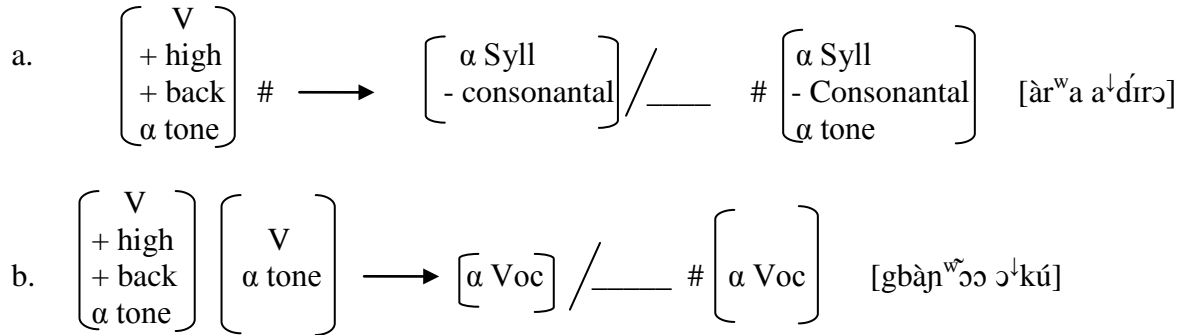
- i. Consonant becomes labialised in an environment before a high back vowel followed by zero or any number of vowels
- ii. A high back vowel at word final position becomes the same as the initial vowel of the second word when they are at the same pitch level.
- iib. A high back vowel followed by another vowels of the same pitch level becomes the same as the initial vowel of the second word.

These P- rules can also be formally represented as follows:

Rule 21: P-rule analysis of labialisation in Mbala Igbo

$$\left[\text{Con} \right] \rightarrow \left[\text{labialised} \right] / _ \left[\begin{array}{c} \text{V} \\ + \text{high} \\ + \text{back} \end{array} \right] \text{Vo} \quad [\text{gbàŋ}^{\text{w}}\text{ɔ} \text{ɔk}^{\text{l}}\text{ú}]$$

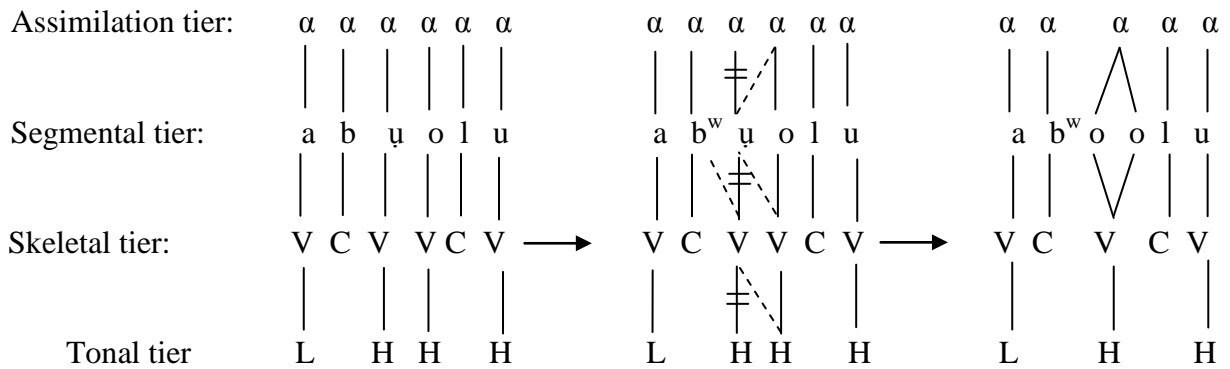
Rule 22: P-rule analysis of assimilation after labialisation in Ọmambala Igbo



Labialisation can also be analysed using autosegmental phonology model as presented below. With this model, the issue of tone will also be handled. The analysis is as follows:

Fig. 5.2 Autosegmental account of labialisation with high vowel assimilation

àbọ́lú [àb^woolú]



In the above analysis in figure 5.2, the second column shows that a new association line links the nasal consonant of the first syllable and the vowel of the syllable to signify nasalisation whereby the vowel takes nasal feature of the nasal consonant. For the second syllable, the dotted association line from the high back rounded vowel to the preceding consonant signifies its influence on the preceding consonant making it to be realised with lip rounding. Its tone and the tone of the first syllable of the second word, which is a vowel, are of the same pitch and this makes them to be represented as one tone at the tonal level in line with OCP. Because they have the same pitch, they allow the high back vowel to assimilate the features of the vowel following it forming a V-shape through the new association line. This makes the two vowels to be one at the assimilation tier, thus forming an inverted V-shape directly opposite the one at the skeletal tier.

Fig. 5.3 Autosegmental account of labialisation without high vowel assimilation

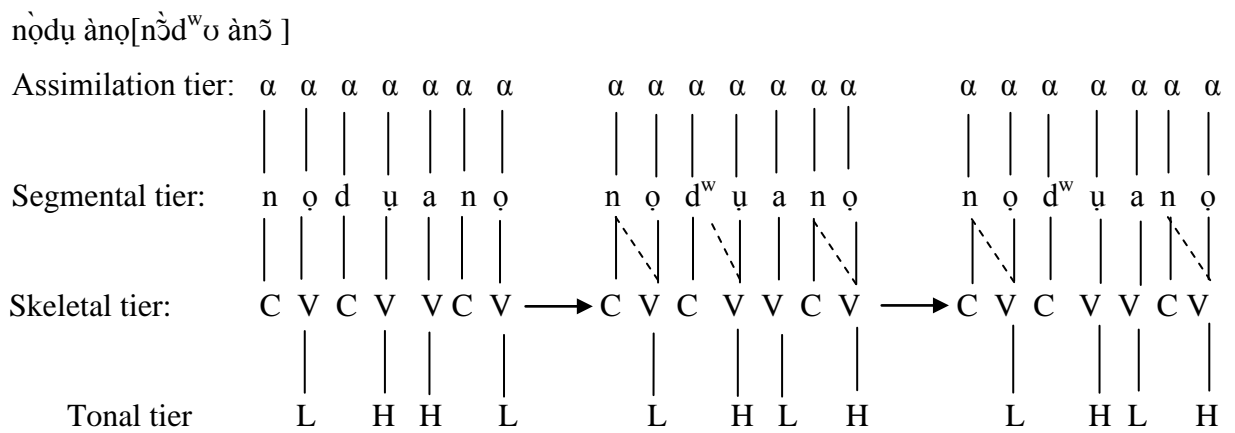


Fig 5.3 shows in the second column that a new association line links the nasal consonant of the first syllable and the vowel of the syllable to signify nasalisation whereby the vowel takes nasal feature of the nasal consonant. There is also the dotted association line from the high back rounded vowel to the preceding consonant to signify its influence on the preceding consonant to make it be realised with lip rounding. However, because its tone and the tone of the first syllable of the second word which is a vowel are not of the same pitch, they are represented with different tones at the tonal level thereby blocking the high back vowel from assimilating the features of the following vowel. No V-shape is equally formed, thus making the two vowels to be associated independently at the assimilation tier.

Government phonology can conveniently account for labialisation followed by high vowel assimilation in the following way:

Fig. 5.4 Government phonology account of labialisation with high vowel assimilation

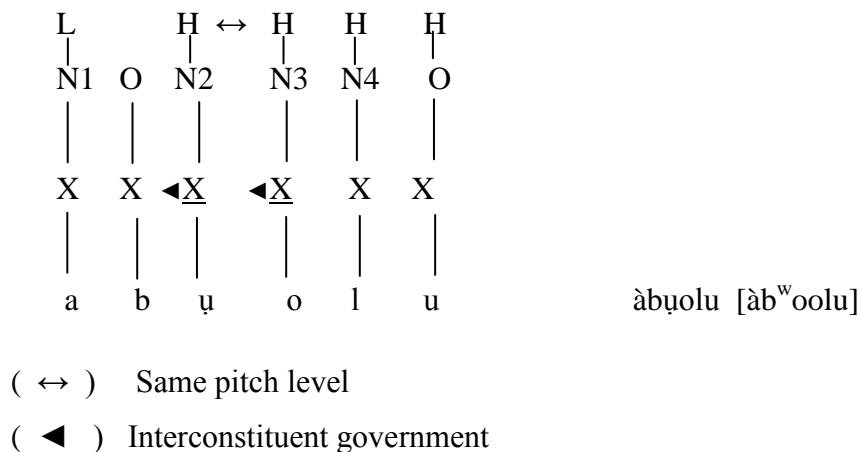
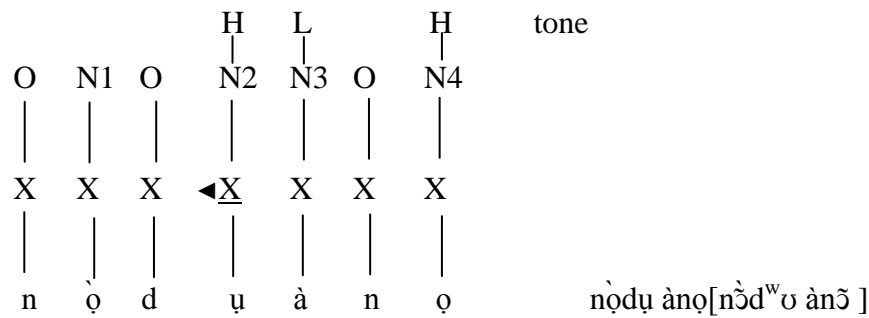


Fig. 5.5 Government phonology account of labialisation without high vowels assimilation



(◀) Interconstituent government

In analysis 5.4, the N2 governs the onset preceding it thereby making it to be labialised. The N2 and N3 are on the same pitch level. As a result, N3 is able to govern N2 thereby forcing it to assimilate its features. Analysis 5.5 shows that N2 governs the preceding onset, but because it does not have the same pitch level as N3, assimilation is blocked such that after causing the preceding consonant to be labialized, it could not assimilate features of the following vowel which in this case is N3.

The foregoing analysis shows that generative phonology, autosegmental phonology and government phonology account for labialisation in Ọmambala Igbo. However, one can say that better explanations are achieved with the autosegmental phonology and government phonology. The generative phonology requires that many rules would be generated in explaining labialisation unlike the other two. The issue of tones playing important role in determining whether a high back vowel would assimilate features of the following vowel is also better explained with the autosegmental phonology and government phonology.

5.2.2 Palatalisation

Palatalisation manifests when a consonant is realised with the raising of the front part of the tongue in anticipation of the following high front vowel. Palatalisation is seen to occur in the speech communities studied within a word and across word boundary, thus agreeing with Dirven and Verspoor (2004). Instances of its occurrence within a word are as in lines 3 of Awkuzu woman’s speech *kwusie* [kwus^jee], 6 of Ñtèjè girsl’s speech *gbabazìa* [gbabaz^jaa], 15 of Ogbunikē man’s speech *bìa* [b^jia], 29 of Anàkù man’s speech *bìàlù* [b^jàl^wò], 17 of Anàkù woman’s speech *èmebìolu* [ème[~]bìolu], 8 of Anàkù youth’s speech *bidozie* [bidoz^jee], 63 of Ìfite Ọgwarì man’s speech *ahìa* [af^jaa], 16 of Ọmùòlùm man’s speech *bìa* [b^jàà], 19 of Ọm ùmboō

woman's speech *b̀ia* [*b̀ia*], 14 of Àgùlerì woman's speech *yà-àb̀ia* [*j̀ààb̀ia*], 23 of Ìkem man 1's speech *tuz̀ia* [*tuz̀ia*], 28 of Ìkem man 2's speech *diot̀a* [*d̀iɔ̀t̀a*], 15 of Nsugbe man 1's speech *diokpala* [*d̀iɔ̀kpala*], 31 of Ñsugbè man 2's speech *àb̀ia?* [*àb̀ia*], 19 of Àn m̄ (Ụmùdọra) man's speech *b̀iakal̀i* [*b̀iàkal̀i*], 14 of Àn m̄ (Ụmùziàm) man's speech *b̀ià* [*b̀ià*] (Appendix VI).

Palatalisation occurs across boundary inlines 10 of Awkuzu woman's speech *b̀ia ebe à* [*b̀ie ebe è*], 16 of Ñtèjè man's speech *kès̀ia ewu à* [*kès̀ie ewu à*], 38 of Ogbunikè man's speech *àb̀ia echi* [*àb̀ie echi*], 35 of Anàkù man's speech *mb̀os̀i à* [*mb̀os̀i à*], 15 of Ụmùòlũm man's speech *ānỳi okwu* [*ānỳi okwu*], 55 of Ìfite Ọgwar̀i man's speech *al̀ià ol̀ià* [*al̀ià ol̀ià*], 41 of Ụmùmboò woman's speech *mm̀ia ọ̀tọ* [*mm̀ia ọ̀tọ*], 38 of Àgùlerì woman's speech *àb̀ia ech̀i* [*àb̀ie ech̀i*], 9 of Ìkem man 1's speech *sisie ọ̀sipaka* [*sisie ọ̀sipaka*], 41 of Ñsugbè man 1's speech *ches̀ia oj̀i* [*ches̀ia oj̀i*], 37 of Àn m̄ (Ụmùdọra) man's speech *àb̀ia ech̀i* [*àb̀ie ech̀i*]. (Appendix VI).

It is noticed that in anticipation, the consonant preceding a high front vowel becomes palatalised while the high vowel assimilates to the vowel after it when they have the same tone level. This could be the reason Emenanjo (1987; 2015) and Katamba (1993) present palatalisation as involving the vowels and go further to describe the phenomenon as occurring in fast speech and involving the turning of the high vowel into a semi-vowel, especially at juncture when it precedes another vowel, while Utulu (2006), agreeing with them, notes that it is a common feature in many languages to convert front high vowels and their back counterparts to semivowels.

When the vowel coming after a high front vowel does not have the same tone as that of the high vowel as in line 27 of Ìfite Ọgwar̀i man's speech and line 19 of Ụmùmboò woman's speech e.g. *b̀ia* [*b̀ia*] "come", the high vowel 'i/i' does not assimilate to the vowel following it after making the preceding consonant to be palatalised, but when the high front vowel and the vowel it precedes have the same tone as in line 16 of Ụmùòlũm man's speech *b̀ià* [*b̀ià*], line 17, 41, 42, 44 & 61 of Nsugbe man 1's speech *àb̀ia* [*àb̀ia*], lines 16, 19 of Ìkem man 1's speech e.g. *dobas̀ia* [*dobas̀ia*], the high vowel easily assimilates to the vowel next to it after making the preceding consonant to be palatalised.

Where there are two words and the high front vowel does not have the same tone with vowel next to it as in 10, 47 of Awkuzu woman's speech *b̀ia ebe à* [*b̀ie ebe è*], after making the consonant preceding it to be palatalised, it is not affected by assimilation, but if the tones are the same as in lines 16 & 20 of Nteje man's speech *tees̀ia uyē* [*tees̀ia uyē*], line 38 of Anàkù man's speech *mm̀ia okũ* [*mm̀ia okũ*], it is equally affected by assimilation. Instances of these are noticed in the data below:

Similarly, when a high front vowel is the last vowel of the first word at boundary position, and it does not have the same tone with the first vowel of the second word as in lines 22, 26 of Nteje man's speech $g\bar{i} uy\bar{e} [g^{\downarrow}i u^{\downarrow}j\acute{e}]$, lines 13 and 37 of Ogbunike man's speech $d\grave{i} aw\grave{u}wo [d^{\downarrow}i a\grave{o}w\grave{o}]$, it will not assimilate the first vowel of the second word, but if the tones are of the same as in lines 13 & 31 of Nteje girl's speech $s\grave{i} \grave{e}mi \bar{e} [s^{\downarrow}\grave{e} \grave{e}mi^{\downarrow}\acute{e}]$, lines 7, 16 & 54 of Ogbunike man's speech $mebi\grave{i} \grave{e}mebi [m\bar{e}bi\grave{i} \grave{e}m\bar{e}bi]$, the high front vowel will assimilate the first vowel of the second word after making the consonant preceding it to be palatalised.

Just as done under labialisation, palatalisation in the speech communities of Omambala area can informally and formally be represented with phonological rule. There are equally two rules that are applied in analyzing palatalisation, which are: (1) Palatalisation rule and (2) Assimilation rule. Because two rules are applied, generative phonology under rule ordering specifies the order for applying them. The rules are applied in the following order:

- a. palatalisation rule
- b. assimilation rule

Assimilation rule cannot be applied before palatalisation rule because that will block palatalisation. The order must strictly be adhered to in order to appropriately account for what has happened.

The two rules can informally be represented as:

- i. Consonant becomes palatalised in an environment before a high front vowel followed by zero or any number of vowels.
- ii. A high front vowel becomes assimilated in an environment of occurrence before a vowel with the same tone with it followed by zero or any number of vowels.

The rules can also be formally represented respectively with P-rule as follows:

Rule 23: P-rule analysis of palatalisation in Omambala Igbo

- i. $\left[\begin{matrix} \text{Con} \end{matrix} \right] \rightarrow \left[\begin{matrix} \text{palatalised} \end{matrix} \right] / _ \left[\begin{matrix} \text{V} \\ + \text{high} \\ - \text{back} \end{matrix} \right] \text{Vo} \quad [m\grave{m}^{\check{h}}i\check{o} \text{ } \check{o}^{\downarrow}k\acute{o}] \text{ "hot drink"}$
- ii. $\left[\begin{matrix} \text{V} \\ \text{high} \\ - \text{back} \\ \alpha \text{ tone} \end{matrix} \right] \rightarrow \left[\begin{matrix} \text{Assim} \end{matrix} \right] / _ \left[\begin{matrix} \text{V} \\ \alpha \text{ tone} \end{matrix} \right] \text{Vo} \quad [m\grave{m}^{\check{h}}\check{o} \text{ } \check{o}^{\downarrow}k\acute{o}] \text{ "hot drink"}$

Labialisation and palatalisation rules can be compressed using rule with variables. This rule is used to explain the fact that a segment assumes the same feature value as another segment. Application of the rule with variable gives the following:

Rule 24: P-rule analysis of labialisation and palatalisation in Qmambala Igbo using variables

$$i. \quad \left[\text{Con} \right] \rightarrow \left[\alpha \text{ labial} \right] / _ \left[\begin{array}{c} \text{V} \\ + \text{ high} \\ \alpha \text{ back} \end{array} \right] \text{V}_o$$

$$ii. \quad \left[\begin{array}{c} \text{V} \\ \text{high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \rightarrow \left[\text{Assim} \right] / _ \left[\begin{array}{c} \text{V} \\ \alpha \text{ tone} \end{array} \right] \text{V}_o$$

Interpretations:

Rule 24 (i) is interpreted to mean that consonant becomes labialised before a high back vowel followed by zero or any number of vowel or palatalised before a high front vowel followed by zero or any number of vowels.

Rule 24 (ii) interpretes that a high back or front vowel becomes assimilated before a vowel with the same tone followed by zero or any number of vowels.

- i. A high back or front vowel that is followed by another vowel of the same pitch level at the end of word becomes the same as initial vowel of the second word.

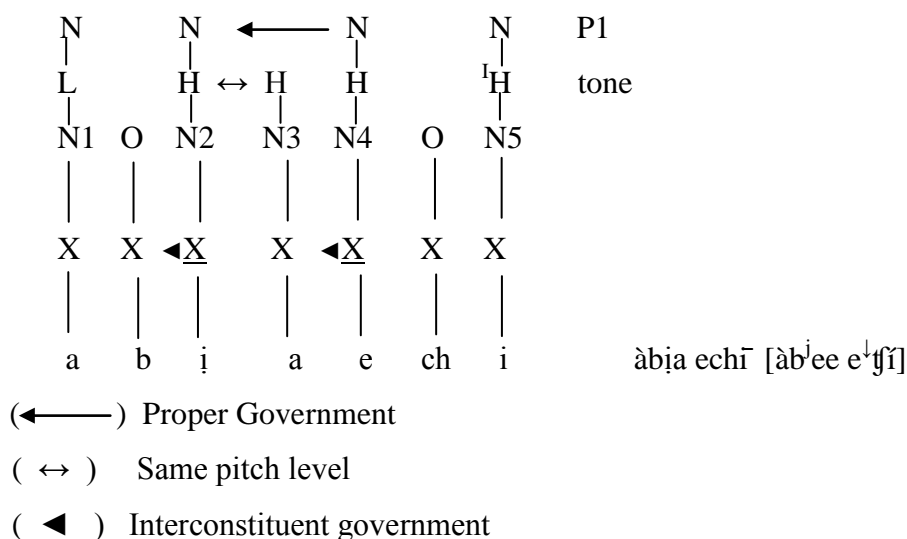
This rule can also be formally represented using P-rule as follows:

Rule 25: P-rule analysis of regressive assimilation affecting high vowel and two other vowels

$$\left[\begin{array}{c} \text{V} \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \left[\begin{array}{c} + \text{ syll} \\ - \text{ Consonantal} \\ \alpha \text{ tone} \end{array} \right] \# \rightarrow \left[\begin{array}{c} \alpha \text{ Syll} \\ - \text{ consonantal} \end{array} \right] / _ \# \left[\begin{array}{c} \alpha \text{ syll} \\ - \text{ Consonantal} \end{array} \right]$$

The Autosegmental phonology and government phonology also account for palatalisation just as they have accounted for labialisation in figures 5.2, 5.3, 5.4 and 5.5. Below is government phonology account of palatalisation:

Fig. 5.6 Government phonology account of palatalisation with high vowel assimilation



In the above analysis in figure 5.6, the N2 governs the onset preceding it thereby making it to be palatalised. The N4 governs the N3 which is at governing relation with it, assimilating its features. At the tone level, the N2 and N3 exhibit same pitch level, approving for the N2 to project to the next level of P1 where it can be governed by the N4 (where the tones are not of the same pitch level, assimilation is blocked and the projection of N2 for it to be at governing relation with N4 would not be possible).

Just as pointed out in labialisation, the generative phonology, autosegmental phonology and government phonology account for palatalisation in Omambala Igbo, but better explanations are done with the autosegmental phonology and government phonology. There is simplicity in the use of the autosegmental phonology and government phonology unlike the generative phonology which requires that many rules would be generated. Also, the issue of tone playing important role in determining whether a high front vowel would assimilate features of the following vowel is also better explained with the autosegmental phonology and government phonology.

5.2.3 Homorganic nasal assimilation

There are instances of homorganic nasal assimilation, also called homorganicity of nasals (Eme, 2008), perceived in the speech patterns of the speech communities investigated. In all the speech communities, our data reveal that nasals assume the same place of articulation with a following consonant during speech. Where the consonant following a nasal is labial, the nasal is realised as a bilabial nasal /m/ as in line 13 & 27 of Ifite Oḡwarì man's speech *m̃l̃ ñũ* [m̃l̃ ñɔ̃], but if the consonant is alveolar or palatal as in lines 5 & 15 of Uḡm̃boḡ woman's speech, the nasal before it becomes alveolar nasal /n/ e.g. *ñe m̃ j̃èl̃* [ññẽ¹ ñ d̃ʒèl̃¹]; where the consonant is velar as in lines

21, 22 & 55 of Anàkù man's speech, the nasal before it becomes velar nasal /ŋ/ e.g. *ngivù* [ŋgⁱivò]. Labialized velar plosives /k^w g^w/ have velar nasal coming before them as in line 34 of Ụmùmboō woman's speech *ive m kwùlù* [ive ŋ kwùlù].

Homorganic nasal assimilation occurs the same way in all the speech communities investigated. We notice from our data that homorganic nasal assimilation occur within words and across word boundaries, but that involving one word is more prevalent. Homorganic nasal assimilation is an example of partial assimilation because the syllabic nasal does not completely lose its features. It can be analysed with phonological rule (P-rule) as follows:

Rule 26: P-rule analysis of homorganic nasal assimilation using variables

$$\left[\begin{array}{c} C \\ + \text{nasal} \end{array} \right] \longrightarrow \left[\begin{array}{c} \alpha \text{ ant} \\ \beta \text{ cor} \end{array} \right] / _ \left[\begin{array}{c} - \text{son} \\ \alpha \text{ ant} \\ \beta \text{ cor} \end{array} \right]$$

This rule is interpreted to mean that a nasal consonant agrees in quality of features anterior and coronal as the obstruents it precedes. This is an example of rules with variables and as stated above compresses two rules, thus:

Rule 27: Feature changing rules (Homorganic nasal assimilation)

i. $\left[\begin{array}{c} C \\ + \text{nasal} \end{array} \right] \longrightarrow \left[\begin{array}{c} + \text{ant} \\ - \text{cor} \end{array} \right] / _ \left[\begin{array}{c} - \text{son} \\ + \text{ant} \\ - \text{cor} \end{array} \right]$

ii. $\left[\begin{array}{c} C \\ + \text{nasal} \end{array} \right] \longrightarrow \left[\begin{array}{c} - \text{ant} \\ + \text{cor} \end{array} \right] / _ \left[\begin{array}{c} - \text{son} \\ - \text{ant} \\ + \text{cor} \end{array} \right]$

Thus, when the obstruent is [+ant, - cor], it means that it is a labial segment. Therefore, the syllabic nasal will assume its features and be produced as labial nasal [m]. If the obstruent is [- ant, + cor], it is either an alveolar or velar segment which will make the syllabic nasal to be produced as either [n] or [ŋ] as the case may be. This is illustrated with data from Ìfite Ọgwari, Ụmùmboō and Anàkù speech communities

119. a. Ìfite Ọgwari man's speech pattern (Appendix V)

line 27 *m̩l̩ n̩u* [m̩l̩ n̩ũ] for obstruents with features [+ant, - cor]

b. Ụm̀̀bõ woman's speech pattern

line 5, 15 òne m̃ jèlì[̀̀nè~̀̀́n dzèl'̀̀] for obstruents with features [- ant, + cor]

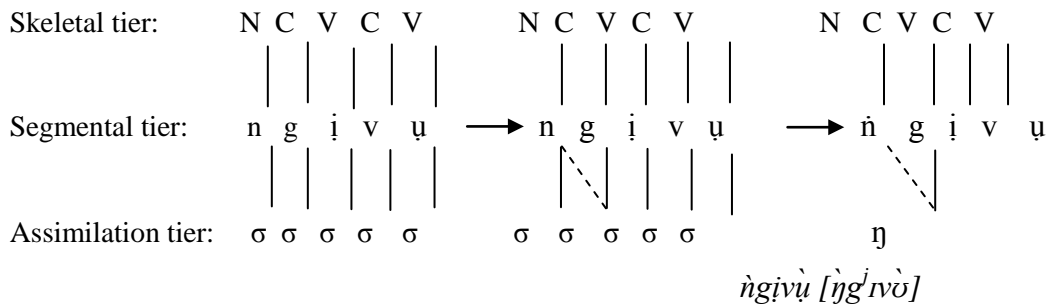
c. Anàkù man's speech pattern

lines 21, 22 & 55 ògìvù [̀̀g'̀̀vù] for obstruents with features [- ant, + cor]

Homorganic nasal assimilation can be analysed using the AP model as follows:

Fig. 5.7 Autosegmental account of homorganic nasal assimilation in Ọmambala Igbo

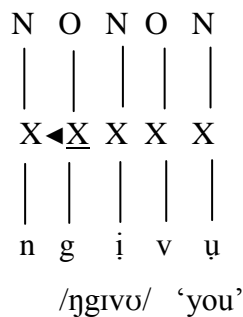
ògìvù [̀̀g'̀̀vù]



In the above analysis in figure 5.7, the syllabic nasal assimilates the place of articulation feature of the following velar consonant.

Homorganic nasal assimilation is also a feature of government phonology where the obstruent is the governor, while the syllabic nasal is the governee. Homorganic nasal assimilation can be analysed using government phonology as follows:

Fig. 5.8 Government phonology account of homorganic nasal assimilation in Ọmambala Igbo



In figure 5.8, the onset g is the governor and n is the governee. The influence of the governor makes the syllabic nasal n to become /ŋ/. This is an example of interconstituent government.

The three theories have been used to analyse homorganic nasal assimilation. The generative phonology is able to generate rules, which clearly provide information concerning various environments syllabic nasal /ŋ/ could take some features of an adjacent consonant following it and what it would change to. The autosegmental phonology has also through the association lines

shown the sound that influences the syllabic nasal, while government phonology demonstrates that phenomenon of homorganic nasal assimilation is a natural one whereby one segment (which in this case is the consonant following the syllabic nasal), is the governor, while the other segment (the syllabic nasal) is the governee.

5.2.4 Nasalisation

Unlike labialisation, palatalisation and homorganic nasal assimilation that are features of anticipatory coarticulation, nasalisation in some languages, like English, is anticipatory and in some others, it is perseverative. In Igbo, it is a feature of perseverative coarticulation in the sense that a vowel assimilates the features of a nasal consonant preceding it during connected speech. In other words, during the production of a vowel that is preceded by a nasal consonant, the velum which became lowered to enable airstream go out through the nasal cavity for the production of the nasal consonant has not returned to its original position before the articulation of the following vowel, thereby making the vowel to equally be realised with airstream going out through the nose.

In our data from the speech communities investigated, we perceived instances of nasalisation involving the vowels which are preceded by a nasal consonant partially taking the nasal feature of the preceding consonant. These instances are noticed in the following speech communities:

120 a. Àgùlerì woman speech pattern (Appendix V A)

- Lines 1 kùnye [kùj̃nɛ̃] “give me water”
 2 nòdụ ànọ [nɔ̃d^w ʌ̃nɔ̃] “sit down”
 5 m̀mma [m̃mã] “mother”

b. Ìkem man 1’s speech pattern (Appendix V C)

- Lines 6 ọ̀nwa ìtọ [ɔ̃j̃wĩ^l ɪ̃tɔ̃] ‘the third month’
 8 arà s̀ì [ar̃às̀ì] ‘evening’
 17 nwaànyà [ɲwããj̃ã̃] ‘woman’

c. Ñsugbè man 1’s speech pattern (Appendix V E)

- Lines 14 gà-ème [gè èmɛ̃] ‘will do’
 15 m̀ụ nwa anò̀ò̀z̀ì [m̃ũ^l ɔ̃j̃ ɲ^{w̃}ã̃ ãñɔ̃ɔ̃z̀ì] ‘the father no longer lives’
 16 o nwègàl̀ù:: [o ɲ^{w̃}egàl̀ù::] ‘there are::’

d. Àgùlerì girl’s speech pattern (Appendix V B)

- Lines 7 ubī ānyị [u^lb̃á^l ʌ̃j̃ɲ̃] “our farmland”
 10 m̀man⁻ nã[m̃mã^l ń̃ nɛ̃] “my mother is”
 15 taàni [taànĩ] “today”

e. Ìkem man 2's speech pattern (Appendix V D)

Lines 40 ònwa kà nà-ànwù alā [ɲɲ^wã kà ñã àɲ^wã a^llá] “the child still sucks breast”

51 ibe ā nyì nà-anùkwaṅ ò gù [iba^láɲ ñã anõk^wan^li ògù] “our community is fighting”

59 màgbùkwèlì ònwe yā [ɔ màgbùk^wèlì òɲ^wi^lé] “it is very good”

f. Ñsugbè man 1's speech pattern (Appendix V E)

Lines 32 nà-àma ā ma [ñã àmã^lámã] ‘that is being tied’

33 nwanyì mụọ ònwa [ɲ^wãàɲì mõɔ ɲɲ^wã] ‘the mother’

34 nà nya [ñãɲã] ‘that he/she’

g. Awkuzu Man's speech pattern (Appendix V P)

Lines 2 oṅe ụmụobi [oɲõ um^wõobi] “from Ụmụobi”

8 onye òbùna ānọnà [oɲõ òbù^lã á^lnõ^lã] “anyone is”

h. Ogbunike man's speech pattern (Appendix V Q)

Lines 13 taànyù [taànõ] “today”

16 mebìlì èmèbì [mēbilì èmēbì] “is not good”

22 m mà-ànyù mmīlì [m mã àɲõm^lmīlì] “I will drink water”

i. Anàkù man's speech pattern (Appendix V R)

Lines 2 onye Anàkù [oɲã anãkù] ‘from Anakù’

5 ànyù ñanyì [ànõ ɲãàɲì] ‘can marry’

11 àmànwùlù [àmãɲ^wólò] ‘amanwùlù’

j. Ìfite Oḡwarì man's speech pattern (Appendix V U)

Lines 6 na ò ne [nõ ònē] “how many”

13 nòlù ànọ mbenù [nò^wlù ànõ mbenõ] “sit down there”

50 ì nà-ànwù? [ì ñã àɲ^wõ] “do you drink?”

k. Ụmùmbò woman's speech pattern (Appendix V V)

Lines 28 ùgàṅì nà-àkpọ [ùgãṅì ñã àkpọ] “we are in famine”

42 mmaà niīne [mãã ni^linē] “everybody”

48 nà-ànwùlìde alā [ñã àɲ^wólìda a^llá] “still sucks breast”

l. Umùòlum man's speech pattern (Appendix V W)

Lines 4 nòdù nọṅna [nõdù nõṅã] “sit down here”

22 wèlù ñayò [wèl^wlù ɲãjò] “take it easy”

41 ñannē nnà m [ɲã^lnē ñã m] “my uncle/aunt”

62 rààmù òkù [rààm^wò òkù] ‘answered me’

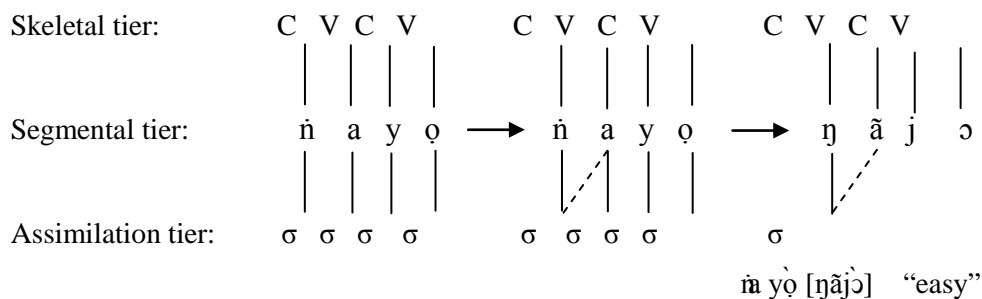
Nasalisation can informally be captured with P-rule whereby vowels become nasalised in an environment after a nasal consonant. It is also formally represented as follows:

Rule 28: P-rule analysis of nasalisation in Qmambala Igbo

$$\left[\begin{array}{c} + \text{Syll} \\ - \text{Cons} \end{array} \right] \longrightarrow \left[+ \text{nasal} \right] / \left[\begin{array}{c} \text{C} \\ + \text{nasal} \end{array} \right] \text{ —}$$

Autosegmental phonology (AP) can be used to analyse nasalisation in the speech communities investigated. In this case, every segment/feature is represented on a different tier. This is illustrated below:

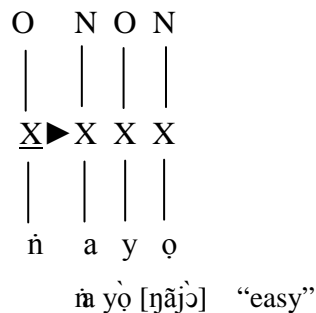
Fig. 5.9 Autosegmental phonology account of nasalisation in Qmambala Igbo



In figure 5.9, it is seen that the different tiers are independent of one another, but linked by association line. The dotted line represents the new link between the nasal consonant /ŋ/ and the vowel following it.

Nasalisation is also a feature of government phonology and can be analysed as presented below:

Fig. 5.10 Government phonology account of nasalisation in Qmambala Igbo



In the above analysis in figure 5.10, ‘ñ’ is the governor while ‘a’ is the governee. As a rule of government, a vowel after a nasal consonant copies the nasal feature of the consonant.

From the foregoing, nasalisation could be analysed using the generative phonology, autosegmental phonology and government phonology. The generative phonology is able to generate rules, which clearly provide information concerning the environment where a vowel could be nasalised. The autosegmental phonology has also through the association lines shown the sound that influences the vowel and the direction, while government phonology demonstrates that nasalisation is a natural occurrence where the nasal is the governor and the vowel is the governee.

5.3 Connected speech features parameter

Under this parameter, the phonological processes such as neutralization of phonotactic constraint, liaison, assimilation and elision are discussed and in this order.

5.3.1 Neutralisation of phonotactic constraints

The phonotactic constraints are found to be neutralised as a result of the influence of the vowel following a word . In Àgùlerì , Ìkem, Ñsugbè, Ñtèjè, Awkuzu, Ànà m̄, Ìfite Ọgwarì speech communities, we perceive the neutralisation of phonotactic constraint [k] from our data, as exemplified below:

- 121 a. Àgùlerì woman's speech line 45 kà ì [kìɪ]
- b. Àgùlerì girl's speech line 15: kà ì [kìɪ]
- c. Ìkem man 1's speech in lines 1 & 30: kà ì [kìɪ]
- d. Ìkem man 2's speech in lines 13 & 24: kà ì [kìɪ]
- e. Ñsugbè man 2's speech in lines 9, 14, 43: kà ì [kìɪ]
- f. Ñtèjè woman's speech in lines 30 & 43: kà ì [kìɪ]
- g. Ñtèjè man's speech in lines 12: d̄ì kà ibū [d̄ì k̄ì i[↓]bú]
- h. Ñtèjè girl's speech in lines 30, 43: kà ì [kìɪ]
- i. Awkuzu woman's speech in line 25: kà i [kìɪ]
- j. Awkuzu man's speech in line 14: kà i [kìɪ]
- k. Ànà m̄ (Ụmùdọrà) man' speech in line 9: kà ì b̄ù? [k̄ì ɪ b̄ù?]
- l. Ìfite Ọgwarì man's speech in lines 6 & 8: kà i nwòlù [k̄ì i ɲwòlù]
- m. Umùòlum̄ mañs speech in line 32. kà ì [kìɪ]

In the above examples, it is noticed that the vowel /a/ has taken the features of the vowel ì/and this has made it possible for i/ì to co-occur with /k/ in a CV structure.

The phonotactic constraint *m̄ọ is neutralized in Ìkem , Ñsugbè, Ñtèjè, Anàkù as seen in the following examples:

- 122 a. Ìkem man 1's speech in line 33: mà ò [m̄ò ̀ò]
- b. Ñsugbè man 1's speech in lines 34 mà ọ [m̄ò ̀ò]
- c. Ñtèjè man's speech in line 25 e.g. mà ọ [m̄ò ̀ò]; line 26 e.g. mà ò [m̄ò ̀ò]
- d. Anàkù man's speech in lines 18, 23, 49, 58: mà ò [m̄ò ̀ò]

Instances of neutralisation of the Igbo phonotactic constraints *gw̄ì, *nw̄ì are perceived in Ñsugbè man 1's speech in line 17 e.g. gwa yā [gw̄ì ̀á] & line 35 e.g. nwa yā [ɲw̄ì ̀á]

Although it is beyond the scope of this study, let us observe that our data disclosed that there are some impossible words in Igbo which have been produced at phonetic representation. This is due to influence of an adjacent vowels e.g.

- 123 a. In Ìkem man 1's speech, there are in lines 10 ụm ù [ʊm̀], 13 ụm̀ [ʊm̀], 20 onye [oŋɔ̃],
 27 ive ɔnwa [ivɔ ɔŋwĩ], 43 evè [evà], 45 ọgò [ɔgì], 50 èmekpu [èmɛ̃kp̃]
 b. Ìkem man 2's speech in line 53 nnekwu [nnɛ̃kwɛ]
 c. Ìsugbè man 1's speech presents the following:
 lines 2 unù [unĩ], 20 onye [oŋɔ̃], 20 ñgàdà [ŋgàd̃], 25 ñkè [ŋk̃]

èjo is not a word in Igbo but it has been made possible at phonetic level in line 1 of Ìtèjè girl's speech [èdʒo].

There are [gbɔɔ] in line 58 of Awkuzu woman's speech, [èba] in line 60 of Awkuzu boy's speech and [oŋɔ] in line 8 of Awkuzu man's speech. *[azè] is produced in the Ogbunike man's speech in line 39. Ànàm data made some words possible as the following examples show:

- 124 a. Ànàm (Ụm̀zịàm) man's speech in lines;
 33. wèta [wètɪ], 49 akwà [akwì]
 b. Ànàm (Ụm̀dọrà) man's speech in line
 49 àvè [àvi]

Neutralization can also be viewed as an instance of assimilation because the vowel of the syllable whose phonotactic constraint has been neutralised drops all its features to take up all the features of the vowel that influences it. It can be analysed with the P-rule (29) used to analyse regressive assimilation. Neutralisation can also be analysed using autosegmental phonology as follows:

Fig. 5.11 Autosegmental phonology analysis of neutralisation in Ọmambala Igbo

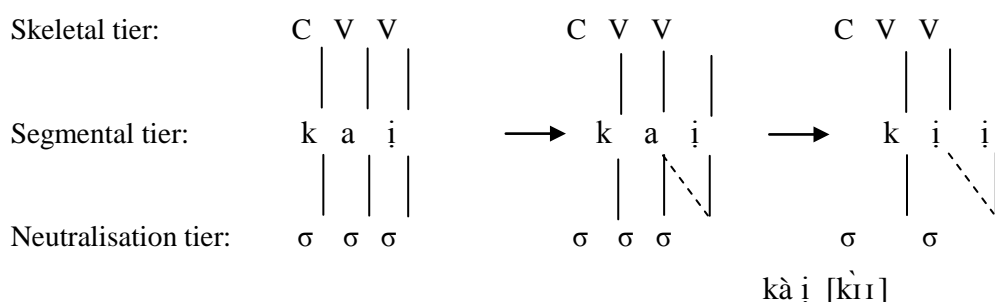
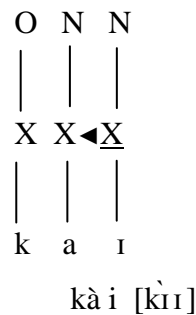


Figure 5.11 is a three-tiered representation of three independent segments: The skeletal tier, segmental tier and assimilation tiers. They are linked to one another by association line. The dotted line represents the new link between the two vowels 'i' and 'a'. The effect of the new link with dotted line is what is seen in column 3 where the vowel of the morpheme *ka* and the pronoun *i* now become alike as a result of the influence of the pronoun. This, therefore, makes the phonotactic constraint forbidding *k* and *i* to co-occur to form a single syllable word in Igbo to be neutralised.

Government phonology equally accounts for neutralisation. This is exemplified with the following figure:

Fig. 5.12 Government phonology account of neutralisation in Qmambala Igbo



The analysis in figure 5.12 shows that sound /i/ is the governor that governs the preceding sound /a/, the governee, thereby making it to completely drop its features and take up its own features. The influence of the /i/ on /a/ is as a result of the natural relationship existing between them because of their adjacency position. With this, they are in governing relation where the vowel of the morpheme *ka* is governed by the pronoun *i* thereby neutralizing the phonotactic constraint forbidding *k* and *i* to co-occur to form a single syllable word in Igbo.

Neutralisation could be analysed using the generative phonology, autosegmental phonology and government phonology. Since the phenomenon is an assimilatory process, the generative phonology is able to generate rules, which clearly provide information on the sound that influences another sound as a result of which the phonotactic constraints are neutralised. The autosegmental phonology has also through the association lines shown the sound that influences another sound, while the government phonology has demonstrated that neutralisation is a natural occurrence resulting from assimilatory process where the sound that influences another is the governor and the sound influenced is the governee.

5.3.2 Assimilation

Five different kinds of assimilation have been identified in Ọmambala varieties of Igbo. They could, however, be grouped in two based on their direction and degree. Based on the direction of assimilation, we identify regressive assimilation, progressive assimilation and coalescent assimilation; we have identified partial assimilation and complete assimilation based on degree of assimilation. Regressive assimilation, progressive assimilation and coalescent assimilation are discussed under different sub-headings, while discussions on partial and complete assimilations are subsumed within them.

5.3.2.1 Regressive assimilation

From our data, instances of regressive assimilation are perceived in the speech patterns of all the speech communities investigated. It occurs in all the speech varieties of Ọmambala area and is a frequently too. We will discuss regressive assimilation based on various ways it occurs, such as: Regressive assimilation within a word; Regressive assimilation across word boundaries; Regressive assimilation where two vowels end a word; Regressive assimilation where vowel /u/ is preceded by an approximant /w/ or labialised velar sound; Regressive assimilation involving elision of consonant.

A. Regressive assimilation within a word: Regressive assimilation can occur within a word as we noticed from our data in lines

125. 7 of Ntèjè man's speech; afūọzikwu [aŋ^lɪa^lf^wɔzik^wɔɔ gù]
68 of Ìfite Ọgwarì man's speech; apānātao[a^lpá^lná^ltaɔ],
26 of Ụmùmboō woman's speech; àkaọ [àkɔɔ]
8 Ìkem man 1's speech; èkposieli [èkpos^leeli]
42 N̄sugbè man 1's speech e.g. chesialu [ʃes^laalu]
17 Àn̄m̄ (Ụmùd̄ ọrà) man's speech e.g. gbànyuọ [gbàɲ^wɔɔ]
27 Awkuzu woman's speech e.g. bànyua [gbàɲ^wɔɔ]

The data in (125) are examples of complete assimilation because the segments that have been affected completely dropped their features and took all the features of the segments that assimilated them. This occurrence can informally be analysed using a P-rule which; a vowel at adjacency position with another vowel drops its features to take up the features of the vowel after it. It can also be formally analysed as follows:

Rule 29: P-rule analysis of complete vowel assimilation in Igbo

$$V \longrightarrow [\alpha \text{ Vowel}] / ___ [\alpha \text{ Vowel}] \left. \begin{array}{l} \text{C} \\ \# \end{array} \right\}$$

Interpretation:

This rule is interpreted to mean that vowels become the same as the vowel next them, followed by a consonant or at word boundary.

Just as done in nasalisation, AP model can be applied in analysing assimilation in Igbo. This is illustrated using our data from the speech communities of Ọmambala area e.g.

Fig. 5.13 Autosegmental phonology analysis of complete vowel assimilation within a word

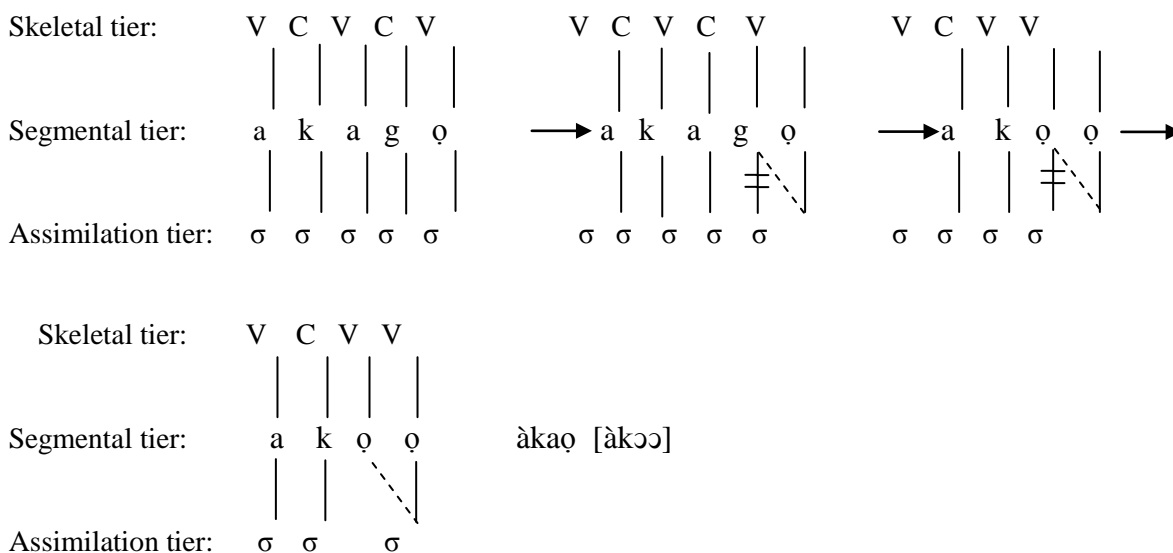
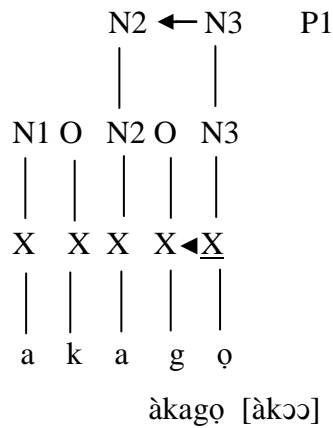


Figure 5.13 is a three-tiered representation of three independent segments: The skeletal tier, segmental tier and assimilation tiers. They are linked to one another by association line. The dotted line in column 2 represents the new link between the segments ‘g’ and ‘ɔ’. The effect of the new link with the dotted line, the crossed through association line and the circle around ‘g’ is what is seen in column 2 where the consonant is delinked and, therefore, deleted. In column 3, the vowel ‘a’ is linked to the vowel ‘ɔ’ and it became influenced such that it completely takes the features of ‘ɔ’ as seen in column 4. This analysis clearly shows that at underlying phonemic representation, the word is /àkagɔ/, but at surface phonetic representation, it is realised as [àkɔɔ].

Regressive assimilation can also be accounted for using government phonology as hereunder presented:

Fig. 5.14 Government phonology account of complete vowel assimilation within a word



The analysis in figure 5.14 shows that sound /ø/ is the governor that governs the preceding consonant /g/, the governee, thereby making it to be deleted. Its deletion gives room for the vowel of N2 to be at adjacency position with N3 and it projects to the next level of P1 where it is governed by vowel of N3.

B. Regressive assimilation across word boundaries: This is assimilation which takes place across word boundaries. Evidences of this occurrence abound in our data from almost all the speech communities as seen in lines

126. 1 of Anàkù woman's speech e.g. ubī ānyī [u[↓]b[↓]á[↓]á[↓]nī]
- 6 & 7 of Ntèjè man's speech; ābōūdo [ábu[↓]údo] and afūozikwu [à[↓]n[↓]í[↓]a[↓]f^wó[↓]zik^wó[↓]ò[↓]gù]
- 2 of Ìkem man 1's speech e.g. a būrō ive ì yà-èje sùba oyìbo [a[↓]b[↓]ú[↓]rì[↓]ivì[↓]ì[↓]jè[↓]è[↓]ʒe[↓]sùbò[↓]oyìbò]
- 9 of Ìkem man 1's speech e.g. sisie ō sipaka [sis[↓]í[↓]oo[↓]ósipaka]
- 5 of Ìkem man 2's speech e.g. jèlèlù àvò Ìkem [ʒèlèl^wà[↓]àvì[↓]íkem]
- 18 of Ìkem man 2's speech e.g. eleàvù [ela[↓]àvù]
- 13, 20 & 23 of Nsugbè man 1's speech
- 8, 12 & 52 of Nsugbè man 2's speech.

The data in (126) show that where a high back or front vowel ends the first word and it has the same pitch level with first vowel of the second word, the high vowel causes the consonant before it to be labialised or palatalised and then assimilates the features of the vowel following it. If, however, the high back or front vowel at word final position of the first word does not have the same pitch level with first vowel of the second word, the high vowel causes the consonant before it to be labialised or palatalised without assimilating the features of the first vowel of the second

word. Regressive assimilation across word boundaries can informally be captured with a P-rule as follows:

- i. Vowels at boundary position with another drop their features to take up the features of the vowel after them. It can also be formally analysed as follows:

Rule 30: P-rule analysis of regressive assimilation in Ọmambala Igbo

$$[V]\# \longrightarrow [\alpha \text{ Vowel}] / __ \#[\alpha \text{ Vowel}]$$

Just as done in nasalisation, AP model can be applied in analysing assimilation in Igbo. This is illustrated using our data from the speech communities of Ọmambala area e.g.

Fig. 5.15 Autosegmental phonology analysis of complete vowel assimilation across word boundary

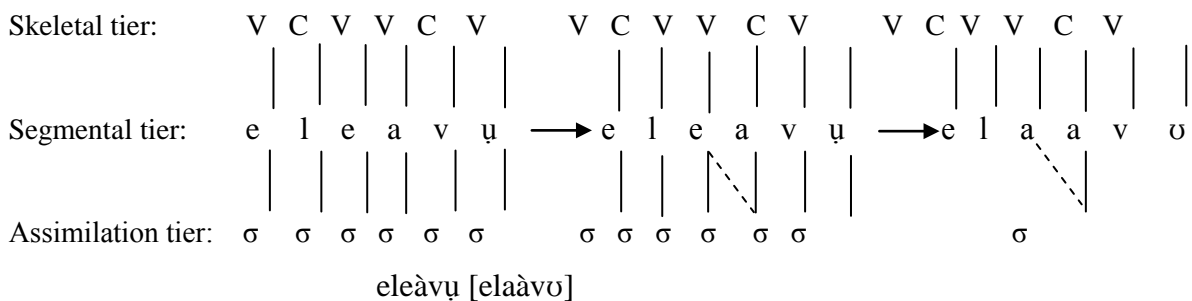
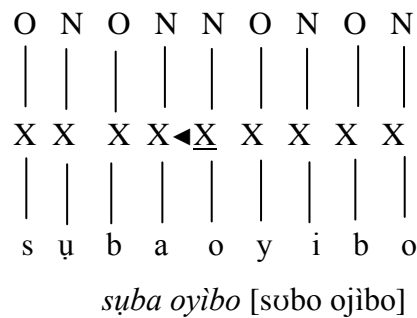


Figure 5.15 is a three-tiered representation of three independent segments: The skeletal tier, segmental tier and assimilation tiers. They are linked to one another by association line. The dotted line represents the new link between the two vowels ‘e’ and ‘a’. The effect of the new link with the dotted line is what is seen in column 3 where the two vowels now become alike.

Regressive assimilation across word boundary can also be accounted for using government phonology as hereunder presented:

Fig. 5.16 Government phonology account of complete vowel assimilation across word boundary



The analysis in figure 5.16 shows that sound /o/ is the governor that governs the preceding vowel /a/, the governee, thereby making it to completely drop its features and take up all the features of the vowel that influences it.

C. Regressive assimilation where two vowels end a word. Instances of this are noticed in lines

127. 14 of Awkuzu woman's speech e.g. $\text{d}\bar{\text{o}}\bar{\text{n}}\bar{\text{o}} \bar{\text{a}}\bar{\text{d}}\bar{\text{o}}\bar{\text{n}}\bar{\text{o}}$ ebee [da[↓]á adeè ebeè]
 8 of Awkuzu youth's speech e.g. jèbèè agū [dʒèbàà a[↓]gú]
 26 of Ñtèjè man speech; nwèè ike [ɲwèi ike]
 17 of Ñtèjè girl's speech; $\text{d}\bar{\text{o}}\bar{\text{n}}\bar{\text{o}} \bar{\text{a}}\bar{\text{d}}\bar{\text{o}}\bar{\text{n}}\bar{\text{o}}$ [da[↓]á á[↓]ádòò]
 32 of Umùòlum̄ man's speech eg. $\text{k}\bar{\text{a}} \bar{\text{i}} \text{laa} \bar{\text{u}}\bar{\text{l}}\bar{\text{a}}$ [kì i loo ɔ[↓]lá]
 68 of Ifite Ọgwari man's speech e.g. $\text{a}\bar{\text{p}}\bar{\text{a}}\bar{\text{n}}\bar{\text{a}}\bar{\text{t}}\bar{\text{o}}\bar{\text{o}} \text{ozu}$ → [a[↓]pá[↓]na[↓]tòo o[↓]zú]
 46 of Umùmboō woman's speech e.g. $\text{n}\bar{\text{a}}\text{-}\bar{\text{a}}\bar{\text{l}}\bar{\text{i}}\bar{\text{a}} \bar{\text{o}}\bar{\text{l}}\bar{\text{i}}\bar{\text{a}}$ → [nã á[↓]òò ɩ[↓]àà]
 38 of Àgùlerì woman's speech e.g. $\text{y}\bar{\text{a}}\text{-}\bar{\text{a}}\bar{\text{b}}\bar{\text{i}}\bar{\text{a}} \text{ech}$ → [jà àb[↓]ee e[↓]ʃí]
 31 of Ànàm̄ (Umùdòrà) man's speech e.g. jèè ànabà → [dʒàà ànã[↓]bà]
 4 of Umùziàm̄ man's speech e.g. jèvèè avia [dʒèvàà avia]
 37 of Ìkem man 2's speech e.g. sàchaa evele [sàʃeeevele]
 25 of Ñsugbè man 1's speech e.g. àchọọ òbòdò [àʃfoò òbòdò]
 5 of Anàkù youth's speech where *gbaa egbè* → [gbee egbè]

These data show that when two vowels end a word involved in regressive assimilation, both vowels are assimilated. This is not the case in line 16 of Ànàm̄ Umùdòrà man's speech e.g. $\text{red}\bar{\text{i}}\bar{\text{o}} \text{mm}\bar{\text{a}}$ [red[↓]iò ɲ^wẽ è a[↓]díró m[↓]má]. This is as a result of the emphasis laid on the demonstrative *nweè*. This also suggests that this kind of regressive assimilation takes place in fast speech. This kind of regressive assimilation can formally be represented with P-rule as follows:

- ii. Two word final vowels become like the initial vowel of the second word.

This can also formally be presented as follows:

Rule 31: P-rule analysis of regressive assimilation affecting two vowels

$$\{[V][V]\}^{\#} \longrightarrow [\alpha \text{ Vowel}] / __ \#[\alpha \text{ Vowel}]$$

sàchaa evele [sàʃeeevele]

The autosegmental phonology (AP) model can be applied in analysing this kind of regressive assimilation in Igbo. This is illustrated using the data below:

Fig. 5.17 Autosegmental phonology analysis of complete vowel assimilation involving two word final vowels

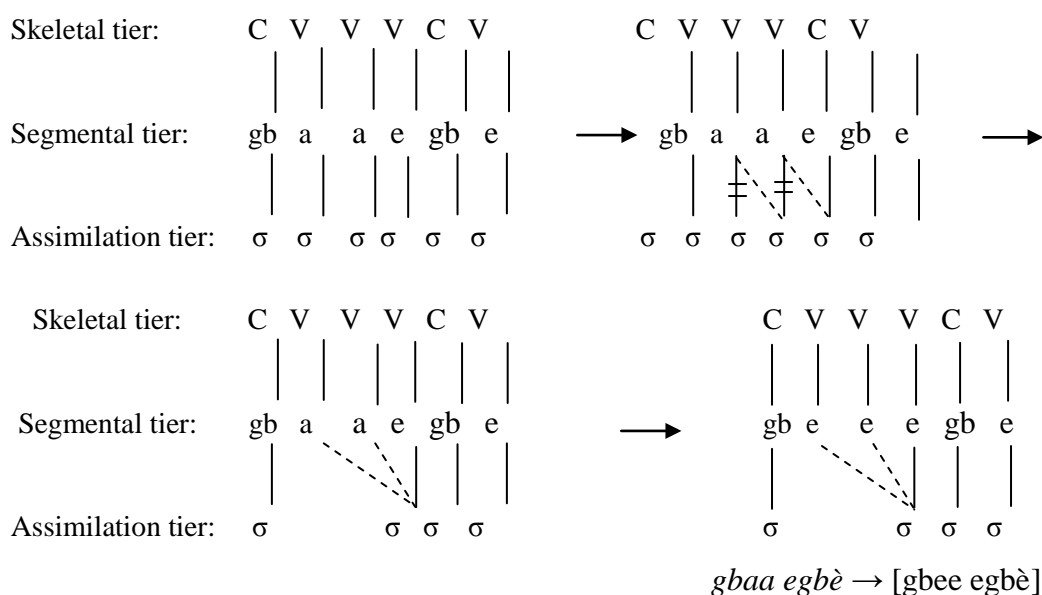
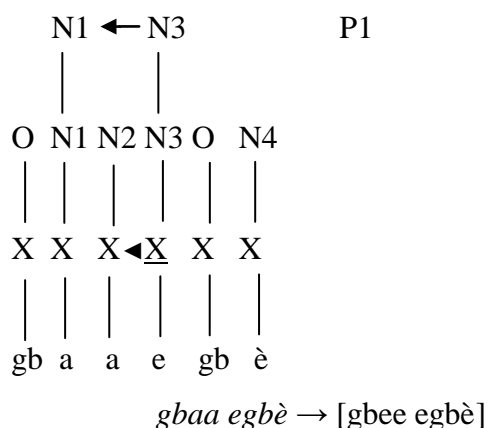


Figure 5.17 shows a three-tiered representation of three independent segments: The skeletal tier, segmental tier and assimilation tiers. They are linked to one another by association line. The dotted lines in column 2 represent the new links to the vowels ‘a’ in the first and second syllables. The effect of the new links with the dotted lines is manifest in column 3 where the new association lines are linked to the initial vowel of the second word. In column 4, the last two vowels of the first word now completely take the features of ‘e’. At underlying phonemic representation, the utterance is /gbaa egbè /, while at surface phonetic representation, it is realised as [gbee egbè].

This kind of regressive assimilation can equally be accounted for using government phonology. The analysis presented below:

Fig. 5.18 Government phonology account of complete vowel assimilation involving two word final vowels



The analysis in figure 5.18 shows that sound /e/ of N3 is the governor that governs the preceding vowel of N2, the governee, thereby making it to resemble it. N1, which is not at adjacency position with N3, now projects to the next level of P1 where it is governed by the N3.

Where two vowels end a word involved in regressive assimilation and the first of the vowels is a high back or front vowel, the high vowel is involved in regressive assimilation, but not in all cases. This, however, happens after the high vowel has caused the preceding consonant to be labialised or palatalised. This can be found in lines

128. 2 of Awkuzu boy's speech; *bìà ebe à* [b^hie ebe è]
 20 of Ìntèjè man's speech; *dechasià ùlì* [detʃas^huu ùlì],
 30 of Ìntèjè youth's speech; *gbanyua ọkū* [gbàɲ^wõɔ ɔ^hkú],
 17 of Ogbunikē man's speech; *gbànyua ọkù à* [gbàɲ^wõɔ ɔko à],
 11 of Anàkù man's speech e.g. *chie ɔ̄* [tʃ^hõɔ ɔ^hzò]
 18 of Anàkù woman's speech e.g. *gbànyuọ ọkū* [gbàɲ^wõɔ ɔ^hkú],
 39 of Ìfite Ọgwarì man's speech e.g. *shuọ àwùlè* [ʃ^waa àwùlè],
 46 of Ụmùmboō woman's speech e.g. *nà-àlìà ọlìà* [nà^h ɔ̄lìà l'ìà],
 38 of Àgùlerì woman's speech; *yà-àbìà echì* [jà àb^hee e^htʃì],
 9 of Ìkem man 1's speech; *sisie ọ sipaka* [sis^hoo ɔsipaka]
 16 of Ìsugbè man 2's speech; *gbànyua ọkū* [gbàɲ^wõɔ ɔ^hkú],
 37 of Ànàm (Ụmùdọrà) man's speech; *yà-àbìà echì* [jà àb^hee e^htʃì].

These data show that for high back or front vowel that ends the first word to assimilate features of the following vowel, it must have the same pitch level with it. This shows that tone plays important role in determining if a high back or front vowel assimilated after labialisation or palatalisation has taken place. This instance did occur in line 56 of Ìfite Ọgwarì man's speech e.g. *nà-èlì azì* → [ɔ n^hè ɛlì azì]. When it is not involved in regressive assimilation, it is either as a result of emphasis laid on the word containing the vowel that would have been involved or the fact that the two vowels have different pitch levels. This kind of regressive assimilation can informally be represented in a phonological rule thus:

- ii. A high back or front vowel at end of a word becomes the same as the initial vowel of the second word when they are of the same pitch level.

This rule can also be formally represented using P-rule as follows:

Rule 32: P-rule analysis of regressive assimilation affecting high vowels

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \# \longrightarrow \left[\alpha \text{ Voc} \right] / \text{---} \# \left[\begin{array}{c} \alpha \text{ Voc} \\ \alpha \text{ tone} \end{array} \right]$$

- iii. A high back or front vowel at the end of a word that is followed by another initial vowel of the same pitch level becomes the same as the initial vowel of the second word.

This rule can also be formally represented using P-rule as follows:

Rule 33: P-rule analysis of regressive assimilation affecting high vowel and two other vowels

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \left[\begin{array}{c} + \text{ syll} \\ - \text{ Consonantal} \\ \alpha \text{ tone} \end{array} \right] \# \longrightarrow \left[\begin{array}{c} \alpha + \text{Syll} \\ - \text{ consonantal} \end{array} \right] / \text{---} \# \left[\begin{array}{c} \alpha + \text{ syll} \\ - \text{ Consonantal} \end{array} \right]$$

These two rules can be represented as a single rule using brace to read:

- iv. A high back or front vowel that is either at word boundary or followed by another vowel of the same pitch level at the end of word becomes the same as initial vowel of the second word.

This rule can also be formally represented using P-rule as follows:

Rule 34: P-rule analysis of regressive assimilation affecting high vowels using brace

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \left\{ \begin{array}{c} \# \\ + \text{Syll} \\ - \text{ Consonantal} \\ \alpha \text{ tone} \end{array} \right\} \# \longrightarrow \left[\begin{array}{c} \alpha + \text{Syll} \\ - \text{ consonantal} \end{array} \right] / \text{---} \# \left[\begin{array}{c} \alpha + \text{ syll} \\ - \text{ Consonantal} \end{array} \right]$$

This kind of regressive assimilation can be explained using autosegmental analysis as used in figures 5.2 and 5.3 under labialisation. Government phonology can also conveniently account for this kind of assimilation as used in figure 5.5 to explain palatalisation.

D. Regressive assimilation where the vowel /u/ is preceded by an approximant /w/: The word final high vowel /u/ is assimilated by the initial vowel of the second word when it is preceded

by an approximant or a labialised velar sound. The approximant or labialised velar sound is in this case not labialised because it is already a labialised sound. This is perceived in lines

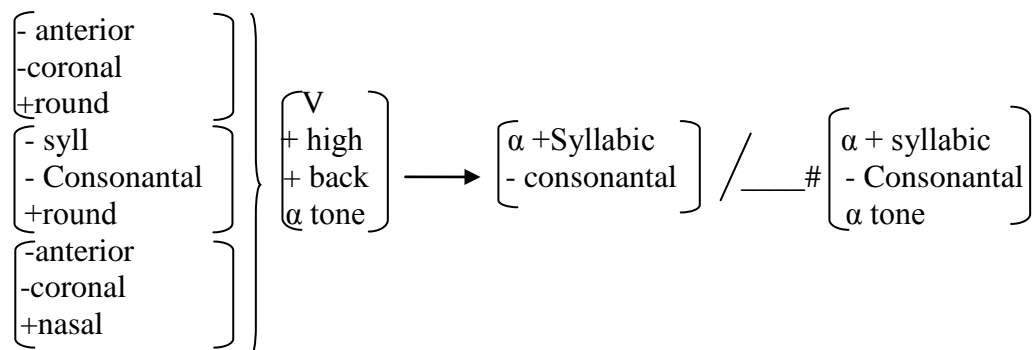
129. 61 of Awkuzu youth's speech; nnekwu ivē → [nnē^wk^wi i[↓]vé]
- 24 of Ntèjè girl's speech; nà-èwu itè → [nē^èèwu itè]
- 16&24 of Ogbunikē man's speech; okwū āyī → [o[↓]k^wá ájī] and ukwù oisi → [ukwù oisi]
- 16 of Anàkù youth's speech e.g. egwu òrò [egwu òrò]
- 57 of Ifite Oḡwarì man's speech; ànwu alá [àŋ^wá alá]
- 10 of Uḡmùḡboō woman's speech; nà-èwu ivē [nē^èèwi i[↓]vé]
- 10 of Àḡùlerì woman's speech; nà-èwu itè [nē^èèwu itè]
- 60 of Àḡùlerì girl's speech; nnekwu ewū [nnē^kwe e[↓]wú]
- 8 of Ìkem man 2's speech; nà-èwu itè [nē^èèwu itè]
- 49 of Ìkem man 2's speech; nnekwu ori [nnē^kwō ori]
- 5 of Nsugbè man 1's speech e.g. m̀p̀ òlòḡwùḡ isì [m̀p̀ òlòḡ^wùḡ osisi]
- 23 of Nsugbè man 2's speech e.g. nnekwu ogorogo [nnē^kwō ogorogo]
- 54 of Ànàm (Uḡmùḡḡrà) man's speech; n̄nukwu avīā [n̄nuk^waa[↓]vī[↓]á].

It is noticed here that tone also plays a role here in determining whether a high back vowel would be assimilated . Thus, where the tones of the high back vowel are not the same as the following vowel, assimilation does not occur e.g. Ìkem man 2's speech pattern in line 49 nnekwu ori [nnē^kwō ori] and Nsugbè man 2's speech pattern in line 23 e.g. nnekwu ogorogo [nnē^kwō ogorogo].

- v. A high back vowel that is preceded by a labialised velar approximant, labialised velar plosive and labialized velar nasal becomes the same as initial vowel of the second word if they are of the same pitch level.

This rule can also be formally represented using P-rule as follows:

Rule 35: P-rule analysis of regressive assimilation affecting high vowels using variables and brace



- i. A high back or front vowel at end of a word becomes the same as the initial vowel of the second word when they are of the same pitch level.

This rule can also be formally represented using P-rule as follows:

Rule 36: P-rule analysis of regressive assimilation affecting high vowels

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \# \longrightarrow \left[\alpha \text{ Voc} \right] / \text{---} \# \left[\begin{array}{c} \alpha \text{ Voc} \\ \alpha \text{ tone} \end{array} \right]$$

- ii. A high back or front vowel that is followed by another vowel of the same pitch level at the end of word becomes the same as initial vowel of the second word.

This rule can also be formally be modified and used to account for regressive assimilation affecting high vowel and two other vowels, as represented below:

Rule 37: P-rule analysis of regressive assimilation affecting high vowel and two other vowels

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \left[\begin{array}{c} + \text{ syll} \\ - \text{ Consonantal} \\ \alpha \text{ tone} \end{array} \right] \# \longrightarrow \left[\begin{array}{c} \alpha + \text{ Syll} \\ - \text{ consonantal} \end{array} \right] / \text{---} \# \left[\begin{array}{c} \alpha + \text{ syll} \\ - \text{ Consonantal} \end{array} \right]$$

These two rules can be represented as a single rule using brace to read:

- iii. A high back or front vowel that is either at word boundary or followed by another vowel of the same pitch level at the end of word becomes the same as initial vowel of the second word.

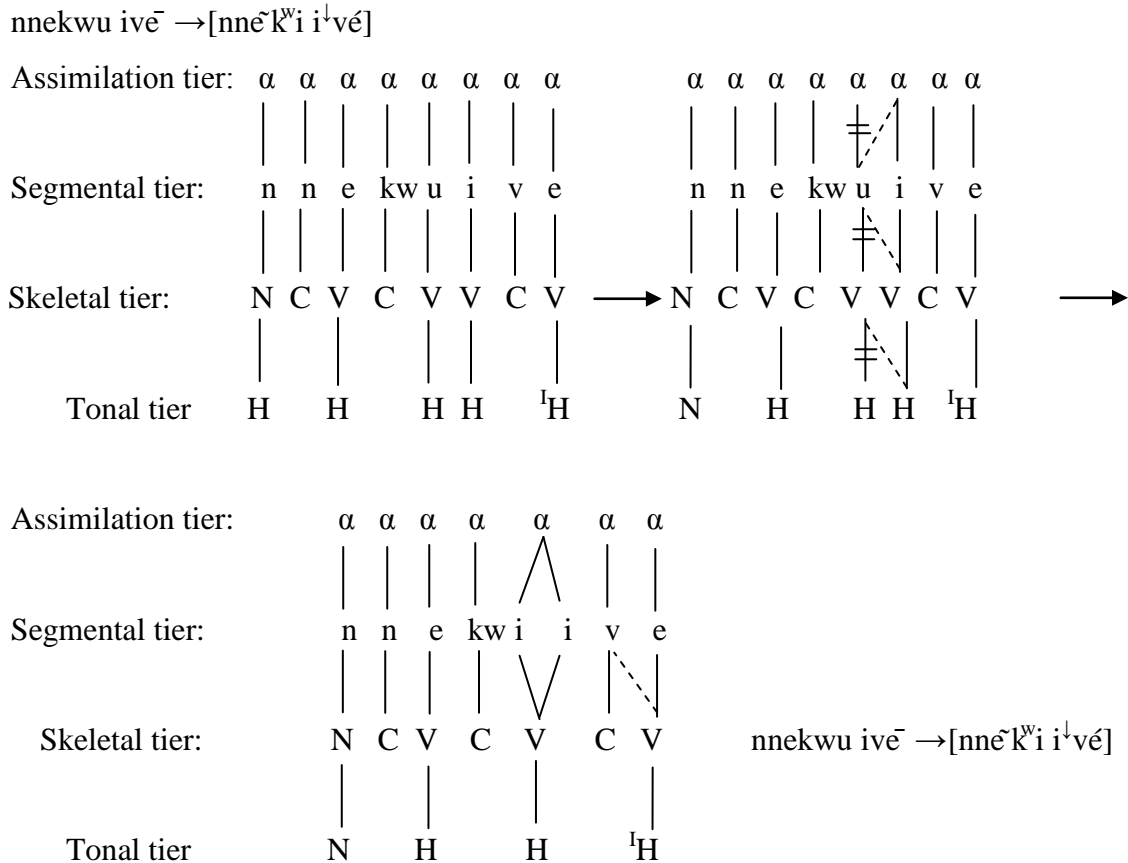
This rule can also be formally represented using P-rule as follows:

Rule 38: P-rule analysis of regressive assimilation affecting high vowels using brace

$$\left[\begin{array}{c} V \\ + \text{ high} \\ \alpha \text{ back} \\ \alpha \text{ tone} \end{array} \right] \left\{ \begin{array}{c} \# \\ + \text{ Syll} \\ - \text{ Consonantal} \\ \alpha \text{ tone} \end{array} \right\} \# \longrightarrow \left[\begin{array}{c} \alpha + \text{ Syll} \\ - \text{ consonantal} \end{array} \right] / \text{---} \# \left[\begin{array}{c} \alpha + \text{ syll} \\ - \text{ Consonantal} \end{array} \right]$$

Autosegmental phonology can be used to account for regressive assimilation affecting high vowels. This is illustrated below:

Fig. 5.19 Autosegmental phonology account of regressive assimilation affecting high vowels



In the above analysis in figure 5.19, the second column shows that a new association line links the first vowel of the second word and the final vowel of the first word from the assimilation tier, while the association line linking the final vowel of the first word with the assimilation tier is delinked. Also, the second column shows that a new association line links the first vowel of the second word and the final vowel of the first word from the skeletal and the association line linking the final vowel of the first word with the skeletal tier is delinked. It is also noticed that the that a new association line links the tone of the first vowel of the second word and the final vowel of the first word from the tonal tier, while the association line linking the final vowel of the first word with the tonal tier is delinked. In the third column, the first vowel of the second word and the final vowel of the first word are linked to one node at the assimilation tier. The first vowel of the second word and the final vowel of the first word are also linked to one V at the skeletal tier. The two vowels are equally associated with one tone at the tonal tier in line with OCP. Because they have the same pitch, they allow the high back vowel to assimilate the features of the preceding vowel forming a V-shape through the new association line. This makes the two vowels to be linked to one node at the assimilation tier, thus forming an inverted V-shape directly opposite the one at the skeletal tier.

Fig. 5.20 Autosegmental phonology account of regressive assimilation without affect high vowel

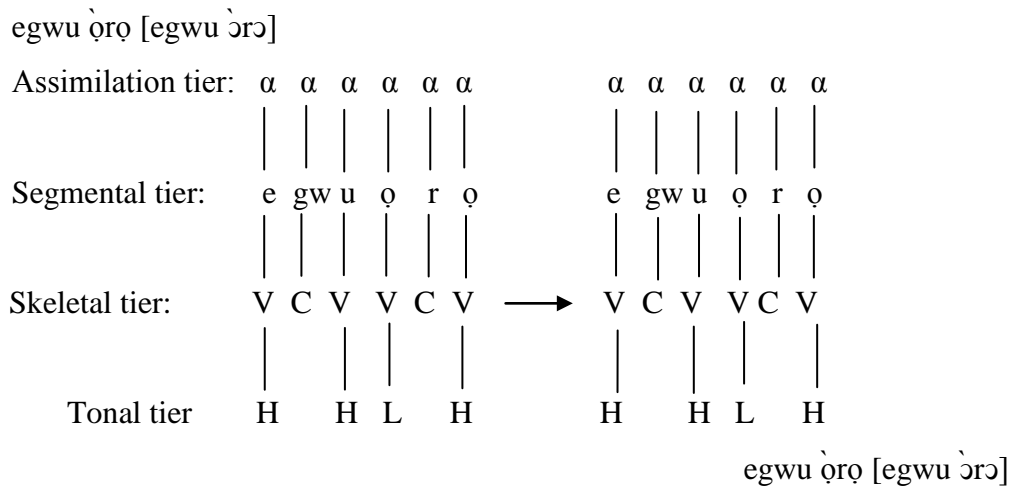
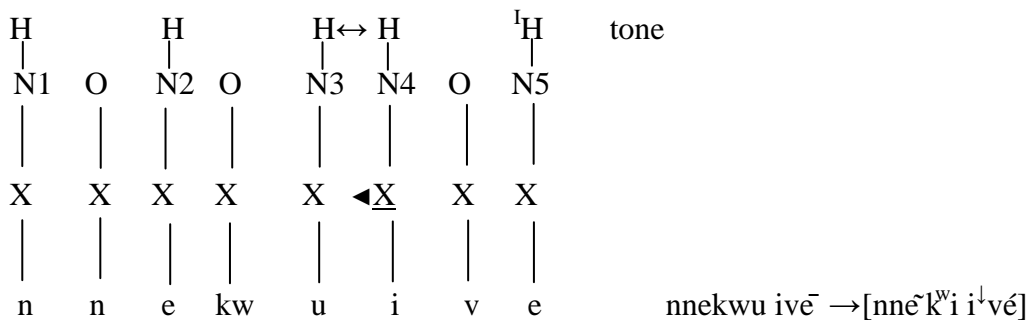


Fig 5.20 shows that the first vowel of the second word and the final vowel of the first word are not identical as a result of which they are not linked to one vowel at skeletal tier. The tones of the two vowels are also not of the same pitch level and, therefore, are represented with different tones at the tonal level thereby blocking the high back vowel from assimilating the features of the vowel following it because no V-shape could be formed.

Below is a government phonology account of this kind of assimilation in the following way:

Fig. 5.21 Government phonology account of regressive assimilation affecting high vowels



- (↔) Same pitch level
- (◀) Interconstituent government

In the above analysis in figure 5.21, the N4 governs the N3. This is made possible because both N3 and N4 are realised at the same pitch level and are at adjacency position (where the tones are not of the same pitch level, assimilation will be blocked).

E. Regressive assimilation involving elision of consonant: Regressive assimilation can involve elision of consonant of the perfective morpheme first. We witnessed this in lines

130. 1 & 68 of Ìfite Ọgwarì man's speech; apā natagò [a[↓]pánatɔɔ],
 26 of Ụmùmbò woman's speech; àkagò [àkɔɔ].

We notice here that the consonant of the final syllable is elided and its vowel goes back to assimilate the preceding vowel. This can informally and formally be represented with two linearly-ordered P-rule as follows:

Rule 39: P-rule analysis of regressive assimilation involving elision

- a. A consonant of word final syllable becomes deleted.

[C] → Ø / ___ [V]# e.g. àkagò → àkaɔ

- b. A vowel takes the features of the following vowel at word final position.

Rule 40: P-rule analysis of regressive assimilation involving elision using variable

[V] → [α Vowel] / ___ [α Vowel] # e.g. àkaɔ → àkɔɔ [àkɔɔ]

This kind of regressive assimilation have been analysed using the autosegmental phonology and government phonology in figures 5.13 and 5.14.

Finally, from the foregoing, it is evident that most regressive assimilation are also complete assimilation as the vowel involved completely drops its features and takes the features of the vowel that influences it.

5.3.2.2 Progressive assimilation

Progressive assimilation is perceived in the speech patterns of some of the speech communities investigated; though it is not a frequent occurrence. In Awkuzu, Àgùlerì and Ànam speech communities, progressive assimilation can occur between a word and demonstrative adjective whereby the final vowel of the first word influences the demonstrative adjective 'a'. This is seen in lines

131. 10 of Awkuzu woman's speech; ebe à [ebe è],
 61 of Àgùlerì woman's speech; ñke à [ñke è],
 4 and 3 of Ànam (Ụmùd ọrà) and Ànam (Ụmùziàm) man's speech respectively; n'ebē ā
 [nē[↓]e[↓]bé[↓]é].

After eliding the consonant of a syllable at medial position, its vowel is influenced by the preceding vowel to take-up its features as found in lines 8 of Awkuzu woman’s speech e.g. ètīnye [ètīi], 29 of Anàkù woman’s speech e.g. àkpòbagwòlù [àkpɔɔg^wɔlɔ], 34 of Anàkù man’s speech e.g. tīnye [tīi], 12 and 42 of Ùmùmbò woman’s speech e.g. gòtèlù [gòtèè] and ìmadù [ìmā^ɔ] respectively. All of these are within a word and are also examples of complete assimilation. Similarly, consonant of the second syllable may be elided, while its vowel is influenced by the preceding vowel and it takes up its features. This is found in line 59 of Ànàm (Ùmùd`òrà) and Ànàm (Ùmùziàm) men’s speech e.g. ebūnātago → [e^lbú^lótágo]“they have brought”. This is a kind of partial progressive assimilation. This kind of assimilation involving the second syllable can also be complete as noticed in line 59 of Ànàm men’s speech e.g. ozu nwenwà [ozu ŋ^wèè], 23 and 62 of Ànàm (Ùmùziàm) man’s speech e.g. osisi [oosi] “tree”.

These instances of progressive assimilation can informally be represented with a P-rule as follows: A vowel preceded by either another vowel or boundary takes the features of the vowel preceding it. The rule can formally be stated as follows:

Rule 41: P-rule analysis of progressive assimilation

$$[V] \left. \begin{array}{l} \# \\ \left. \begin{array}{l} +\text{syll} \\ -\text{Consonantal} \end{array} \right\} \end{array} \right\} \rightarrow [\alpha \text{ Vowel}] / [\alpha \text{ Vowel}] _ \left. \begin{array}{l} C \\ \# \end{array} \right\}$$

Progressive assimilation also occurs after the elision of consonant of the pronoun ‘ya’ and the left over vowel is influenced by the vowel of the first word. Instances of this occurrence are in lines

132. 14 of Ntèjè girl’s speech e.g. ùmùnnē dī ya [ɔmòⁿné^ldí e]; duru yā [duru^lé]
 69 of Ogbunikē man’s speech eg. imi yā [imī^lé]
 39 of Ìfite Oḡwarì man’s speech e.g. akwùkwò yā [akwɔ^lɔ]
 32 of Nsugbè man’s speech e.g. nà di yā [nā^l di^lé].

This can informally and formally be explained with two linearly-ordered P-rule, namely:

- i. Elision rule
- ii. Feature changing rule

The first rule says:

- a. An initial consonant becomes deleted when preceded by a vowel followed by word boundary.
- b. A vowel becomes the same as the preceding vowel at word boundary.

These rules can respectively be represented formally as below:

Rule 42: P-rule analysis of progressive assimilation involving elision

$$\left[\begin{array}{l} + \text{sonorant} \\ - \text{Consonantal} \end{array} \right] \rightarrow \emptyset / \left[\begin{array}{l} + \text{syll} \\ - \text{Consonantal} \end{array} \right] \# \text{ ___ } \left[\begin{array}{l} + \text{syll} \\ - \text{Consonantal} \end{array} \right] \#$$

133. imi yā → imi ā

Rule 43: P-rule analysis of progressive assimilation involving elision using brace and variables

$$\left[\begin{array}{l} + \text{syll} \\ - \text{Consonantal} \end{array} \right] \rightarrow \left\{ \begin{array}{l} \alpha \text{ syll} \\ + \text{Consonantal} \\ + \text{syll} \\ - \text{back} \\ \text{Half open} \end{array} \right\} / \left\{ \begin{array}{l} \alpha \text{ syll} \\ - \text{Consonantal} \\ + \text{syll} \\ + \text{high} \\ - \text{back} \end{array} \right\} \# \text{ ___ } \#$$

134. akwə ā → [akwə[↓]ɔ]
 imi ā → [imi[↓]é]

This kind of assimilation is mostly partial as we can see from the examples . It is only in Ifite Oḡwarì that we perceive it as complete assimilation . It is also discovered that progressive assimilation can occur after coalescent assimilation had taken place and the coalesced segment influences the vowel adjacent to it to take up its features either partially or completely. This kind of assimilation occurs both across word boundary and within a word. Instances of where it occurs across word boundary are found in lines

135. 59 of Awkuzu woman's speech; èvè ya [èvi e]
 13 of Ntèjè girl's speech; sì ème yā [s'è èmĩ[↓]é]
 70 of Ogbunikē man's speech eg. nne yā [nnĩ[↓]é]
 57 of Anàkù man's speech e.g. bù ñgì nè ya [bù ñgì ñĩ[↓] e]
 35 of Anàkù woman's speech e.g. wète yā [wèti[↓]é]
 43 of Ifite Oḡwarì man's speech; wète yā [weti[↓]é]
 11, 14, 20, 32 & 36 of Ìkem man 1's speech e.g. èle yā [èli[↓]é]
 48 of N̄sugbè man 2's speech e.g. àvè ya [àvì e].

Instances of where this kind of assimilation occurs within a word are found in lines

136. 58 of Awkuzu woman's speech eg. gbànye [gbĩ]
 49 of Ụmùmboō woman's speech e.g. m̄nȳ e [m̄r̄i].

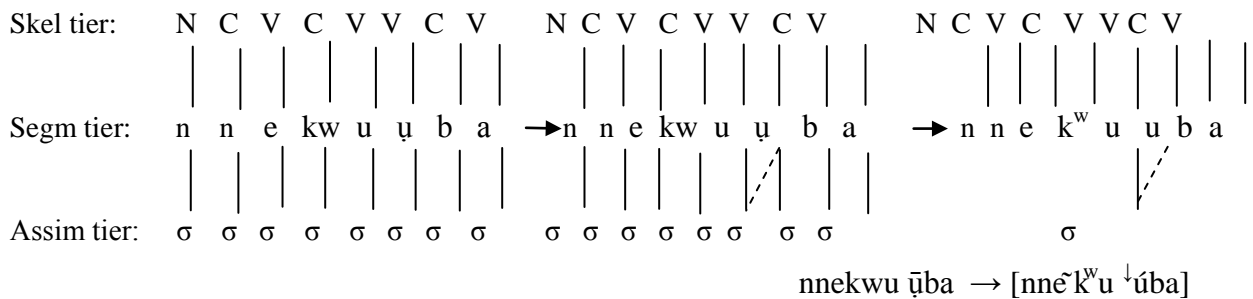
It is noticed that within a word, this kind of assimilation occurs as complete assimilation, but across word boundaries, it is partial assimilation.

Progressive assimilation also involves the third person pronoun influencing the SI verb *bù* ‘be’ such that after the elision of the consonant, its vowel drops its features to take up features of the pronoun as can be seen in lines 4 of Ñtèjè man’s speech; *ọ̀ bù ubùbò* [ɔ̀ ubùbò], 68 of Ogbunike man’s speech e.g. *ọ̀ bù nziokwū* [ɔ̀ nz^hoo^hkwū], 7 of Ìfite Ọgwarì man’s speech e.g. *ọ̀ bù ɡìní?* [ɔ̀ ɡr^hní], 8 of Ụmùmbò woman’s speech e.g. *ọ̀ bù ɡìní?* [ɔ̀ ɡr^hní?], 1 of Ìkem man 1’s speech e.g. *na ọ̀bù* [nɔ̀ ɔ̀], and 23 of Ñsugbè man 1’s speech e.g. *ọ̀ bù* [ɔ̀].

Instance of where progressive assimilation involves final vowel of the first word influencing the impersonal pronoun following it is found in line 7 of Ñtèjè girl’s speech ; *̀n kè a* [̀n kè e]. We noticed few cases of progressive assimilation across word boundary where the last vowel of the first word completely influences the first vowel of the second word so that it drops its features to take the features of the sound that influences it . This is observed in line 32 of the speech of Ìkem man 1 e.g. *nli ̀gbàgwù* [nli ̀gbàgwù], 25 of Ogbunike man’s speech e.g. *nnekwu ̀ba* → [nnɛ^w k^w u ̀ba].

We can also analyse our data on progressive assimilation using the autosegmental phonology model as presented below:

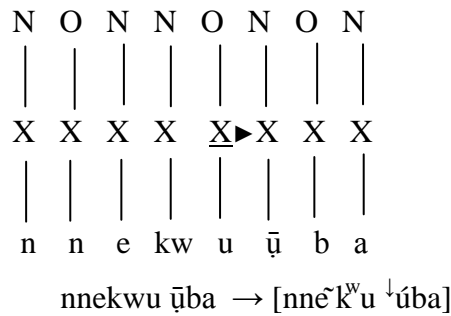
Fig. 5.22 Autosegmental phonology analysis of progressive assimilation



In the analysis in figure 5.22, there are skeletal tier, segmental tier and assimilation tiers, which are linked to one another by association line. The dotted line represents the new link between the two vowels ‘u’ and ‘̀’ . We see in the last column that because of the new link to the second vowel which has been indicated with dotted line, progressive assimilation occurs making the two vowels to be the same. The direction of the dotted line is very necessary in knowing whether assimilation is progressive or regressive.

A government phonology account of progressive assimilation can also be given; an indication that the process obeys government phonology rule e.g.

Fig. 5.23 Government phonology account of progressive assimilation



The vowel ‘u’ is the governor in the above analysis, while ‘ū’ is the governee. They maintain strict locality condition because they are at adjacency position without any intervening segment.

Finally, it is evident from our data that progressive assimilation can occur within a word and at word boundary. All instances of progressive assimilation observed from the data are also examples of complete assimilation except progressive assimilation involving elision and coalescent assimilation which are instances of partial assimilation.

5.3.2.3 Coalescent assimilation

Our data reveal instances of coalescent assimilation perceived in the speech patterns of some of the speech communities investigated. It is observed from the speech communities that coalescent assimilation occurs within and across word boundary. For coalescent assimilation at word boundary, the final vowel of the first word and the initial vowel of the second word are involved. This is noticed in lines

137. 43 & 59 of Awkuzu woman’s speech; wèta yā [wètr[↓]á] & èvè ya [èvi e]
 19 & 21 of Ñtèjè man’s speech; nà ya [nãa]
 13 of Ñtèjè girl’s speech; ème yā [èm[↓]é]
 34 & 50 of Ogbunikē man’s speech; wèta yā [wètr[↓]á] & àfè ya [àfi e]
 18 and 23 of Anàkù man’s speech e.g. ðìkwà yà [ðìk^wìà]
 35 of Anàkù woman’s speech e.g. wète yā [wèti[↓]é]
 10 of Ìfite Ọgwarì man’s speech e.g. èmefùta yā [èmē[↓]fotr[↓]á]
 43 of Ìfite Ọgwarì man’s speech e.g. wèta yā [weti[↓]é]
 48 & 50 of Ụmùmboō woman e.g. nà yā [nã[↓]á] and àvè ya [àvi e] respectively
 50 of Àgùlerì woman’s speech e.g. àvè ya [àvi e]
 49 of Àgùlerì girl’s speech e.g. akwà ya [akwàa]
 11 of Ìkem man 1’s speech e.g. èle yā [èli[↓]é]
 20 of Ñsugbè man 2’s speech jìde yā [dʒidi[↓]é]
 21 and 30 of Ànam man’s speech e.g. wèli yā [wèli[↓]é]
 30 of Ànam man’s speech e.g. akwùkwọ yā [aak^wì[↓]á].

Within a word, coalescent assimilation can occur at CVCV or NCVCV syllable structure between the vowel of the first syllable and the consonant of the second syllable. Once this occurs, the vowel of the second syllable is completely influenced by the coalesced segment to take up its features. This instance is found in lines 58 of Awkuzu woman's speech; gbànye [gbɪɪ], 4 of Awkuzu man's speech; kùnye m̄ [kii ↓m̄], 4 of Ogbunike man's speech e.g. kùnye m̄ [kii ↓m̄], 42 of Anàkù woman's speech e.g. ìmmanya becomes [ìmm̄ɪa], 43 of Umùòlum̄ man's speech e.g. mmanya [mm̄ɪa], 50 of Ìfite Oḡwarì man's speech e.g. ìmmanya [ìmm̄ɪa], 40 and 49 of Ụmù̀mboò woman's speech e.g. ìmmanya [ìmm̄ɪa] and m̀nye [m̄ɪɪ]; 41 and 42 of Àḡùlerì woman and girl respectively e.g. mmanya [mm̄ɪa], 33 of Ìkem man 2's speech e.g. mmanya [mm̄ɪa].

All the examples show that the coalesced segment is usually *i*/*ɪ* depending on the VH group of the final vowel of the first word. Also, all the data show that the coalesced segment influences the vowel of the syllable which consonant is involved in coalescent assimilation to agree in harmony with it.

Based on the observations from the data, it could be posited that:

- i. Coalescent assimilation in Igbo speech communities of Omambala involves the final vowel of the first word and initial /j/ sound of the pronoun *ya* /ja/ 'his/her/its'; and within a word, it involves the vowel of the first or second syllable and the consonant of second or third syllable, as the case may be, (usually /ɲ/) as in lines 40 & 49 of Ụmù̀mboò woman's speech where *ìmmanya* → [ìmm̄ɪa] & *m̀nye* → [m̄ɪɪ].
- ii. the coalesced segment is *i*/*ɪ* depending on the VH group of final vowel involved in coalescent assimilation.
- iii. the vowel of the second word or second or third syllable whose consonant is affected by coalescent assimilation agrees in harmony with the coalesced segment.

When the vowels in the first words are [-ATR] vowels, two sounds at juncture coalesce to /i/. The vowel of the second word whose initial consonant is affected by coalescent assimilation remains a [-ATR] vowel in harmony with the coalesced segment. This is exemplified with data from the following speech communities:

138. a. **Ogbunike** (i) àfè akwùkwọ yā
[àfà aok^wɪ ↓á]
“her/his school uniform”
- (ii) afà ya
[afɪa]
“his/her/its name”

- (iii) ɸnò ya
[ɸñ̩ a]
“his/her/its house”

b. Ànṁ̀

- (i) àvè akwùkwò ā
[àvə aak^wɪ ↓á]
“her/his school uniform”
- (ii) avà ya
[aṽ̩ a]
“his/her/its name”

When the vowels of the first words are [+ATR] vowels, the two sounds at juncture coalesce to /i/ while the vowel of the second word whose consonant is affected by coalescent assimilation and which belongs to [-ATR] vowel group is influenced by the coalesced segment to change to [+ATR] vowel /e/ in harmony with the coalesced segment. This is exemplified below:

139. **Ànṁ̀** (i) wèli yā̃
[wèli ↓é]
“take it”
- (ii) ive yā̃
[ivi ↓é]
“his/her belongings”

When the vowels of the first word are from both [-ATR] and [+ATR] vowel groups, the two sounds at juncture coalesced to /i/ if the final vowel of the first word is a [+ATR] vowel, while the vowel of the second word whose consonant is affected by coal A and which belongs to [-ATR] vowel group takes the feature of [+ATR] vowel /e/ in harmony with the coalesced segment. The two sounds at juncture, however, coalesce to /i/ when the final vowel of the first word is a [-ATR] vowel and the vowel of the second word whose consonant is affected by coal A remains a [-ATR] vowel in harmony with the coalesced segment. Examples are presented below:

- 140 a. Ogbunikẽ (i) wèta yā̃
[wèti ↓á]
“bring it”
- (ii) àfè ya
[àfi e]
“her dress”

b. Àn m̄ (i) àvè ya
 [àvi e]
 “her dress”

c. Ụm̀̀m̀boō woman, line 50: àvè ya [àvi e] “her/his clothe”

d. Ìfite Ọgwarì man in lines

10: èmef̀̀ta yā [èm̄f̄otr̄↓á] ‘do it’

43: wèta yā [wet̄i↓é] ‘bring it’

The description also show that when the first words have NCV syllable structure where the vowel is either from [-ATR] vowel group or [+ATR] vowel group, the two sounds at juncture coalesced to /h/ or /i/ depending on the VH group of the final vowel of the first word. The vowel of the second word whose consonant is affected by coal A is influenced to agree in harmony with the coalesced segment. Below are examples from some speech communities:

141 a. Ogbunikē man: (i) nne yā
 [nni↓é]
 ‘his/her/its mother’
 (ii) nnà ya
 [nn̄a]
 ‘his/her/its father’

b. Ụm̀̀m̀boō woman in line 48 e.g. ña yā [ɲĩ↓á] “her/his child”

Coalescent assimilation as witnessed in our data can formally be captured using P-rule. Two rules are involved and they are linearly ordered: the coalescence rule and feature changing rule. The rules are:

Rule 44: P-rules analysis of coalescent assimilation

a.
$$\left[\begin{array}{l} +\text{syll} \\ -\text{Consonantal} \end{array} \right] \left\{ \begin{array}{l} \emptyset \\ \# \end{array} \right\} \left[\begin{array}{l} +\text{Sonorant} \\ +\text{Continuant} \\ -\text{back} \end{array} \right] \text{V} \longrightarrow \emptyset \left[\begin{array}{l} \text{V} \\ +\text{high} \\ -\text{back} \end{array} \right] \left\{ \begin{array}{l} \emptyset \\ \# \end{array} \right\} \emptyset \text{V}$$

1 2 3 4 1 3 2 4

b.
$$\text{V} \longrightarrow \left[\begin{array}{l} \text{V} \\ \alpha \text{ ATR} \end{array} \right] / \left[\begin{array}{l} \text{V} \\ \alpha \text{ ATR} \end{array} \right] \text{---} \#$$

Interpretations:

- a. A word final or medial vowel and the following consonant coalesce to a high front vowel.
- b. Vowels agree in harmony with the preceding vowel.

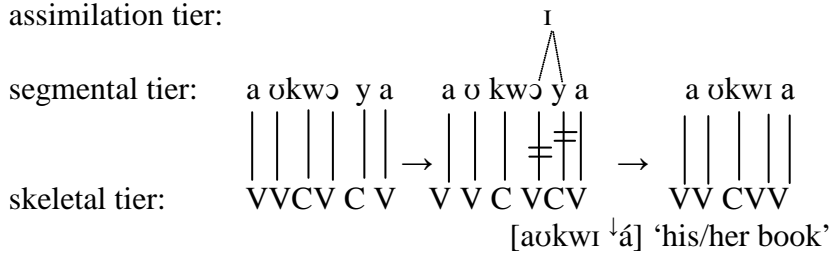
Coalescent assimilation can also be analysed using autosegmental phonology model as follows:

Figures 5.24: Autosegmental phonology analysis of coalescent assimilation

Analysis 1: [-ATR] Vowel Group

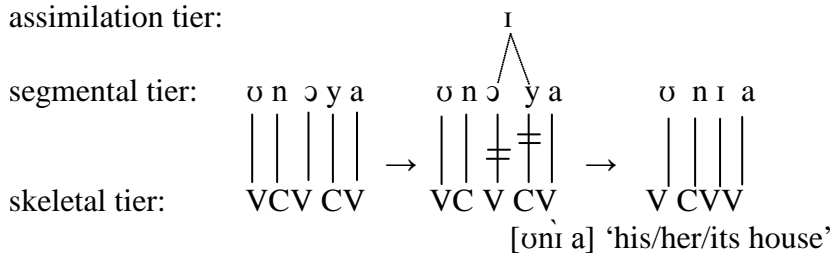
a. [aʊkwɪ ↓á] ‘his/her book’

assimilation tier:



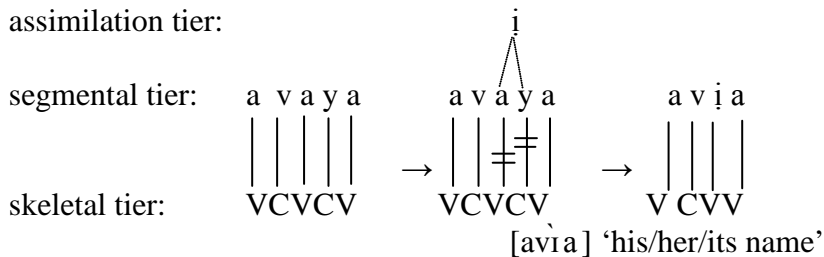
b. [ʊnɪ a] ‘his/her/its house’

assimilation tier:



c. [avɪ a] ‘his/her/its name’

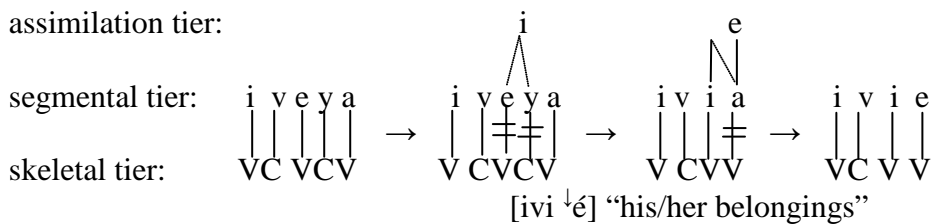
assimilation tier:



Analysis 2: [+ATR] Vowel Group

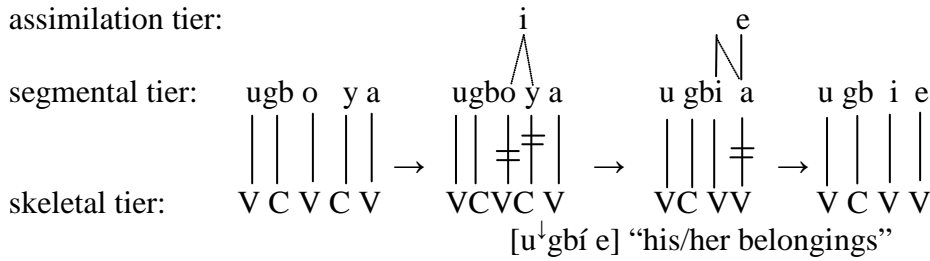
a. [ivi ↓é] ‘his/her belongings’

assimilation tier:



b. [u^lgbí e] ‘his/her belongings’

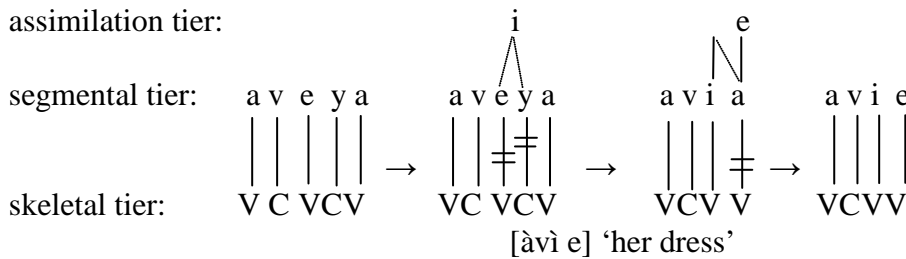
assimilation tier:



Analysis 3: [-ATR] Vowel Group and +ATR Vowel Group

[àvì e] ‘her dress’

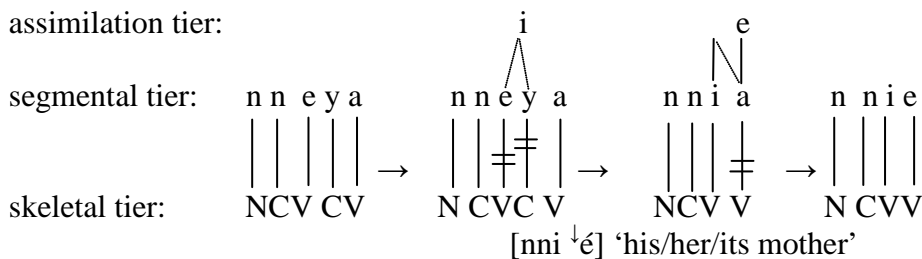
assimilation tier:



Analysis 4: NCV Syllable Structure

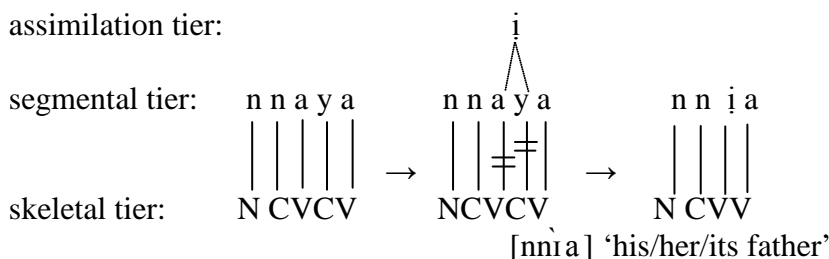
a. [nni^lé] ‘his/her/its mother’

assimilation tier:



b. [nnì a] ‘his/her/its father’

assimilation tier:

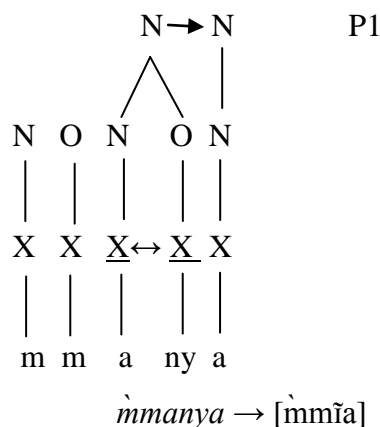


The vowels in the first words in analysis 1 (a – c) of figure 5.24 are [-ATR] vowels. The analyses show that two sound segments at juncture coalesced to /ɪ/ because the final vowels of the first words are [-ATR] vowels. The vowel of the second word whose initial sound segment is affected by coalescent assimilation remains a [-ATR] vowel in harmony with the coalesced sound

segment. In analysis 2(a–b), the vowels of the first words are [+ATR] vowels. The two sound segments at juncture coalesced to /i/ because the final vowels of the first words are [+ATR] vowels, while the vowel of the second word whose initial sound segment is affected by coalescent assimilation and which belongs to [–ATR] vowel group is ‘forced’ to change to [+ATR] vowel /e/ in harmony with the coalesced sound segment. For the analysis 3, the vowels of the first word are from [–ATR] and [+ATR] vowel groups. The two sound segments at juncture coalesced to /i/ because the final vowel of the first word is a [+ATR] vowel, while the vowel of the second word whose initial sound segment is affected by coalescent assimilation and which belongs to [–ATR] vowel group is ‘forced’ to change to [+ATR] vowel /e/ in harmony with the coalesced sound segment. In analysis 4(a–b), the first words have NCV syllable structure where the vowel is either from [–ATR] vowel group or [+ATR] vowel group. The analysis reveals that in 4(a), the two sound segments at juncture coalesced to /i/ because the final vowel of the first word is a [+ATR] vowel and the vowel of the second word whose initial sound segment is affected by coalescent assimilation and which belongs to [–ATR] group is ‘forced’ to change to [+ATR] vowel /e/ in harmony with the coalesced sound segment; In 4(b), the two sound segments at juncture coalesced to /i/ because the final vowel of the first word is a [–ATR] vowel and the vowel of the second word whose initial sound segment is affected by coalescent assimilation remains a [–ATR] vowel in harmony with the coalesced sound segment.

A government phonology account of coalescent assimilation can also be given; an indication that the process obeys government phonology e.g.

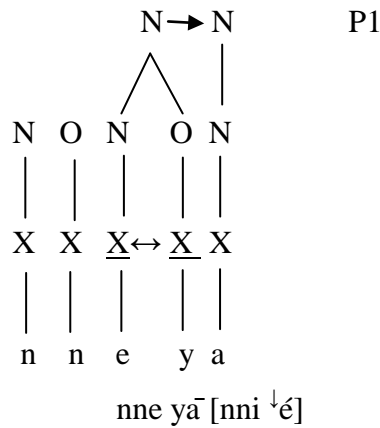
Fig. 5.25 Government phonology account of coalescent assimilation within a word



In this analysis, neither the vowel of the second syllable nor the consonant of the third syllable could govern each other. They now coalesce to something else which is usually a vowel. The coalesced segment now stays at adjacency position with the final vowel which projects to the next

level to be governed by the coalesced segment such that it partially takes some features of the coalesced segment.

Fig. 5.26 Government phonology account of coalescent assimilation across word boundary



The analysis in figure 5.26 is just like the one in figure 5.25. It shows that neither the final vowel of the first word nor the consonant of the pronoun *ya* could govern each other such that they coalesce to something else (usually a vowel). The coalesced segment now stays at adjacency position with the vowel of the pronoun which projects to the next level to be governed by the coalesced segment. This makes it to partially take some features of the coalesced segment.

Regressive assimilation, progressive assimilation and coalescent assimilation could be analysed using the generative phonology, autosegmental phonology and government phonology. The generative phonology is able to generate rules, which clearly provide information on the sound that influences another sound as a result of which the sound so influenced drops part of or all its features and take part or all the features of the sound that influences it, especially for regressive assimilation and progressive assimilation. However, the generative phonology requires generating a lot of rules and the rules undergoing many transformations. The autosegmental phonology has also through the association lines shown the sound that influences another sound, while the government phonology has demonstrated that assimilation is a natural occurrence whereby the sound that influences another is the governor and the sound influenced is the governee. The autosegmental phonology and government phonology appear simpler in analyzing assimilation in Qmambala Igbo than the generative phonology.

5.3.3 Elision

Elision is another phonological process found in the speech communities investigated. From the speech communities investigated, there are instances of consonant, vowel, syllabic nasal and

syllable elisions, though not all of them exist every speech community. Consonant elision is prevalent in all the speech communities.

Consonant elision occurs at word initial and medial positions. Consonant elision which affects the second syllable at word medial position is seen in lines 46 & 37 of Awkuzu woman and Awkuzu boy e.g. awùwọ [aòwò], 24 & 37 of Ogbunikē man’s speech e.g. osisi à [oisì à] and awùwọ [aòwò] respectively, 25 & 38 of Anàkù woman’s speech e.g. osisi à [oisì à] and awùwọ [aòwò] respectively, 24, 30 and 37 of Àgùlerì woman’s speech e.g. osisi à [oisì à]; akwùkwọ [aok^wɔ] “book” and awùwọ [aòwò] respectively, 36 and 60 of Ñsugbè man 2’s speech e.g. awùwọ [aòwò] and akwùkwọ [aok^wɔ] respectively, 30 and 36 of Ànàm Ùmùdọrà man’s speech e.g. akwùkwọ [aakwɔ] and awùwọ [aàwò] respectively.

One important thing about this kind of consonant elision is that the consonant of the second and third syllable must be the same for elision to occur. We noticed from Ànàm Ùmùdọrà man’s speech pattern that after the consonant of the second syllable has elided, its vowel harmonises with the preceding vowel. Consonant elision in these speech communities can generally informally be captured with a P-rule which is stated below:

- i. Consonant of the second syllable becomes elided when it is the same as consonant of the third syllable. It can also formally be captured with P-rule as follows:

Rule 45: P-rule analysis of elision using variables

$$[\alpha \text{ Con}] \longrightarrow \emptyset / [V] \text{ — } [V] [\alpha \text{ Con}] [V] \#$$

This kind of elision can be analysed using autosegmental phonology where features are represented on separate tiers. This is illustrated as follow:

Fig. 5.27 Autosegmental phonology account of consonant elision

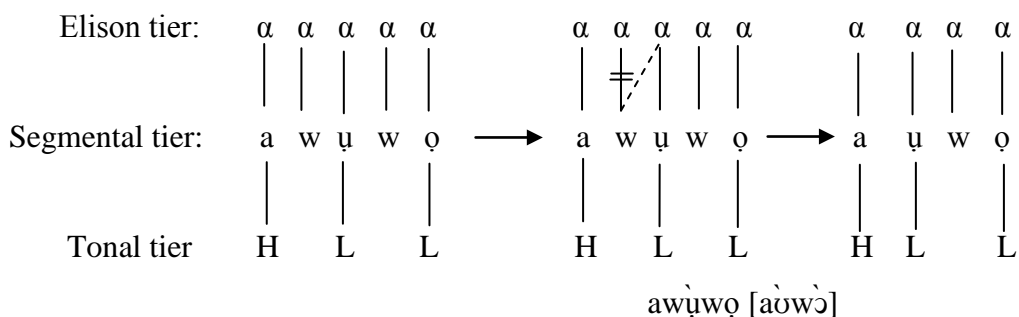
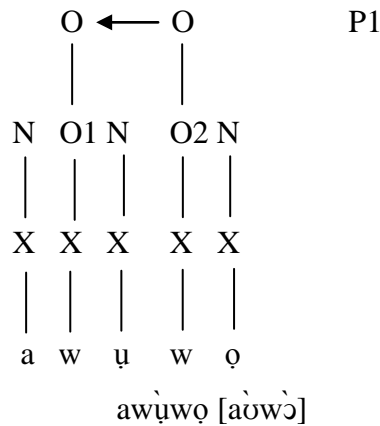


Figure 5.27 is a three-tiered representation of three independent segments: The tonal tier, segmental tier and elision tier. They are linked to one another by association line. The dotted line in column 2 represents the new links to the consonant of the second syllables. The crossed through association

line delinks the consonant of the second syllable while the circle around it signify its deletion. The effect of what happens in column 2 manifests in column 3 where the consonant of the second syllable is conspicuously missing.

Government phonology theory also accounts for consonant elision. Below is an illustration of government phonology analysis of consonant elision:

Fig. 5.28 Government phonology account of consonant elision



Government phonology analysis of consonant elision in figure 5.28 shows that O2 should govern O1 and have it deleted, but they do not occupy adjacency position. In order that strict locality condition of the theory is adhered to, the O1 has to project to the next level of P1 where it can be at governing relationship to be governed by O2.

The consonant elision that affects the final syllable is perceived in Awkuzu , Ntèjè, Ifite Oḡwarì, Ụmùmbòḡ, Àḡùlerì, Ìkem, Oḡbunikē, Anàkù and Ànam speech communities . Examples are in lines 13 of Awkuzu woman’s speech e .g. dḡnḡ ādḡnḡ [da[↓]á[↓]ádḡḡ] 58 of Ntèjè girl’s speech e .g. dinē ēdinē [d[↓]i[↓]é[↓]éd[↓]i[↓]è], 38 of Ifite Oḡwarì man’s speech e .g. eḡbugo [eḡbuo], 26 of Ụmùmbòḡ woman’s speech e.g. àkagḡ nkā [àkḡḡ ḡ[↓]ká], 42 of Àḡùlerì girl’s speech e .g. dinē ēdinē [d[↓]i[↓]é[↓]éd[↓]i[↓]è], 19 of Ìkem man 1’s speech e .g. àḡbḡḡhḡ [àḡbḡḡ], 54 of Oḡbunikē man’s speech e .g. bḡkà lḡrì [bòkà l[↓]rì], 63 of Anàkù man’s speech e .g. kwàkḡtálù [kwàkḡtàà] and 53 of Ànam (Ụmùdḡrà/Ụmùzìàm) men’s speech e.g. bḡkà lḡrì [bòkà l[↓]rì]. Another example is in lines 1 & 68 of Ifite Oḡwarì man’s speech , then line 60 of Ụmùmbòḡ woman’s speech e .g. a pā natagḡ [a[↓]páná[↓]ḡḡ]. This can formally be analysed with P-rule as follows:

Rule 45: P-rule analysis of consonant elision

$$\left[\text{Con} \right] \longrightarrow \emptyset / \left[\text{V} \right] \text{ — } \left[\text{V} \right] \#$$

Interpretation: Consonants become deleted in an environment between two vowels at word boundary

Consonant elision that affects the third syllable at medial position of word occurs in lines 27 of Anàkù woman and Umùòlum̄ man's speech e.g. àbùwolu [àb^woolu], 42 of Àgùlerì girl's speech e.g. èdinèwo [èdⁱièwo]. We noticed in many speech communities, consonant elision at initial position where in the pronoun *ya*, the consonant 'y' is deleted leaving only the vowel 'a'. This usually occurs when the pronoun follows a noun or a verb at boundary. Instances of this are found in lines

- 142 11 & 14 of Ntèjè girl's speech e.g. di yā [di^lé]
 21 & 62 of Ogbunike man's speech e.g. wèlù yā [wèl^oá]
 18, 19, 41, 44, 46 & 55 of Anàkù man's speech e.g. nnūy a [n^lnūa]
 55 & 62 of Anàkù woman's speech e.g. àsù yā [às^wuá]
 39 of Ifite Oḡwarì man's speech e.g. akwùkwọ nyā [ak^wo^lo]
 61 of Umùmboō woman's speech e.g. nà-àtù yā [nà^l àt^oá]
 62 of Àgùlerì woman's speech; nà-àtù yā [nà^l àt^oá]
 45 of Ìkem man 1's speech e.g. ndì oḡò ya [ndj^o oḡi a]
 32 of Nsugbè man 1's speech e.g. nà di yā [nà^l di^lé]
 61 of Ànàm (Umùzjàm) man's speech e.g. nà-àtù yā [nà^l àt^oá].

It is also discovered that consonant elision can lead to assimilation (retrogressively or progressively). Examples of where it leads to progressive assimilation are seen in lines

143. 14 of Ntèjè woman's speech; duru yā [dur^wu^lé]
 34 of Anàkù man's speech e.g. ì tinye [ì tii]
 48 of Àgùlerì girl's speech e.g. mụny e [mõi]
 30 and 36 of Ànàm Umùdọrà man's speech, then, 23, 36, 51 & 62 Ànàm Umùzjàm man's speech e.g. akwùkwọ yā [ak^wo^lá].

From these data, the elision of the initial consonant of the pronoun *ya* leads to its remaining vowel *a* being 'forced' to agree in harmony with the final high vowel of the first word. This can be explained with two phonological rules: the deletion rule and feature changing rule.

- i. Palatal approximant becomes deleted in an environment after a high vowel at word boundary followed by another vowel at word final position.
- ii. Vowel 'a' becomes a plus Advanced tongue root vowel or minus Advanced Tongue Root vowel depending on the vowel harmony group of the final vowel of the first word at boundary position.

The rules can formally be stated as follow:

Rule 46: P-rules analysis of elision followed by progressive assimilation

$$\begin{array}{l}
 \text{a. } \left[\begin{array}{l} +\text{son} \\ +\text{cont} \\ -\text{back} \end{array} \right] \longrightarrow \emptyset / \left[\begin{array}{l} \text{V} \\ +\text{high} \end{array} \right] \# \text{ ____ } \left[\text{V} \right] \# \\
 \\
 \text{b. } \left[\begin{array}{l} +\text{syll} \\ -\text{back} \\ +\text{open} \end{array} \right] \longrightarrow \left[\begin{array}{l} \text{V} \\ \alpha+-\text{ATR} \\ - \end{array} \right] / \left[\begin{array}{l} \alpha+-\text{ATR} \\ - \end{array} \right] \# \text{ ____ } \#
 \end{array}$$

It is also evident that there are partial assimilation and complete assimilation. Examples of where consonant elision leads to regressive assimilation are witnessed in lines 1 & 68 of Ìfite Ọgwarì man's speech e.g. apā natagọ nyā [a¹pána¹ɔ¹ja¹], 26 of Ụmùmbò woman's speech e.g. àkago [àkɔɔ]. No instance of consonant elision at word final position was recorded in any of the speech communities. This is probably because Igbo is a no coda language. What our analysis of consonant elision has clearly disclosed is that it can affect any syllable be it the 1st, 2nd, 3rd, 4th or 5th.

From the data, it very clear that vowel elision is very scanty. Its occurrence is perceived in Awkuzu, Ogbunikē, Anàkù and Ìfite Ọgwarì speech communities and it involves elision of vowel of the personal pronoun 'mụ'. This can be found in lines

144. 22 of Awkuzu woman's speech e.g. m̄pa m̄ → [m̄p̄ 1m̄]
 51 of Ogbunikē man's speech eg. ch̄italu m̄ → [t̄ita¹aa¹m̄]
 16 of Anàkù man's speech e.g. àda m̄ [àda 1m̄]
 51 of Ìfite Ọgwarì man's speech e.g. an̄gì m̄ → [a¹gì m̄].

It is only in Ìfite Ọgwarì that we witnessed syllabic nasal elision in lines 63 & 64 of Ìfite Ọgwarì man's speech e.g. zinnē [zi¹nē]. Syllabic nasal elision can formally be explained with P-rule as follows:

Rule 47: P-rule analysis of elision of syllabic nasal

$$\left[\begin{array}{l} +\text{syll} \\ +\text{nasal} \end{array} \right] \longrightarrow \emptyset / \left[\begin{array}{l} +\text{Syll} \\ -\text{Con} \end{array} \right] \text{ ____ } \left[\begin{array}{l} +\text{Consonantal} \\ -\text{Syll} \end{array} \right]$$

Interpretation: Syllabic nasal becomes deleted in an environment before a vowel followed by a consonant.

This can also be analysed using permutation rule as follows:

Rule 48: P-rule analysis of elision of syllabic nasal using permutation

$$\begin{array}{ccc} \text{V} & \left[\begin{array}{l} + \text{syll} \\ + \text{nasal} \end{array} \right] & \text{C} \\ 1 & 2 & 3 \end{array} \longrightarrow \begin{array}{ccc} \text{V} & \emptyset & \text{C} \\ 1 & & 3 \end{array}$$

Syllable elision occurs at word medial and final positions. Syllable elision is perceived at word final position in Awkuzu and Ogbunike⁻ SCs at CVVCV syllable structure as seen in line 14 of Awkuzu boy’s speech; taàni [taà] and line 51 of Ogbunike⁻ man’s speech; taàtà → [taà]. It also affects the second syllable of VCVCV as we noticed in lines

145. 39, 46 and 51 of Ìfite Ọgwarì man’s speech e.g. akwùkwò [ak^wɔ], awùwò [awò] and anīgì mụ [a^lgím]
- 25, 38 and 52 of Umùòlum⁻ man’s speech eg. awùwò [awò] “cunning”
- 30 and 36 of Ụmùmbò woman’s speech e.g akwùkwò [ak^wɔ] “book” and awùwò [awò] “cunning”;
- 24, 30 and 37 of Àgùlerì girl’s speech e.g. osisinwè [osⁱɲwè] “this tree”, awùwò [àwò] “cunning”;
- 17 of Ìkem man 2’s speech e.g. osisinwà [osiɲwà] “this tree”;
- 24 of Ànam Ụmùdọrà man’s speech osisinwè [osⁱɲwè] “this tree”;
- 49 of Ànam Ụmùdọrà/Ụmùziàm men’s speech e.g. àtìtì [àtì] “dirt”.

One important observation from Ìfite Ọgwarì , Ụmùmbò and Àgùlerì data is that this kind of syllable elision sometimes leads to tone assimilation as witnessed in lines 51 of Ìfite Ọgwarì man’s speech e .g. anīgì mụ [a^lgím] “I do not” , 36 of Ụmùmbò woman’s speech ; awùwò [àwò] “cunning” and line 37 of Àgùlerì girl’s speech ; awùwò [àwò] “cunning”. In Ìfite Ọgwarì man’ s speech, after the elision of the syllable /nī/, its tone influences the high tone of the third syllable such that it becomes reduced to a downstep tone , while in Ụmùmbò woman and Àgùlerì girl’s speeches, the syllable /wù/ is deleted but its low tone influences the high tone of the first syllable such that it becomes reduced to a low tone.

The phonological rule analysis of Syllable elision is given below:

Rule 49: P-rule analysis of syllable elision

$$\left[\text{Syllable} \right] \longrightarrow \emptyset / \left[\begin{array}{l} +\text{Syll} \\ -\text{Con} \end{array} \right] \text{ — } \left[\text{Syllable} \right] \#$$

Interpretation: A syllable is deleted between a vowel and another syllable at word boundary.

This can also be analysed using permutation rule e.g.

Rule 50: P-rule analysis of syllable elision using permutations

$$V \begin{matrix} \left[\text{Syllable} \right] \\ 1 \quad 2 \end{matrix} \left[\text{Syllable} \right] \begin{matrix} \\ 3 \end{matrix} \longrightarrow 1 \ \emptyset \ 3 \quad \text{e.g. awùwò [àwò] "cunning"}$$

Syllable elision also occurs at CVCVCV and CVCV syllable structures and it affects the last syllable. This kind of syllable elision usually leads to lengthening of the vowel preceding the elided syllable. Instances of this are perceived in lines

- 146. 26 of Ñtèjè girl's speech e.g. gòtèlù [gòtèè] "bought"
- 51 of Ogbunikē man's speech e.g. chitalu mū [ʃitaam] "bring for me"
- 40, 60 & 61 of Anàkù man's speech e.g. gūtalù [gūtaa] "feel like"
- 12 of Ụmùmboō woman's speech e.g. gòtèlù [gòtèè] "bought"
- 11 of Ànàm Ụmùziàm man's speech e.g. gòtèlù [gòtèè] "bought".

This can be explained with rule ordering involving two rules: syllable deletion and vowel lengthening. The rules are formally stated as:

1. A syllable is deleted at word final position
2. Vowels become lengthened at word final position

These two rules can formerly be represented as follow:

Rule 51: P-rules analysis of consonant elision followed by vowel lengthening

- i. $\left[\text{Syllable} \right] \longrightarrow \emptyset / \begin{matrix} \left[+\text{Syll} \right] \\ \left[-\text{Con} \right] \end{matrix} \text{ ___ \# } \text{ e.g. gòtèlù } \longrightarrow /gòtè/$
- ii. $\begin{matrix} \left[+\text{syll} \right] \\ \left[-\text{Cons} \right] \end{matrix} \longrightarrow \left[\text{lengthened} \right] / \begin{matrix} \left[+\text{Cons} \right] \\ \left[-\text{Syll} \right] \end{matrix} \text{ ___ \# } \text{ e.g. /gòtè/ } \longrightarrow [gòtèè]$

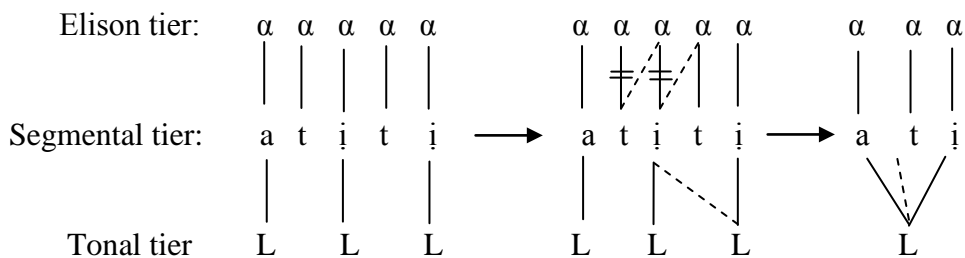
This kind of syllable elision also occurs at VCV syllable structure and it is perceived in line 58 of Ogbunikē man's speech e.g. òbòdò afù → [òbòdàà] "that community". In line 52 of Awkuzu boy's speech, instance of this kind syllable elision was perceived at CVCV syllable structure e.g.

zō̄lu [ˈzoo] “that rained”. We observe that the tone of the final syllable is not deleted with the syllable.

All the four kinds of elision are perceived in Ìfite Ọgwarì speech community only ; Consonant, vowel and syllable elisions are witnessed in Awkuzu and Ogbunikē and Anàkù speech communities; while in Àgùlerì , Ìkem, Ñtèjè, Umùòlun̄, Ụmùmbō and À nam̄ speech communities, we saw consonant and syllable elisions ; and finally , we noticed only consonant elision in our Ñsugbè data.

Syllable elision can be analysed using the AP model. This will enable the issue of tone to also be handled. The analysis is as follows:

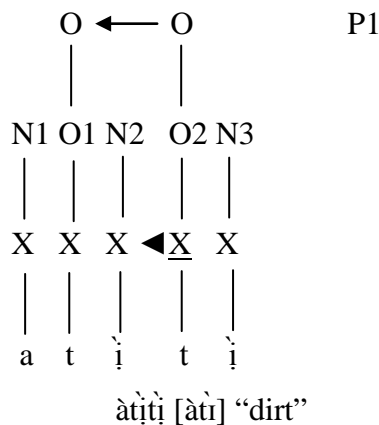
Fig. 5.29 Autosegmental phonology account of syllable elision



In the analysis in figure 5.29, the tone of the second syllable docks to the next tone-bearing unit after the elision of the syllable. Again, in line with OCP of AP, identical elements are realised as one.

Government phonology theory also accounts for syllable elision. This is illustrated below:

Fig. 5.30 Government phonology account of syllable elision



Government phonology analysis of syllable elision in figure 5.30 shows that O2 governs N2 and O1 and have them deleted. However, it first governs N2 which is at adjacency position with it, while O1 then projects to the next level of P1 in order to occupy adjacency position with O2 where it can be governed.

From the foregoing, the generative phonology generated phonological rules and used them to account for elision. The rules are able to provide information which says that at certain environment, a sound or a syllable is deleted or elided. However, just as in other phonological processes and secondary articulatory features, generative phonology requires that a lot of rules would be generated in order to account for elision. The autosegmental phonology has provided a simple analysis of elision process using the association lines and circle around the elided sounds. The government phonology has equally provided a simple analysis of elision and has demonstrated the naturalness of the process. It is able to demonstrate that elision is a product of governor-governee relationship.

5.3.4 Metathesis

Metathesis as a phonological process involves the exchange of the positions of two sounds in speech. An instance of metathesis manifests in line 9 of the speech of Ìkem man 1. This is presented below:

147. Line 9 òsipaka [òsipaka] ‘rice’

The two segments that change positions in the above utterance are the /k/ and /p/. The word was pronounced /òsikapa/ by Ìkem people interviewed, except Ìkem man 1; as seen above. This can formerly be explained with P-rule as presented below:

Rule 52: P-rule analysis of metathesis in Qmambala Igbo

$$V \begin{matrix} \left[\text{Syllable} \right] \\ 1 \quad 2 \end{matrix} \left[\text{Syllable} \right] \begin{matrix} \\ 3 \end{matrix} \# \longrightarrow 1 \ 3 \ 2 \ 4 \quad \text{e.g. } \text{òsikapa} \longrightarrow [\text{òsipaka}] \text{ ‘rice’}$$

It is only the generative phonology that has comfortably been used to account for metathesis. None of the other two theories could be used to explain the phenomenon.

5.3.5 Insertion

Insertion occurs in some of the speech communities investigated. It involves the syllabic nasal, vowel and consonant and its essence is for easy pronunciation of the words. Some of the data

presented by different scholars (including Emenanjo, 2015) under epenthesis can still be discussed under insertion. Consonant insertion is scanty among the speech communities. It occurs mostly at word initial position with affixation of syllabic nasal to a word. Examples can be seen from the table below:

Table 5.2 Consonant insertion in some speech communities of Ọmambāla

Respondent	Lines	Canonical form	After insertion	Gloss
Awkuzu girl	60.	nwa	[ŋŋ ^w á]	child
Ogbunikē man	48&65.	nwa	[ŋŋ ^w á]	child
Àgùlerì woman	65.	nwa àvụ	[ŋŋ ^w á àvụ]	that baby
Àa m̄ (Ụmụdọrà) man	47.	nwa ànwa	[ŋŋ ^w áàn ^w á]	that child
Ụmụmboō woman	64.	ña yā	[ŋŋī [↓] á]	his/her baby

From the data in table 5.2, it is clear that the inserted consonant is at word initial position and once inserted, it serves as syllabic nasal and carries tone. Insertion of vowel occurs at word medial position. The vowel that is inserted usually would have the same quality as the vowel adjacent to it. Instances of this are witnessed in the following speech communities:

Table 5.3: Vowel insertion in the speech communities of Ọmambāla

Respondent	Lines	Canonical form	After insertion	Gloss
Àgùlerì girl	42.	bèdì	[beèdì]	bed
Àa m̄ Ụmụdọrà	43.	m̄bà nà	[m̄baàná]	thank you
Ñtèjè man	3.	vilē jì	[vi [↓] léèd̄jì]	village
Awkuzu woman	43.	ọsịsọ	[ɔsɪ [↓] ɪsɔ]	immediately
Ogbunikē man	34.	ndụfụ nwaànwa	[ndof̄f̄ ɲwāàn ^w á]	immediately
Umùòlùm̄ man	44.	Jizōsì	[d̄jì [↓] z̄ɔs̄ɪ]	Jesus

There are perceived instances of vowel insertion in all the speech communities. It occurs at word medial and final positions. Examples are seen in line 43 of Àa m̄ Ụmụdọrà man’s speech e .g. [m̄bà^ánà] “thank you”, in Ñtèjè man’s speech in line 3 e.g. [vi[↓]léèd̄jì] “village”. There is even insertion on the name of Ñtèjè community at the medial position e .g. [ñtèjè]. Cases of insertion are also witnessed in line 34 of Ogbunikē man’s speech e.g. [ndof̄f̄ ɲwāàn^wá] “immediately”. Our data show that the inserted vowels are sometimes not realized at the same pitch with the vowel adjacent to them.

This can formerly be explained with P-rule. The P-rule analysis of insertion is presented below:

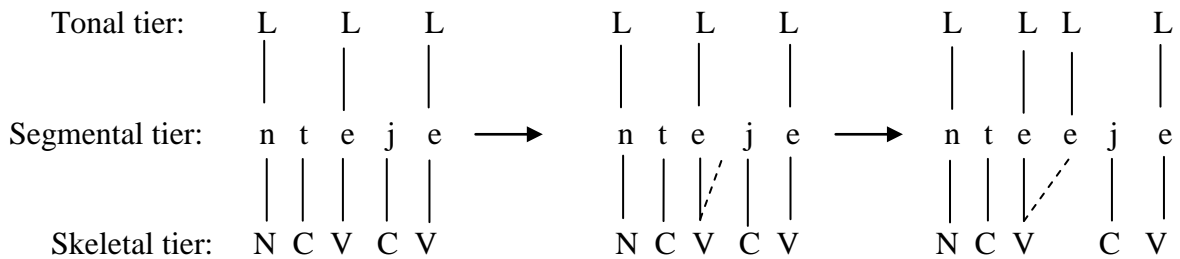
Rule 53. P-rule analysis of insertion in Ọmambala Igbo

$$\emptyset \longrightarrow \left[\begin{array}{c} \alpha \text{ syll} \\ - \text{ Con} \end{array} \right] / \left[\begin{array}{c} \alpha \text{ syll} \\ - \text{ Con} \end{array} \right] \text{ --- } \left[\begin{array}{c} + \text{ Con} \end{array} \right] \quad \text{Ntèjè} \text{ [ntèèjè]}$$

Interpretation: This rule is interpreted to mean that a vowel is inserted between a vowel of the same quality and a consonant.

Insertion can also be explained using autosegmental phonology analysis. This is illustrated below:

Fig. 5.31 Autosegmental phonology account of insertion



In this analysis, column two shows that a new association line branches from the association line of the second syllable leading to introduction of another segment before the following consonant. Column three shows that the introduced segment is a vowel that has the same quality as vowel before it.

It is only the generative phonology and autosegmental phonology that could be used comfortably to account for insertion. The analysis using the autosegmental phonology could, however, be said to be simpler.

5.3.6 Vowel harmony rule violation and obedience

Igbo, the rule of vowel harmony provides that for the formation of simple words, the vowels must be from the same harmonic set. Our data show that there is VH rule violation at CVNVCV, CVCVCV, CVCV, VCVCV and VCVCVCV syllable structures in some of the speech communities investigated where vowels of the two VH groups, [+ATR] and [-ATR], are combined. The violation is found in:

148 a. Àgùlerì woman’s speech in lines

12 ègotawo [ègotawo], 30 sūwo [↓s’ówo], 66. kèdu [kèd^wo]

b. Àgùlerì girl's speech in lines

30 sūwo [^lsúwo], 44 avele [avele], 52 jèlì [jèlì], 65 kèdù? [kèd^wo?]

c. Ìkem man 1's speech in lines

9 ō sipaka [^lósipaka], 20 kelì [kelì], 25 èbugelì [èbugelì],
32 enwē rọ [e^lηwérọ], 33 nwē lụ [^lηwélụ], 34 bụgèèlì [bùgèèlì],
46 ebuga [èbuga],

d. Ìnsugbè man 2's speech in lines

6. jèbèlù [dʒèbèl^wù], 7 tèlù [tèl^wù], 8 kèdù [kèd^wù], 17. ejerọ [edʒerọ],
26. èmezì [èmezì]

e. Ànà ìm (Umùzjàm) man's speech in lines

7 kèrì? [kèrì], 50 kpòtelụ m [kpòtelụ^lm], 52 jèlù [ɔjèl^wù],

f. Anàkù man's speech in lines

5 nèlù [nèlù], 17 kọwakwue [kọwakwue], 30 nwèchàlì [nɔwèʃàlì],
32. mē lị [^lmélì], 51 nugo [nugo]

g. Anàkù woman's speech in lines

6 jèlì [dʒèlì], 8 tèlì [tèlì], 37 dinta [din^ltá], 51 mụny e [mùnyɛ],
53. kpòtelụ [kpòtelụ]

h. Anàkù youth's speech in lines

2. nērọ [^lηérọ], 5 àkwagodu [àkwagod^wu], 14 gbagide [gbagide],

i. Umùòlum̄ man's speech in lines

7 tèlù [tèl^wù], 27 àbụwolu [àb^woolu], 37 dinta [din^ltá], 53 wètalụ m̄ [wètalụ^lm̄].

j. Umùmbòò woman's speech in lines

6 jèlì [dʒèlì], 48 -àñulide [àñulide],

k. Ntèjè man's speech in lines

6 àbụlụgwokwo [àbùlùgwokwa], 6 ābọ̀udo [^lábu^lúdo],
7 afūozikwu [a^lf^wɔzikwu], 20 dehasia [deʃas^laa], 20 tesia [tes^laa]

l. Ntèjè girl's speech in lines

10 èdunata [èdunãtã], 42 àsugwo [àsugwo], 55 àlarugwo [àlarugwo],

m. Awkuzu boy's speech in lines

24 ēmero[[↓]émēɔ], 31 sugwo [sugwo], 59 ghā rībagwo[[↓]Yá[↓]rība gwo]

n. Ogbunikē man's speech in lines

18 ējerō[[↓]édžerɔ], 30 sūgwo [[↓]sūgwo], 43 ànabàgwo [ànabàgwo], 49 m̀ny e
[m̀nyɛ], 66 kèdu [kèdu]

The above are examples of violation in single words. This violation is observed to have occurred in words with expanded verb roots. It is discovered that assimilation (including regressive, progressive and coalescent) leads to VH rule violation in some cases. Instances of this are noticed in lines 17 & 18 of Nsugbe man 2's speech where regressive assimilation makes the vowels not to agree in harmony.

149. Nsugbe man 2's speech in lines

17. ànyì agā-ejerō [àɲ[↓]ia a[↓]gé edžerɔ] 'we will not go'

18. b̀jaebe à [b̀[↓]ie eba à] 'come here'

VH rule violation caused by assimilation is also witnessed in the following speech communities:

150 a. Àn m̀ (Um̀uziam) man's speech in lines

4 jèvèè avia [džèvèà avia], 13 àgwa òbòro [àgwo òbòrò], 24 nsògbu anyì [nsògb^wa aɲi], 26 onye alā [oɲa a[↓]lã], 27 n'ogè ùgànì [noogò ù gànì], 28 ēgbugwo agwō [[↓]égbugwa a[↓]gwó], 30 àb̀ia echī [àb̀[↓]iee[↓]ɲi], 38 àza ŋlo [àzi [↓]llo], 46 nà-èli azù [ɔnè èl[↓]ia azù], 48 t̀nye ọk̀uukpē [t̀ɲɔ ọku u[↓]kpe], 51 & 62 nà-èje aakwō [nè èdžã a akwɔ], 58 nà-èli ụjū [nè èl[↓]o ɔ[↓]džú], 67 onye Um̀uziam Àn m̀ [oɲɔ ɔm̀uziam ànãm]

b. Um̀òlum̄ man's speech in lines

14 ibē ānyì [i[↓]bã [↓]ɲɲi], 29 n'ogè aguū [noogà agɔ[↓]u], 31 s̀l̀l̀ù èvè akwō [s̀l̀^wè èvã akwɔ], 35 wète ya[wètr[↓]ã], 56 nnekwuavīa [nnekwa a[↓]v[↓]ia], 63 èje akẁukwō [èdžã akwɔ].

c. Awkuzu woman's speech in lines

2 àkō obelē [àko obe[↓]lé], 5 ego ọrà [egɔ̀ rã], 11 ebe àv̀u [eba àv̀u], 13 ād̀òò ebee[adeè ebeè]

d. Awkuzu boy's speech in lines

3 ebe àvụ [eba àvɔ], 7 jèbèè avia [dʒèbàà avia], 15 àgwa òbòdò [àgwo òbòdò], 31 èvè akwùkwọ [èvè akwùkwɔ], 37 onye àvụ [oɲā àvɔ], 38 yà-àbja echī [jà àbʲee eʲtʃī], 43 evele àvụ [evela àvɔ], 58 nà-èje akwùkwọ [nèʲèdʒa aɔkwɔ], 60 nà-èbe akwā [nèʲ èba àkwá]

e. Ntèjè man's speech in lines

6 àbùlùgwokwo ābōūdo [àbɔlɔgwokwa ʲábuʲúdo], 8 ūdo òfuma [ʲúdoò fomā], 9 n'ivé [nīivi i], 17 ogē à [oʲgá à]

f. Ntèjè girl's speech in lines

3 onye avūnū [oɲā aʲvɔnʊ̄], 14 n'ime ɔmūnnē [nīimō ɔmōnʲné], 23 ebē i bụ? [eʲbíi bò], 28 igwe ānyị [igwa ʲájɪ], 28 òbòdo ānyị [òbòdaʲájɪ], 40 onye alā [oɲā aʲlá], 41 ēgbugwo agwọ [ʲégbugwa agwɔ], 49 yà-àja echī [jà àdʒe eʲtʃī], 57 evele àvụ [evela àvɔ]

g. Ogbunikē man's speech in lines

3 ebē à [eʲbá à], 14 òbòdo ānyị [òbòdo ʲájɪ] 16 okwū ānyị [oʲkwá ʲájɪ], 27 onye ala [oɲā ala], 28 n'ogē ùgàñ [nōōʲgú ùgàñ], 29. egbugwo agwọ [egbugwa agwɔ], 38 yà-àbja echi [jà àbʲee eʲtʃī], 52 nà-èje akwùkwọ [nèʲèdʒa aɔkwɔ], 58 òbòdò afù [òbòdàaà],

h. Anàkù man's speech in lines

1 avā Ìgbò m [aʲví ìgbò m], 2 onye Anàkù [oɲa anàkù], 5. ùsòlò Anàkù [ùsòlà anàkɔ], 7 ele anyị [ela aɲɪ], 9 ibē āyị [ibá ájɪ], 15 n'eri ọrò [neerʲòò rò], 16 gà-èbu urò [gè èbɔ urò], 17 onye ọ bụ [oɲɔ ɔ bù], 20 kowaa ive [kɔwii ive], 20 bụlō ijē ọyì [bɔʲlí iʲdʒòò jì], 30 ive ayị [iva aɲɪ], 30 nwèchàlì ive [ɲwèʃàlì ive], 34 mbọsì unū [mbòsɔ uʲnú], 37 irū bì ọnu [iʲrúbʲòò nɔ] 38 gà-èjì ọjì [gè edʒʲòò ʲdʒɪ], 40 n'ibe ānyị [niiba ʲájɪ], 44 ọgụ Ìse [ɔgi ʲíse], 46. òvu àkpà ego [òvʷu àkpè eʲgò], 52 sòosọ ego [sòosɛ ego], 62. ive ọdọ [ivɔ ʲòdɔ], 64. nà ele Anàkù [nè elà anàkɔ]

i. Anàkù woman's speech in lines

1 onye Anàkù [oɲa anàkù], 8 ubī ānyị [uʲbʲá ʲájɪ], 19 ànyị ejēkọ [àɲʲe eʲdʒéko], 28. yìba ìgìlì [jìbi ìgìlì], 30 àyị ètigbuwo agwọ [àje etigbuwa agwɔ], 39 gà-àbja echī [gà àbʲee eʲtʃī], 40 m̄ bala ēzi [ʲmbale ʲézi], 44 onye ọbùlā [oɲɔ ʲòbulà], 47 sàchaa evele [sàʃʲee evele], 51 ọ kụ ùtùkpè [ɔku ùtùkpè], 54 ọlụ ugbō [ɔlu uʲgbó], 59 òbòdo à [òbòdaà], 63 nà-èje akwùkwọ [nèʲ èdʒa aɔkwɔ]

j. Anàkù youth's speech in lines

11 obele ọvọ [obelɔ ʲòvɔ], 15 gbanààra egbè [gbanààre egbè], 16. onye ọbùlā [oɲɔ ɔbuʲlá], 16 nà onye àvụ [nò oɲa àvɔ], 16 kụrụ egwu [kɔrʷe egwu]

k. Ìfite Ọgwarì man's speech in lines

37 n'ogē ùgàní [nõʃgúò gàñ], 40. òku ụla [òkuula], 47. kà-àbija echī [kà àbʲee eʃí], 56 nà-èli azì [nè̃ ɛ̃a azì], 60 nà-èje akwọ [nè̃ ɛ̃dʒa akwọ], 63 & 64 zinnē āyì [ziʲnā́ ʲájì], 68 apānātòọ ozu[aʲpáʲnátòò oʲzú], 72 nà-èje ùkì ta [nè̃ ɛ̃dʒo òkòtá 74 kàliri iye í? [kàlirí iji í?]

l. Ụmụmboō woman's speech in lines

15 ebe à [eba à], 30 èvè akwọā [èvà akwíʲá], 37 ga-abija echī [ga abʲee eʃí], 47 nà-èri arì [nè̃ ɛ̃rʲa arì], 52 nà-èje akwọ [nè̃ ɛ̃dʒa akwọ], 55 n'ebe ānyì [ne eba ʲányì], 59 òbòrōā nyì [òbòra ʲányì]

m. Àgùlerì woman's speech in lines

7 ibe ānyì [iba ʲányì], 14, 58 & 59 òbòdo ānyì [òbòda ʲányì], 29 ēgbuwo agwọ [ʲégbuwa agwọ], 38 yà-àbija echī [jà àbʲee eʃí], 47 nà-èri azù [nè̃ ɛ̃rʲa azù], 52 èje akwùkwọ [ɛ̃dʒa aukwọ], 54 ọlụ ubì [olu ubì], 55 nnekwu avīā [nnekwaa ʲvīʲá],

n. Àgùlerì girl's speech in lines

9 ebe ịhì ? [ebi ɪbù?], 14 yà-àgwa òbòdò [jà agwo òbòdò], 29 va ēgbuwo agwọ [ve ʲégbuwa agwọ], 38 yà-àbija echī [va jà àbʲee eʃí], 39 ama òbòdò [amo òbòdò], 46 nà-èli azù [nè̃ ɛ̃rʲa azù], 51 èje akwùkwọ [ɛ̃dʒa aukwọ], 54 nnekwu avīā [nnekwa aʲvīʲá], 57 & 58 òbòdo ānyì [òbòda ʲányì]

o. Ìkem man 1's speech in lines

2 būrọ ive ... sùba oyibo [ʲbóri ive ... subo ojibo], 6 zùba òkwòkwòlikwō [zobo òkwòkwòliʲkwó], 8 mgbèdè anàsì [mgbèdà anàsì], 10 gote ụmù ive , ...na-èle [gote umì ive , ...ne èle], 11. ọnụ egō a yàvà èle yā [one eʲgá a jàvè èli ʲé], 11 ego àyòlò [ega àyòlò], 13 ụm ụ ulùulu ụmù òkolobìà [omu ulùulo omò òkolobia], 14 àrì ibe ya [àrì ibi e], 20 onye ọ [onɔ ɔ], 22 va ēlikpùwo ākwālī [ve ʲélikpùwa ʲákwáʲlì], 27 ive ọnwá [ivɔ ɔ ɲwá] 28 elikpùzie ọnwá [elikpùzì ɔ ɔ ɲwá], 28 nā-ēbugo àmànwùlù [ʲné ʲébuga àmànɲwòlò], 29 bulidezie àmànwùlù [bulidezʲaa àmànɲwòlò], 29 ovu ọnwā [ovʷɔ ɔʲɲwá], 36 ọnwá isè [ɔɲwi isè], 50 ọnwá evù [ɔɲwe evù]

Where a word originally violates the VH rule, assimilation sometimes leads to obedience to the VH rule. Instances of this occurrence are witnessed in the speech communities studied. Examples are seen in:

151 a. Àgùlerì woman's speech in lines 30 sūwo àvè [ʲsúwa àvè], 66 kèdụ ive í [kèdi ivi í]

b. Àgùlerì girl's speech in lines 30 sūwo àvè [ʲsúwa àvè], 52 jèlì ikùte [jèlì iʲkúte]

c. Ìkem man 1's speech in lines

32 nā-enwē rọ ive [ʲné eʲɲwéri ive], 33 nwē lụ ive [ɲwéli ive], 46 èbuga ive [èbugi ive]

d. *Ànà m̀* (Um̀uziàm) man's speech in lines

5 jèlì ubì [dʒèlù ubì], 12 òtè Ānàm [òtə ʼánàm], 9 nà-èje [nè èje], 10 yà-èti [jè èti],
17 yā-ējerɔ [jé ʼédʒerɔ], 26 nà-ème [nè ème]

e. Ntèjè man's speech in line 20 e.g. tesija uyē [tesʼuu uʼjé]

f. Ntèjè girl's speech, lines 42 àsugwo akwà [àsugwa akwà], 55 àlarugwo ulā [àlarugwo uʼlā],

g. Awkuzu boy's speech in line 59 e.g. ghā rībagwo āzū [ʼghāʼrībagwa ʼáʼzú],

h. Ogbunike man's speech in lines

30 sūgwo àfè akwukwò [ʼsúgwa àfè], 30 àfè akwukwò [àfà akwókwo], 43 ànabàgwo ūla
[ànabàgwo ʼula], 49 m̀ny e oku [m̀nyɔ oku], 66 kèdù ife [kèdi ife]

i. Anàkù man's speech in line 5 ǹl̀l̀l̀l̀l̀l̀l̀ [ǹl̀l̀l̀l̀l̀l̀l̀l̀l̀]

j. Anàkù woman's speech, lines 7 jèlì ubì [dʒèlì ubì], 51 m̀ny e oku [m̀nyɔ oku]

m. Anàkù youth's speech, lines 2 ǹr̀r̀ ego [ǹjèr̀ ego], 14 gbagide akwā [gbagida akwá]

n. Um̀umboō woman's speech in lines 6 jèlì ubì [dʒèlì ubì], 48 ǹl̀l̀l̀l̀l̀l̀l̀ [dʒèlì ubì]

The Igbo SI morphemes *na* whether as a preposition and as an auxiliary verb, the future morphemes *ga-*, *ya-*, *ka-* and *ma-*, and the third person pronoun *ha/va* agree in harmony with initial vowel of the second word.

152 a. *Ànà m̀* (Um̀uziàm) man's speech in lines:

9 nà-èje [nè èje], 10 yà-èti [jè èti], 17 yā-ējerɔ [jé ʼédʒerɔ], 26 nà-ème [nè ème],
27 n'ogē ù g̀ǹ [ǹɔ ʼgé ʼg̀ǹ], 46 nà-èli [nè èli]

b. Um̀òlum̄ man's speech in line 29 n'ogè aguū [ǹɔgà agú],

c. Awkuzu woman's speech in lines:

4 yà-ème [jè èmè], 6 nà-èyesi [nè èjesi], 7 yà-ègo [jè ègo], 8 yà-èinye [jè ètii]

d. Awkuzu boy's speech in lines:

38 yà-àbija echī [jà àbʼije eʼfɪ], 58 nà-èje akwukwò [nè ʼèdʒa aukwɔ], 60 nà-èbe akwā
[nè ʼèba aʼkwá]

e. Ntèjè man's speech in lines 9 n'ive i [ǹɪvi i], 13 yà-èbu [jè èbu], 26 na-ète [nè ète]

f. Ntèjè girl's speech in lines:

1 nà-èje [nè èdʒe], 7 yà-èbutekwu [jè èbutekʷu], 14 n'ime um̀unnē [ǹim̄ òm̄n̄né],
24 nà-èwu [nè èwu], 49 yà-àja echī [jà àdʒe eʼfɪ]

g. Ogbunike man's speech in lines

10 nà-èsi [nẽ èsi], 18 mā-ē jerò [mẽ éđjerò], 28 n'ogē ùgàní [nõó'gú ùgàní], 29 fa egbugwo [fe egbugwo], 38 yà-àbija echi [jà àb'ee e'fí], 52 nà-èje akwukwo [nè'èđza akwò]

h. Anàkù man's speech in lines:

10&42 nà-ekù [nẽ ekù], 12 nà-ème [nẽ èmẽ], 15 n'eri òrò [nẽer'òò rò], 16 gà-èbu urò [gè èbu urò], gà-ejì ojì [gè edz'òò 'dži], 25 nà ijē nì [nì i'dzèní], 25 kà ì bja [kì i b'aa], 32 nà unù [nũ unũ], 40 n'ibe ā yì [niiba 'áji], 41 gà-edu [gè edu], 59 kà unū nàème [kù u'nũ nẽ ème], 64. nà ele Anàkù [nè ela anàkù]

i. Anàkù woman's speech in lines:

10 kà ì bụ [kì i bò], 11 nà-èwu [nẽ èwu], 12 gà-èti [gè èti], 39 gà-àbija echì [gà àb'ee e'fí], 63 nà-èje [nè èđze]

j. Anàkù youth's speech in lines:

13 na-èti ...na-esò yā [ne èti...ne e'sí 'é], 16 nà onye àvù [nõ onã àvò]

k. Ìfite Ogwari man's speech in lines:

6 na one kà I [nõ onẽ kì i], 20 kà èti [kè èti], 36 nà-ème [nẽ èmẽ], 37 n'ogē ùgàní [nõ'gúò gàn'è], 47. kà-àbija echì [kà àb'ee e'fí], 56 nà-èli azì [nè'è òa azì], 60 nà-èje akwò [nè'èđza akwò], 72 nà-èje ùkù ta [nè'èđzò 'òkùtá]

l. Ùmùmboò woman's speech in lines:

10 nà-èwu [nẽ èwu], 11 gà-èti [gè èti], 13 nà-èli [nẽ èli], 37 ga-abija echì [ga ab'ee e'fí], 47 nà-èri arì [nè èr'a arì], 52 nà-èje akwò [nè èđza akwò], 55 n'ebe ānyì [ne eba 'áji], 65 kà ì [kì i]

m. Àgùlerì woman's speech in lines:

10 nà-èwu [nẽ èwu], 13 nà-èli [nẽ èli], 38 yà-àbija echì [jà àb'ee e'fí], 45 kà ì [kì i], 47 nà-èri azù [nè èr'a azù], 53 kà o [kò o]

n. Àgùlerì girl's speech in lines:

14 yà-àgwa òbòdò [jà agwo òbòdò], 15 kà ì [kì i], 29 va ēgbuwo agwò [ve 'égbuwa agwò], 38 yà-àbija echì [va jà àb'ee e'fí], 46 nà-èli azù [nè èl'a azù]

o. Ìkem man 1's speech in lines:

1. kà ì yà-ejì [kì i jè edzì], 3 na-ebido [nè ebido], 8 va ekposieli [ve èkposieli], 24 nà-ème [nè ème], 25 na-ègbu [ne ègbu], 25 na-èbugelì [ne èbugel'ì], 26 nà o [nò o],

27 na-èkwu [ne èkwu], 30 kà i yà-èbu [kì i jè èbu], 32 nā-enwē rọ ive [^lné e^lɲwéri ive],
 34 nà i bùgèèlì [nì i bùgèèlì] 36 yā-ē so ya [^ljé ^lési e], 46 yà-èbuga ive [jè èbugi ive],
 49 nà ọgọ ya [n̄ɔɔ ḡi a], 50 kà ọ gà-èmekpu yā [k̄ɔɔ ḡè èmekpi ^lé],

The above instances of vowel harmony violation and obedience, with exception of the first, can be explained with the same analysis done on regressive assimilation using generative phonology, autosegmental phonology and government phonology theories. What this suggests is that vowel harmony violation and obedience in speech most cases occur as a result of regressive assimilation.

5.3.7 Tone issues in Omambala varieties

Tone has extensively been discussed in Igbo literature. Therefore, this study will not dwell so much on tone. However, it is good to note that three tones exist in all the speech communities studied and they are phonemic: high tone, low tone and down step tone. There are sequences of high high, high low, high down-step, low low and low high tones. There is no low down-step sequence and, just as in SI, down-step tone does not begin a word Omambala except in associative construction e.g. Àgùlerì girl's speech in line 29 *va ēgbuwo agwọ* [ve ^légbuwa agwọ]. Some observations on tone from analysis of our data shall be highlighted as follows:

- i. Role of tone in labialisation and palatalisation: Analysis of our data reveals that tone plays important role in determining whether a high vowel would assimilate features of vowel following it after causing a preceding consonant to be labialised or palatalised. When a high back rounded vowel and the vowel coming after it do not have the same tone, the high vowel 'u/ɯ' does not assimilate the vowel following it after making the preceding consonant to be labialised. Instances of this are seen in Anàkù man's speech in lines 23 jùọ [dʒ^wɔɔ], 36 rùọ [r^wɔɔ], Ìkem man 1's speech in line 36 and 37 àlò ìmmụō [àlò ìmm^wō^lɔ]. When the high back rounded vowel and the vowel following it have the same quality of tone as in Anàkù man's speech in lines 14 tolue [tol^wee], 16 ɲi a [dʒ^waa], Umùòlum̄ man's speech in lines 18 mènɲualu m̄ [mèn^wãalɔ^lm̄], 27 àbụwolu [àb^woolu], Ìfite Ọgwarì man's speech in line 38 ègbuo [ègb^woo], Ìkem man 1's speech in lines 19 ụmùàgbò [um^wã^làgbò], the high vowel easily assimilates the vowel next to it but that is after making the consonant sound before it to be labialised. Similarly, when a high front vowel and the vowel coming after do not have the same tone as in line 27 of Ìfite Ọgwarì man's speech and line 19 of Ụmùmboō woman's speech e.g. *b̄ià* [b̄ià] "come", the high vowel 'i' does not assimilate to the vowel following it after making the preceding consonant to be palatalised, but when the high front vowel and the vowel it precedes have the same tone as in line 16 of Ụmùòlum̄ man's speech *b̄ià* [b̄ià],

line 17, 41, 42, 44 & 61 of Nsugbe man 1’s speech *àbìà* [àb^haa], lines 16, 19 of Ìkem man 1’s speech e.g. *dòbasìà* [dòbas^haa], the high vowel easily assimilates to the vowel next to it after making the preceding consonant to be palatalised.

- ii. Syllable elision leads to tone assimilation as witnessed in lines 51 of Ìfite Oḡwarì man’s speech e.g. *anīgì mụ* [a^hgím] “I do not” , 36 of Ụmụ̀mboō woman’s speech ; *awùwò* [àwò] “cunning” and line 37 of Àḡùlerì girl’s speech; *awùwò* [àwò] “cunning”.
- iii. The tones combination in Igbo translation of the English word *breast* differs among the speech communities. Àḡùlerì, Ñsugbè, Ìkem, Ànà m̄, Ntèjè, Awkuzu and Ogbunikē have a high high combination while Anàkù, Ụmụ̀mboō, Ụmụ̀òluṃ and Ìfite Oḡwarì have a high down-step combination e.g.

153.	Àḡùlerì group	Anàkù group
	ala	alā ‘breast

- iv. Tone gliding: There are instances of gliding tone in the data from the speech communities investigated. This occurs as a result of extra vowel of the same quality following a preceding vowel (Emenanjo, 2015:111) or a result of an orthographic convention involving graphological elision (Mbah and Mbah, 2010:119). Gliding tone as witnessed in the speech communities is not phonemic, but rather a phonetic feature. Tables below show examples of gliding tone from the speech communities investigated:

Gliding tone in Àḡùlerì, Ìkem and Ñsugbè speech communities

Table 5.4: Gliding tone in Àḡùlerì speech community

Respondent	Lines	Before glide	Glide	Gloss
Àḡùlerì woman	3.	neèvu	[névu]	there
	4.	nòḡnwa	[nòḡwa]	here
	13,14,15.	taàni	[tāni]	today
	13.	ji ọvụṃ	[dʒ ^h ɔv ^h o]	“new yam
Àḡùlerì girl	3.	neèvu	[névu]	there
	26.	duū ru	[du ^h úru]	old
	42.	beèdì	[bé dì]	bed
	43.	deèje	[dé dʒe]	thank you
	55.	taànḡwà	[tānḡwà]	today

Table 5.5: Gliding tone in Ìkem speech community

Respondent	Lines	Before glide	Glide	Gloss
Ìkem man 1	7&18.	ulùulu	[ulǔ lǔ]	very little
	27.	nòò	[nô]	that it is
	30.	izù naasā̀à	[izù naa ¹ sáà]	it is one month
	33.	duùrù	[dú rǔ]	old person
Ìkem man 2	3.	neèvu	[névu]	there
	10&47.	taàni	[tâni]	today
	12.	nòonwa	[nôŋwa]	here
	53.	h̄h̄òò	[ŋŋô]	this one

Table 5.6: Gliding tone in Ñsugbè speech community

Respondent	Lines	Before glide	After Glide	Gloss
Ñsugbè man 1	22&34.	nweè	[ŋwê]	that
	18&52.	wèe je	[wě dʒɛ]	to go
	22&34.	nweè	[ŋwê]	that
	22&38.	òsìgàrèti	[òsìgàrèti]	cigarette
	26.	weèta	[wê ta]	if you bring out
	28.	agbòò	[agbô]	young girl
	42.	kwaàta	[kwa ¹ t]	bring out
	61.	nwunyèe dī	[ŋwuně ¹ dī]	co-wife
Ñsugbè man 2	9.	èbee?	[èbe ¹ é?]	where
	12,13,54	taàtà	[tá tǎ]	today
	12.	ovūū	[ovó ¹ ú]	new
	16,47	jèe	[dʒě]	go
	22.	kpaà	[kpá]	no
	32, 34	mèe	[mè]	do
	31, 32	katàà	[ka ¹ táà]	now
	55.	aròonunwa	[a ¹ ròonunwa]	this year

Gliding tone in speech communities of Anambra West LGA

Table 5.7: Gliding tone in Ànám speech community

Respondent	Lines	Before glide	Glide	Gloss
Ànám (Umùdòrà) man	13,14,54.	taàtà	[ta̠tà]	today
	17.	jèè	[dʒɛ̠]	go
	23.	kpaà	[kpa̠]	no
	26.	duùrù	[du̠rù]	old person
	29.	agwọ nwaà.	[agwọ ɲwâ]	the snake
	32, 33.	nnìì	[nn̠ì]	now
	43.	m̠baànà	[m̠da̠nà]	thank you
	51.	m̠bòsì nīne	[m̠bòsì ni̠ne]	everyday
	59.	ozu nweè	[ozu ɲwê]	the corpse
Ànám (Umùziàm) Man	12,54&55.	taàta	[ta̠ta]	today
	25.	duùrù	[d ^w u̠r ^w ù]	old person
	29.	jèè	[dʒɛ̠]	go
	31.	m̠èè nyā n̠n̠ìì	[m̠e̠n̠já n̠n̠ì]	do it now
	43.	m̠baànà	[m̠la̠nà]	thank you
	51.	nīne	[ni̠ne]	all
	56.	arù nwaà	[arùɲ ^w a̠]	this year

Gliding tone in Ntèjè, Awkuzu and Ogbunike speech communities

Table 5.8: Gliding tone in Ntèjè speech community

Respondent	Lines	Before glide	Glide	Gloss
Ntèjè man	22&26.	nwaànyà	[ɲ ^w a̠n̠j̠]	woman
	27.	taàni	[ta̠ni]	today
	37.	osisiì	[os̠is̠i̠]	tree
	39.	duùrù	[du̠rù]	old person

Table 5.9: Gliding tone in in tone in Awkuzu speech community

Respondent	Lines	Before glide	Glide	Gloss
Awkuzu woman		nīne	[ni̠ne]	all
Awkuzu man	52.	taànunwà	[ta̠n̠ɲ ^w a̠]	today

Table 5.10: Gliding tone in tone in Ogbunikē speech community

Respondent	Lines	Before glide	Glide	Gloss
Ogbunikē man	14.	taànụ	[táńo]	today
	15.	taàtà	[tátà]	today

Gliding tone in Anàkù, Umùòlum̄, Ìfite Ọgwarì and Ụmù̀mbō speech communities

Table 5.11: Gliding tone in tone in Anàkù speech community

Respondent	Lines	Before glide	Glide	Gloss
Anàkùm an	61.	ìì nụgo nwunyè	[í nũgo ŋ ^w unè]	you have married
Anàkù woman	24.	kpaà	[kpa]	no
	27.	nnà m àbuolu duùrù	[nnà m àb ^w oolu d ^w ú ^w ù]	my father is old
	31.	ọọ chụwọ	[ô f̄owọ]	s/he has washed
	32.	jèe	[d̄ʒě]	go
	33,34&35	kàanàa	[kǎ nǎ]	now
	34&35	mèe	[mē]	do
	36.	eleèni m jì gwa gī	[elé ni n d̄ʒi g ^w a [↓] gí]	as I said
	45.	àbọọlụ	[àb̄d̄l̄o]	has gone to bed
	46.	deèje	[d̄é d̄ʒe]	thank you
	60.	aàpanatawọ	[á panatawọ]	they have brought
61.	nnọọ	[ŋ̄n̄ô]	this one	
Anàkù youth	12.	ò wèlụ wèe	[ò wèl̄o w̄e]	she/he will use it
	15.	siisì	[s̄í s̄ì]	six

Table 5.12: Gliding tone in tine in Ụmù̀òlum̄ speech community

Respondent	Lines	Before glide	Glide	Gloss
Umù̀òlum̄ man	4 & 20.	nọọna	[nôna]	here
	36.	mèelụ	[mēl̄o]	do
	44 & 63.	Nine	ni [↓] ine]	all
	46.	Deèje	[d̄é d̄ʒe]	thank you
	47.	jèe sàa	[d̄ʒēsá]	go and wash
	27.	nọọ	[n̄ô]	that it is

Table 5.13: Gliding tone in tone in Ìfite Ọgwarì speech community

Respondent	lines	Before glide	Glide	Gloss
Ìfite Ọgwarì man	13.	m̃b ñu	[m̃b ñu]	here
	14.	m̃b ē	[m̃b ↓é]	here
	31.	kpaà	[kpã]	no
	33.	osi ñu	[osiñ]	this tree
	39.	ø sh̃u	[ô sh̃ ^w u]	s/he has washed
	40.	jèere	[d̃z̃ere]	go

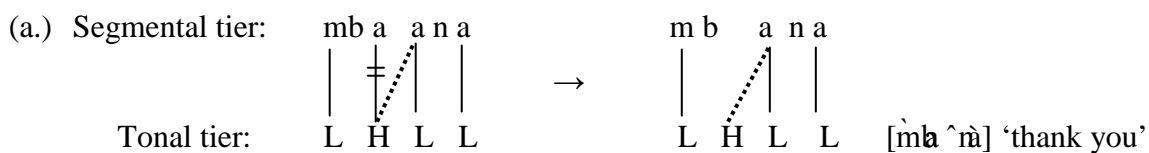
Table 5.14: Gliding tone in tone in Ụmụmboō speech community

Respondent	lines	Before glide	Glide	Gloss
Ụmụmboō woman	28.	kàanà	[kǎ nǎ]	now
	44.	deèje	[dɛ́ d̃z̃ɛ]	thank you
	56.	ntàà nà	[ntá nǎ]	this day

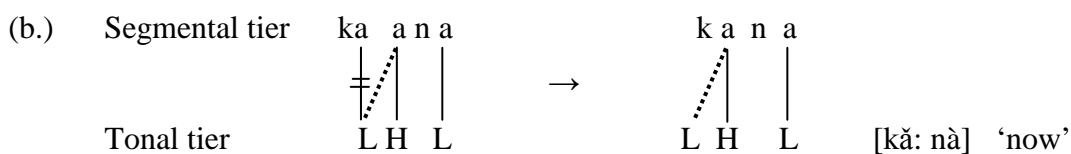
Gliding tone occurs the same way in all the speech communities investigated. It can be described as a tonological process resulting from two identical vowels occupying adjacency position at the underlying form without having the same pitch level as seen in line 13 of Ìfite Ọgwarì man's speech e.g. m̃b ñu [m̃b ñu] 'there', lines 28 of Ụmụmboō woman's speech e.g. kàanà [kǎ nǎ] 'now', 56 ñtāà ña [ñtá nǎ] 'this day'. The gliding takes the form of falling tone [ˆ] and rising tone [˘] and it is phonetic. This can be analysed using the AP model as follows:

Fig. 5.32 Autosegmental phonology analysis of gliding tone

Anam (Ụmụziàm) man:



Ụmụmboō woman:



Gliding tone in Igbo is better explained using autosegmental phonology analysis. The result of the analysis agrees with earlier view of Igwe (1975) that glides are phonetically motivated and that it

involves two vowels appearing contiguously either in the same word or in juxtaposed words where the second vowel, which constitutes a syllable, is either lower or higher than the one preceding it. It also aligns with Emenanjo's (2015) later submission that gliding tones, which occur in words in isolation, should be treated as two different pitch levels on two identical vowels, a submission that prompts his suggestion for a reanalysis of gliding tone in Igbo as an extra vowel of the same quality following the preceding vowel. It is a consequence of two independent tones being mapped to a single syllable as noted by Katamba (1993:157), Clark and Yallop (1999:406) and Oostendorp, (2005:5-7).

Gliding tone in Igbo could be explained using the autosegmental phonology principles only. None of the other two theories could be applied. This is a clear evidence that issues of tone are better explained using the autosegmental phonology.

Chapter Six

Summary, conclusion and recommendation

6.1 Summary of findings

This study discussed phonology of Ọmambāla varieties of the Igbo language. It specifically sought to identify and compare the phonemes of Ọmambala variants, explain and compare their phonological patterning of words, examine and compare their phonological processes and secondary articulation features and reclassifying the Ọmambala Igbo within the landscape of Igbo dialectology. Minimal pair/set analysis was used to identify the phonemes, while descriptive method was first used to discuss the phonological patterning of words, phonological processes and secondary articulation features, before the phonological processes and secondary articulation features were analysed using the generative phonology, autosegmental phonology and government phonology.

Prior to the study, it was noted that available literature shows that much has not been discussed on Igbo speech communities of Ọmambala area and that few studies on the phonological aspect of the speech varieties found in the area, such as Ikekeonwu (1987) and Nwaozuzu (2008), hold divergent views in their groupings of the speech communities. An example was cited that while Ikekeonwu (1987) groups the speech communities as satellites of the Inland West Dialect Cluster (IWDC), Nwaozuzu (2008) classifies them as primary dialects of the East Niger Group of Dialects (ENGD). It was also pointed out that Manfredi (1991:32) cited by Emenanjo (2015:5-7) captures the name *Ọmambāla* in his classification, where he considers *Ọmambāla* a name for a dialect of Northern cluster and which sub-divides into Ọka, Ọnìchà and Àgùlerì. It was noted that in this classification, Manfredi might have used Àgùlerì to represent the Igbo speech communities of Ọmambala area. Also observed was that some of the past studies which discuss the phonemes of the speech communities of Ọmambala area are not detailed, while none of them discusses the phonological patterning of words as well as the phonological processes and secondary articulatory features of the Ọmambala Igbo, let alone identifying their differences and similarities.

The study has been able to identify the phonemes of the speech communities investigated as well as establish their differences and similarities. It reveals that the speech communities differ in their number of phonemes and that the differences are in the consonant phonemes as they all have the same vowels as the standard Igbo: Àgùlerì, Ìsugbè, Ìkem, Awkuzu and Ìtèjè speech communities have twenty-five consonants each; Ogbunike and Ìfite Ọgwarì each has twenty-six consonants; Ànam and Ụmụmboō have twenty-four consonants each; Anàkù and Ụmụoluṃ speech

communities have a total of twenty-three consonants each. The consonant phonemes of the speech communities are:

- i. Àgùlerì: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z ɣ l j w/
- ii. Ñsugbè: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z ɣ l j w/
- iii. Ìkem: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z ɣ l j w/
- iv. Ànàm: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z l j w/
- v. Ñtèjè: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z ɣ l j w/
- vi. Awkuzu: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r v s z ɣ l j w/
- vii. Ogbunikē: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r f s z ʃ ɣ l j w/
- viii. Anàkù: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ v s r l j w/
- ix. Ìfite Ọgwarì: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ f v s v ʃ fi r l j w/
- x. Ụmùmbò: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ v s ʃ r l j w/
- xi. Ụmùlòm: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ v s r l j w/

The results of the analysis showed that the SI phonemes found common to all the speech communities investigated are: /p b t d k g kp gb k^w g^w m n ɲ ɲ^w ʃ dʒ r s l j w/. Among the speech communities studied, it is only Àgùlerì, Ñsugbè, Ìkem, Ñtèjè and Awkuzu speech communities that have the same quality and quantity of phonemes. The speech communities investigated differ in their number of consonant phonemes: Àgùlerì, Ìkem, Ñsugbè, Ñtèjè & Awkuzu speech communities have 25 consonants excluding /f fi ʃ/; Ogbunikē and Ìfite Ọgwarì have 26 consonants, but while phonemes of Ogbunikē speech community lack /fi v/, those of Ìfite Ọgwarì exclude /ɣ ɲ/; 24 consonant phonemes exist in Ànàm and Ụmùmbò, but they differ in that while Ànàm does not have /ʃ f ɣ fi /, Ụmùmbò lacks /f z fi ɣ/; Anàkù and Umùlòm have twentythree consonants each without / f z ʃ fi ɣ/.

The results of the analysis revealed some differences and similarities in the phonological patterning of words among the speech communities, which involves the retention or substitution of some of the SI phonemes in some speech communities. One common observation among the speech communities is the replacement of the /f/ and /fi/ phonemes with /v/, except in Ogbunikē and Ìfite Ọgwarì. The speech communities in Ayamelum LGA, with the exception of Ìfite Ọgwarì, would realize the Igbo phoneme /z/ as [r]. The phoneme /ɲ^w/ in SI exists as a phoneme and occurs in any environment in Àgùlerì, Ìkem, Ñsugbè, Ànàm, Ñtèjè, Awkuzu, Ogbunikē and Ìfite Ọgwarì, but in Anàkù, Ụmùmbò and Ụmùlòm, when it occurs between unrounded vowels or after a

rounded vowel, it is realized as [ŋ^w], and between unrounded vowels or before an unrounded vowel, it is realized as [ŋ].

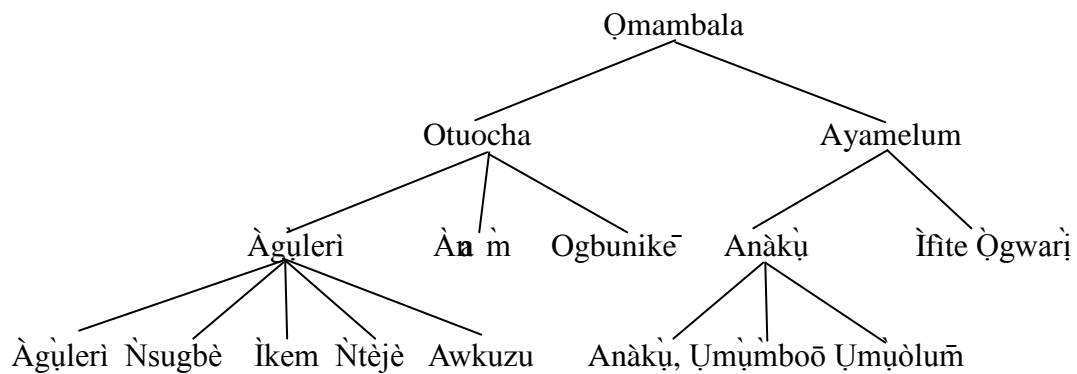
In the area of phonological processes and secondary articulation features, considerable differences and similarities have been recorded among the speech communities. For instance, consonant, vowel, syllabic nasal and syllable elisions were identified from the analysis, but not all of them are witnessed in each of the speech communities.

This study has also demonstrated that the generative phonology, autosegmental phonology and government phonology can be applied in explaining the phonological processes and secondary articulation features of the speech communities of Qmambala area. In most cases, the three theories were applied, while in some cases, one or two of them were used. For instance, the generative phonology, autosegmental phonology and government phonology were used to analyse labialisation, palatalisation, homorganic nasal assimilation, nasalisation, neutralisation, assimilation, elision and vowel harmony; lengthening and insertion were analysed using the generative phonology and autosegmental phonology; The generative phonology only was used to analyse metathesis; and only the autosegmental phonology was used to analyse gliding tone. Notwithstanding that the three theories could be used in most cases to analyse the phonological processes and secondary articulation features, the autosegmental phonology and government phonology could be said to have simplicity of application; The generative phonology requires generating many rules and the rules undergoing a lot of transformations in order to explain certain phenomena. In addition, for better results on analysis involving issue of tone, the autosegmental phonology and government phonology are considered more suitable. For example, in analyzing labialisation and palatalisation where it is discovered that tone plays important role in determining whether a high vowel would assimilate features of the following vowel after causing the preceding consonant to be labialised or palatalised, as the case may be, the autosegmental phonology and government phonology are more suitable.

From the results of the analysis and on the basis of the major differences and similarities discovered among the speech communities, the Igbo varieties of Qmambala are reclassified as Qmambala Main Dialect of the East Niger Group of Dialects of Nwaozuzu's (2008) or the Onitsha Main Dialect of the Inland West Dialect Cluster of ~~Ikwe~~ (1987). There are two major features of this dialect. The first one is the replacement of /f/ and /fi/ phonemes with /v/, except in Ogbunikē and Ìfite Oḡwarì; Ogbunikē and Ìfite Oḡwarì have /f/, while /fi/ exists in Ìfite Oḡwarì only. The second feature is the elision of second syllable of a VCVCV structure. Within this

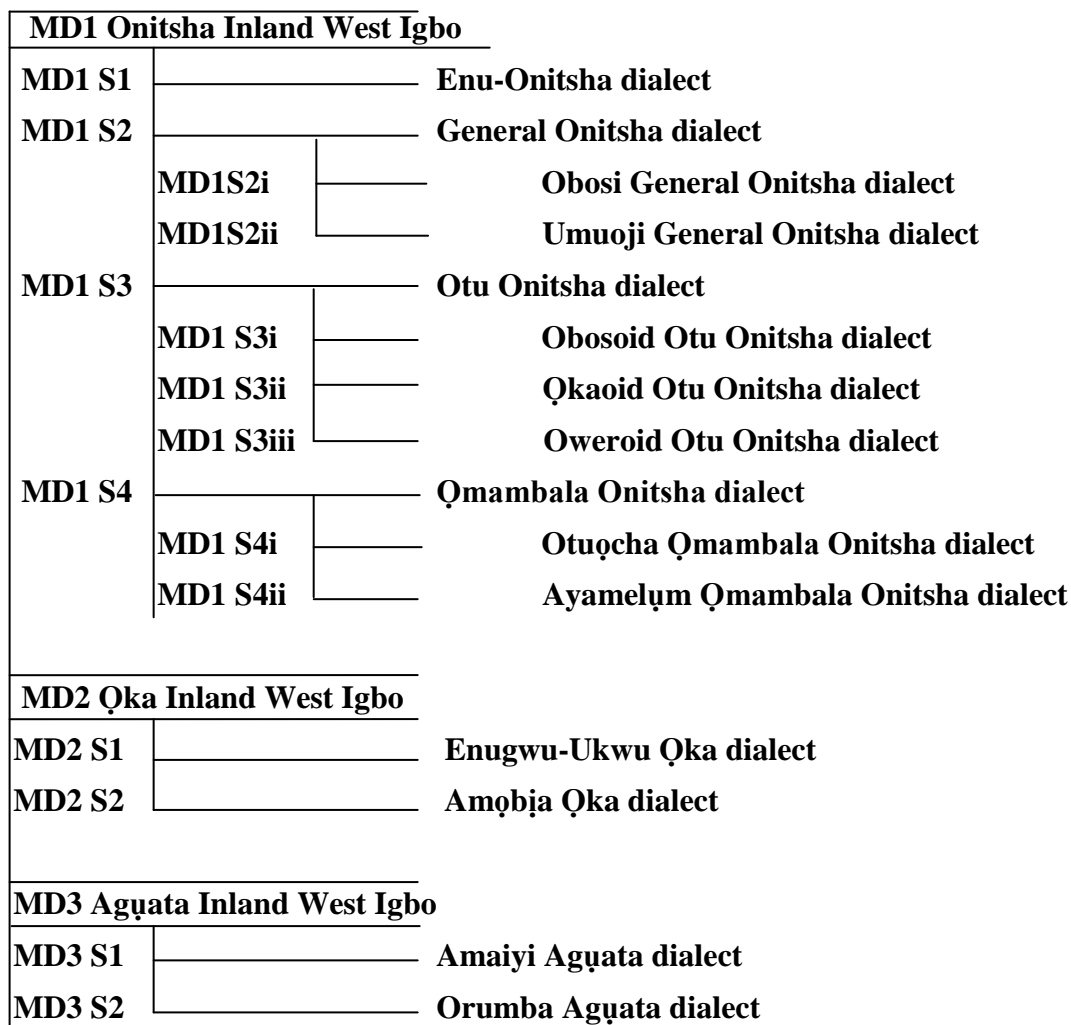
dialect are two sub-dialects: Otuocha and Ayamelum; each having its characteristics. For example, in Otuocha sub-dialect, there is lack of /f ɸ fi/ phonemes found in SI and the use of /ɲ/ instead of /j/ e.g. anyị ‘we/our’. Within the Otuocha sub-dialect are Àgùlerì, Ànàm and Ogbunikē; In Àgùlerì and Ogbunikē, there is the presence of the voiced velar fricative /ɣ/, while Ànàm replaces it with /v/. The major difference between Àgùlerì and Ogbunikē is that the former lacks /f ɸ/ phonemes existing in the latter; Ogbunike does not have the /v/ phoneme. Ànàm also elides consonant of the second syllable of VCVCV structure followed by progressive assimilation and have the tendency of multiple elision in lexicalised words e.g. *Umù ezè Ànàm* which is lexicalised as *UmùezèÀnàm* becomes pronounced as *Umùziàm* with the elision of first and second *e* in *ezè*, first *a* and consonant of the second syllable in *Ànàm*; *Umù ndiò rà* lexicalized as *Umùndiòrà* is pronounced as *Umùdòrà* with the syllabic nasal and vowel of the second syllable in *ndi* being elided. For Ayamelum, there is a complete absence of the S.I. phoneme /ɣ/ which is usually replaced with /j/; second syllable of VCVCV word structure is elided except where the derived form has another meaning. Within the Ayamelum dialect are Anàkù and Ìfite Ògwarì. In Anàkù, the SI phoneme /z/ is usually replaced with /r/, there are the S.I phonemes /^w/ and /ɲ/, but /ɲ^w/ occurs between rounded vowels or after a rounded vowel, while /ɲ/ is found between unrounded vowels or before an unrounded vowel; Ìfite Ògwarì is the only speech community that has /fi/, it does not have the S.I phoneme /ɲ/, and this is the only place syllabic nasal elision is discovered. The tree diagram structure of Omambala dialect is presented as follows:

Fig. 6.1 A tree diagram structure of Omambala dialect



Nwaozuzu (2008) does not provide a schematic representation of Igbo dialects unlike Ikekeonwu (1987). This study, therefore, repositions the Omambala Igbo within Igbo dialectology using Ikekeonwu's (1987) schematic representation, thus:

Fig. 6.2 A repositioning of Ọmambala dialect within the Inland West Igbo of IkekeỌnwu (1987)



6.2 Conclusion

It has not been easy carrying out a study such as this. A lot of challenges were encountered some of which bothered on the difficult terrain of the area such that it was difficult plying the roads during raining reason. This study has actually done well for the people of Ọmambala area by discussing their phonology. This is because researchers have not really shown much interest in the area. At least, with this study, the phonology of the area has been brought to the limelight and other linguists and people who have not read much about the area will appreciate this work. This study has also demonstrated that the generative phonology, autosegmental phonology and government phonology can adequately explain the phonological processes and secondary articulation features of human language, having been applied in analyzing the phonological processes and secondary articulation features of the Igbo of Ọmambala people. This study has provided an initial platform for discussing the phonological processes and secondary articulation features of the speech varieties of Ọmambala area.

6.3 Suggestions for further studies

The reclassification of Ọmambāla speech varieties is done based on their phonological differences and similarities. This study recommends that further studies should be conducted on the speech varieties on other levels of language description to ascertain whether their differences and similarities would align with our reclassification.

There are copious data on Ọmambala varieties which contrastive linguists can rely on in conducting a contrastive analysis of Ọmambala varieties and SI in order to help Ọmambā la students overcome the problems they might be encountering while studying SI as a school subject. It is strongly recommended that contrastive linguists should not let go of this material in solving Igbo learning problems of students from Ọmambala area. Dialectologists, lexicographers, teachers and translation experts should also avail themselves of this reference material in their bid to solve problems of the Igbo language studies.

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List of respondents community by community and their ages

Àgùlerì SC

Oliakù Ugochukwu Okechi-Nweke (53 years)

Miss Nkeiru Nwafor (35 years)

Nnacheta Nwafor (49 years)

Ñsugbè SC

Mr. Obaneche Nnaemeka (68 years)

Chief Michael Ndubuisi Emoh (53 years)

Hon. Molokwu

Ìkem SC

Chief Adili Ajaana (88 years)

Chief Iwegbunam Ekwemeze (Ichie Okeosisi) (80 years)

Chief Ndubueze Sam Chieji (Ichie Nwakaibeya) (57 years)

Ànam SC

Mr. Ikechukwu Obede Nnacho (42 years)

Mr. Nnaemeka Chukwuemeka (43 years)

Mr. Peter Okoye (43 years)

Ñtèjè SC

Chief Ikelie Ozike (80 years)

Hon. Ignatius Achebe (58 years)

Miss Anayo Igwekofu (48 years)

Awkuzu SC

Michael Nwaka (72 years)

Mrs. Nwaka (45 years)

Mr. Peter Nweke (37 years)

Ogbunikè SC

Mr. Jerry Mozie (56 years)

Mr. H. A. Uwaezuoke (48 years)

Mrs. Azuka Uwaezuke (40 years)

Anàkù SC

Hon. Francis Nnacheta (52 years)

Mrs. Veronica Nnacheta (36 years)

Mrs. Philomena Okafor (40 years)

Ụmùòlùm SC

Mr. Charles Morah (58 years)

Mr. Christopher Morah (46 years)

Mr. Ekene Makwudo (45 years)

Ìfite Ọgwarị SC

Mr. Obineche James Akal-karali (45 years)

Mr. Ignatius Ejike (Abu Ahmed) (53 years)

Ụmụmboō SC

Mr. Samson Onwueze Odoh (40 years)

Mrs. Philomena Egwuatu (46 years)

Appendix II
Swadesh (1955) 100 wordlist

S/n	Gloss	SC1 Àgulerì	SC 2 Ìkem	SC 3 Ñsugbè	SC 4 Ànám	SC 5 Ñtèjè	SC 6 Awkuzu (Òkuzù)	SC 7 Ogbunikē	SC 8 Anàkù	SC 9 Ìfite Ògwàrì	SC 10 Ụmụmbō	SC 11 Umùòlum̄
1	i/me	mmụ	mmụ	mụ	mmụ	mmụ/ mụ	mmụnwa	mmụ	mmụ	mụ	mmụ	mmụ
2	you	ngi	ngi	ginwà/ nginwà	ngi	ngi/ gi	ngi	ngi	ngi	gi	ngi	ngi
3	we	anyi	anyi	anyi	anyi	anyi	anyi	ayi	ayi	anyi	anyi	anyi
4	three	itọ	itọ	itọ	itọ	itọ	itọ	itọ	itọ	itọ	itọ	itọ
5	four	ino	ino	ino	ino	ino	ino	ino	ino	ino	ino	ino
6	five	ise	ise	ise	ise	ise	ise	ise	ise	ise	ise	ise
7	child	nnwa	nnwa	nnwa	nnwa	nnwa	nnwa	nnwa	na	nwa	na	na
8	navel	otùbò	otùbòlò	otùbòlò	otùbòlò	otùbò	otùbòlò	otùbò	utùbòlò	otùbè	otùbò	utùbò
9	roast	ruọ	oruru	oruru ive	ooru	oruru ive	rua	rua	oruru ive	oru	oru ive	ruọ
10	one	ovu	ovu	ovu	ovu	ovu	ovu	ofu	owu	nnaā	nnaā	нна
11	two	ihu a	ibọọ	ihu a	ihu o	ihu o	ihu o	ihu a	ibọọ	ibuọ	ibuọ	ibọọ
12	big	nnekwū	nnekwu	nnokwu	ñne	nnekwū	nnekwu	nnekwū	nnekwū	otì (human), ozili ñne (thing)	ñne	nnekwū
13	long	ogorogo	ogonogo	ogorogo	ogorogo	ogonogo	ogonogo	ogonogo	ogonogo	ogonogo	ogonogo	ogonogo
14	small	obelē	nwa obelē/ ùluchi/ mp	mp	mp	obele/mp	obelē	obele	obele/ mkpilikpi	ihe pele aka	mb	mpe
15	woman	nwaanya	nwaanya	nwaanyi	nwaanyi	nwaanya	nwaanya	nwaanyi	na nanya	nwa ndziom	na nanya	nanya
16	man	nwokē	nwoke	nwokē	nwokē	nwokē	nwokē	nwokē	na nwokē	nwokē	nanokē	na nwoke
17	person	mmadi	mmadi	mmadu	mmaru	mmadu	mmadu	mmadu	mmadi	mmari	mmadi	mmadi
18	fish	azu	azi	azu	azu	azu	azu	azu	ari	azi	ari	ari
19	bird	nnuni / egwule	nnuni	nnuni	nnuni	nnuni	nnuni	nnuni	nnuni	nnuni	ra ni lu	nanulu
20	dog	akwu/ nkita	nkita	nkita	nkita	nkita	nkita	nkita	nkita	nkita	nkita	nkita
21	goat	ewu	ewu	ewu	ewu	ewu	ewu	ewu	ewu	ewu	ewu	ewu
22	tree	oisi	osisi	ukwu oisi	oosi	osisi	osisi	osisi/oisi	osisi	ukwu oisi	oshi	oosi
23	seed	mkpū u	mkpū u	mkpū u	mkpū u	mkpū u	mkpū u	mkpū u	mkpū lu	mkpū u	mkpū u	mkpū lu
24	leaf	akwo	akwukwo	akwukwo/	aakwo	akwukwo	abuba	abuba	akwukwo	akwo	akwo	mkpala

				aakwọ								aakwọ
25	root	mgbọlogwù	mgbọlogwù	mgbọlogwù	mgbọlogwù	m̀p ọlogwù	m̀p ọlogwù	m̀p ọlogwù	mgbọlogwù	mgbọlogwù	m̀p ọlogwù	mgbọlogwù
26	housefly	ijīji	ijīji	ijījī	ijījī	ijījī	ijījī	ijījī/ijījī	ijīji	ijījī	ijījī	ijījī
27	skin	aakpọ	akpukpọ	akpukpọ	aakpọ ārù	akpukpọ ārù	akpukpọ ārù	aakpọ	akpukpọ àrì	akpọ àzì	akpọ àrì	aakpọ àrì
28	meat	anụ	anụ	anụ	anụ	anụ	anụ	anụ	anụ	anụ	anụ	anụ
29	blood	mmeē	mmeē	mmeē	mmeē	mmeē	mmeē	mmeē	mmeē	mmeē	mmèē	mmeē
30	bone	ọkpụ	ọkpukpụ	ọkpukpụ	ọkpụ	ọkpukpụ	ọkpukpụ	ọkpukpụ/ ọkpụ	ọkpukpụ	ọkpụ	ọkpụ	ọkpụ
31	fat	àbùlà	àbùlà	àbùlà	àbà	àbùlà	àbùlà	àbùlà /àùlà	àbùlà	àbà	àbà	ààbà
32	egg	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa	àkwa
33	horn	ọdū	ọdū	ọdū/ m̀p	ọdū/ m̀p	ọdū/ m̀p	ọdū/ m̀p	ọdū	ọdū	ọdū	ọdū	m̀p
34	tail	ọdudù/ ọì dì	ọdudù anū	ọdudù	ọdudù	ọdudù	ọdudù	ọdudù/ọì dì	ọdudù	ọdì	ọọdì	ọọdù
35	feather	ugbènè	ugbènè	ugbènè	ugbènè	ugbènè	ugbènè	ugbènè	ugbè	ugbò	àabà	àabà
36	hair	aji/agigilì isī	aji/agigàlà isī	aji/ ntùtù isī	àgìlìgà isī	aji/ntùtù	aji	aji/ntùtù isī	aji	aji/ajàlà isī	ajàlà ishī	ajàlà isì
37	head	isi	isi	isi	isi	isi	isi	isi	isi	isi	ishi	ishi
38	ear	ntị	ntị	ntị	ntị	ntị	ntị	ntị	ntị	ntị	ntị	ntị
39	eye	anya	anya	anya	anya	anya	anya	anya	anya	anya	anya	anya
40	nose	imi	imi	imi	imi	imi	imi	imi	imi	imi	imi	imi
41	grave	inì	inì	inì	inì	inì	inì	inì	inì	inì	inì	inì
42	mouth	ọnū	ọnū	ọnū	ọnū	ọnū	ọnū	ọnū	onu	ọnū	ọnū	ọnū
43	tooth	eze	eze	eze	eze	eze	eze	eze	ere	eze	ere	ere
44	tongue	ile	ile	ile	ile	ile	ile	ile	ile	ile	ile	ile
45	nail	mbọ	mbọ	mbọ	mbọ	mbọ	mbọ	mbọ	mbọ	mvọ	mbọ	mbọ
46	leg	ọkpà	ọkpà	ọkpà	ọkpà	ọkpà	ọkpà	ọkpà/ukwù	ọkpà	ọkpà	ọkpà	ọkpà
47	knee	ikpùlù ukwù	ikpùlù ukwù	ikpùlù ukwù	ikpèlè ukwù	ikpùlù ukwù	ikpùlù ukwù	ikpèlè ukwù	ikpùlù ukwù	ikpìlì ukwù	ikpùlù ukwù	ikpùlù ukwù
48	hand	aka	aka	aka	aka	aka	aka	aka	aka	aka	aka	aka
49	belly	afọ	avọ	avọ	avọ	avọ	avọ	afọ	avọ	ahọ	avọ	avọ
50	neck	onu	onu	onu	onu	onu	onu	onu	unu	onu	onu	onu
51	breast	ala	ala	ala	ala	ala	ala	ala	alā	alā	alā	alā
52	heart	obù	obù	obì	obì	obì	obì	obì	ubù	obù	obù	obì
53	swallow	ònino	ònino	ònino	òono	ònino	ònino	ònino/òino	ònino	òno	òono	òono

54	drink	nwụọ	nwụọ	lää	nwụọ	nwụa	nwụa	ñi a	nwụọ	nwụọ	nwụọ	nwụọ
55	eat	lie	lie nlī	lie nlī	lie	lie nlī	lie	lie	lie nlī	lie	lie ivē	lie
56	bite	tàa	tàa ivē	tàa ivē	tàa	tàa ivē	tàa	tàa	tàa ivē	tàa	tàa ivēe	tàa
57	see	nèkaà/ nèeni	nèe	nèe anyā	nèe	nèkene/ nèe	nèe/nèkaà	nèkene/ nèenu	nèkene	nèeke	nèkeè	vugodu
58	know	màlī ivē	imā ive	imā ive	imā ive	màlụ̄ ivē	màlī ivē	māa iḡē	imā ive	oma iye	ima ive	màlī
59	sleep	ula/ làva ulā	ula	ula	ula	ula	ula	ula/làlụ	ula	ula	ula	ula
60	die	nwụrụ	nwụrụ	onwụ	nwụọ	nwụọ	nwụrụ	nwụa	nwụọ	nwụrụ	nwụlụ	nwụọ
61	kill	gbùo	gbùo	gbùe	gbùo	gbùo	gbùe	gbùe	gbùo	gbùe	gbùo	gbùo
62	bathe	wụọ	wụọ arī	wụa arī	wụọ	wụọ	wụa	wụa	wụọ arī	wụọ azī	wụa arī	wụọ
63	jump	mānie/ wụọ ntụ	wūnyie enū	mānie/ wūnie enū	wūnyie enū	wūry ie/ mānyie	wūnyie enū	wūri e	wuvèlī	kpọọ	mānyie	mānyie
64	walk/go	jève/pụva /pụ rụ	pụva	jève	jève	jève	jève/jèe	jèbe/pụla	jève	jèbe	pụva	jève
65	come	bia	bia	bia	bia	jaa	bia	bia	bia	bia	bia	bia noona
66	lie down	diē ēdiē	diē ēdiē	dinē ànī	dinē ànī	diē ēdiē	diē ēdiē	dinē ànī	dī īdiē	dīalī àdià	diē diē	jeè dinē
67	blow	vụọ	vụọ	vụa	vụọ	vụa	vụa	fua	vụọ	hụọ	vụọ	vụọ
68	give	nyiē	nyiē	nye yā	nye/ nyiē	nye/nyiē	nye/ nyiē	nye	nyiē	nye	nyiē	nyèe
69	say	kwùo	kwùo	kwùe	kwùo	kwùe	kwùe	kwùe	kwùo	kwùo	kwùbe	kwùo
70	sun	anwū	anwū òkike	anwū	anwū	anwū	anwū	anwū	anwū	anwū	anwū	anwū
71	moon	onwa	onwa	onwa	onye ivè	onwa	onwa	onwa	ona	onwa	ona	ona
72	star	mmümü onwa	kpakpaṅdò	kpakpaṅdò	kpakpaṅdò	kpakpaṅdò	kekeèrì	mmü onwa	kpakpaṅdò	kpakpaṅzè	kpakpaṅdò	kpakpaṅdò
73	water	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī	mmilī
74	steal	orī/ aka ntt̄ ụ	orī	orī	orī	orī	orī	orī/zùe	urī	ozī	ụlụ	ụlụ
75	stone	m̄kpumè	m̄kpumè	m̄kpumè	m̄kpumè	òkwute/ m̄kpumè	òkwute/ m̄kpumè	òkwute/ m̄kpumè	m̄kpumè	m̄kpumè (large), ikpolo (small)	m̄kpumè	m̄kpumè
76	sand	ajā	ajā	ajā	ajā	ajā	ajā	ajā	ajā	ajā	ajā	ajā
77	ground	Ànà	ànà	ànì	ànì	ànà	ànà	ànì	ànà	ànì	ànà	ànà
78	rope	elili	elili	elili	elili	elili	elili	elili	elili/ ụḡ	eli/ ụḡ	eli	eeli
79	smoke	anwū ụ	ànwū ụ	ànwū ụ	anwūlụ	anwū ụ	anwū ụ	anwū ụ	anwū ụ	anwū ụ	anwū ụ	anwū ụ
80	fire	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ

81	ashes	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ	ntụ
82	saliva	onụ mmīli	onu mmīli	onụ mmīli	onụ mmīli	onu mmīli	onụ mmīli	onụ mmīli	onụ mmīli	onụ milī	onụ mmīli	onụ mmīli
83	road	Ezi	ezi	ezi	uzò	ezi	ezi	ezi	iri	ezi	eri ọrọ	eri
84	hill/ mountain	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu	ugwu
85	red	mmee mmeē	mmeē mmeē	mmeē mmeē	mmeē	mmeē mmeē	mmeē m̄ mmeē	mmeē mmeē	mmeē	mmē	mmē mme	mmeē m̄ me
86	give birth	mụọ nnwā	omumu nnwa	mụa nnwā	mụọ nnwā	mụa nnwā	mụa nnwā	mụa nwā	mụọ nnā	mụọ nwā	mụọ	mụọ nnā
87	bury	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe
88	white	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha	ọcha
89	black	Nji	ñji	òji	òji	òji	òji	òji	ñji	òji	ojī	òji
90	night	aṅà sị	aṅà sị	ùchichì	àasị	ànyasị	ànasị	anyàsị/ ùchichì	ànasị	uùchì/aàsị	aṅà sị	aṅàsị
91	hot	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọkụ	ọọrụ ọkụ	ọkụ
92	cold	oyī	oyī	oyī	oyī	oyī	oyī	oyī	oyī	oyī	oyī	oyī
93	full	òjuju/ òuju	òjuju	òjuju	òuju	òjuju	òjuju	òjuju/òuju	òjuju	òju	òuju	òuju
94	new	ovūū	ovūū	ovūū	ovūū	ovūū	ovūū	ofūū	ovū	ohū	ovū	ovūū
95	good	mmā	mmā	mmā	mmā	mmā	mmā	mmā	mmā	mmā	ive oma	mmā
96	fowl	ọkụkụ	ọkụkụ	ọkụkụ	ọkụ	ọkụkụ	ọkụkụ	ọkụ	ọkụkụ	ọkụ	ọkụ	ọkụkụ
97	dry(clothe)	ìkpò nkụ	ìkpò nkụ	ìkpò nkụ	ìkpò nkụ	ọkìkọ	ọkìkọ	ìkò akọ	ìkpò nkụ	ìkò akọ	ọkọkọ	ọkọkọ nkū
98	name	Avà	avà	avà	avà	avà	avà	afà	avà	ahà	avà	avà
99	market	avịa	avịa	avịa	avịa	avịa	avịa	afịa	avịa	ahịa	avịa	avịa
100	plate	Avele	evele	avele	àvele	evele	evele	àfele	evele	àhele	aveleje	avele

Appendix III
Reaercher-adapted 138 word list

		SC 1	SC 2	SC 3	SC 5	SC 7	SC 8	SC 9	SC 10	SC 11	SC 12	SC 13
S/n	Gloss	Agulèrì	Ikem	Nsugbè	Anam	Ntèjè	Awkuzu (Ọkuzù)	Ogbunike	Anàkù	Ìfite Ọgwârì	Umumbō	Umub um
1	small	Mpe	mpe	mpe	ipe/mpe	ipe/mpe	ipe/mpe	ipe/mpe	mpe	ipe	mpe	ipe
2	to cry	ikwā akwa	ikwa akwa	ikwā akwa	ikwā akwa	ikwā akwa	ibē	ibē akwa	ikwā	ikwā	ikwā	ikwā
3	flog	pia	tie	tie	pia	pia	pia	pia	tie	tie	tie	tie
4	come	bia	bia	bia	bia	jaa	bia	bia	bia	bia	bia	bia

5	chewed	tàlì	tàlì	tàlì	tàlì	tàlì	tàlì	tàlù	tàlì	tàlì	tàlù	tàlù
6	fell	dàlì	dàlì	dàlì	dàlì	dàlì	dàlì	dàlù	dàlì	dàlì	dàlù	dàlù
7	to chew	ìtā	ìtā ive	ìtā	ìtā	ìtā	ìtā	ìtā	ìtā	ìtā	ìtā	ọọtā
8	to warm (eg. Food)	Ndàkwa	isìkwe nli	ìdākwa	ìdā	ìdākwa	ìdākwa	ìdākwa	ìdākwa	ìdākwa	ìdā	ọọdā nílí
9	god	Chi	chi	chi	chi/Chiòkè	chi	chi	chi	iyī	shi	chi	chi
10	yam	Ji	ji	ji	ji	Ji	ji	ji	ji	ji	Ji	ji
11	to wait	ichē	ichē	ichē	ichē	ichē	ichē	ichē	ichē	ichē	ichē	ichē
12	to go	ijē	ijē	ijē	ijē	ijē	ijē	ijē(be)	ijē	ijē	ijē	òojē
13	say	kwùo	kwùo	kwùe	kwùo	kwùe	kwùe	kwùe	kwùo	kwùo	kwùe	kwùo
14	dig	gwùo	gwùo	gwùe	gwùo	gwùe	gwùe	gwùe	gwùo	gwùo	gwùbe	gwùo
15	to say	ikwū	ikwū	ikwū	ikwū	ikwū	ikwū	ikwū	ikwū	ikwū	ikwū	òokwū
16	to dig (hole)	igwū	igwū	igwū	igwū	igwū	igwū	igwū	igwū	igwū	igwū	òogwū
17	bag	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà	àkpà
18	jaw	àgbà	àgbà	àgbà	àgbà	àgbà	àgbà	àgbà	àgbà	àgbà	akpō	àgbà
19	dribble	kpàa	gbèe	kpàa	kpàa	kpàa	kpàa	kpàa	kpàa	kpàa	kpàa	kpàa
20	run (race)	gbàa	gbàva	gbàa	gbàava	gbàa	gbàa	gbàa	gbàa	gbàa	gbàva	gbàa
21	know/slap	màa	màa	màa	màa	màa	màa	màa	màa	màa	màa	màa
22	go	jèe	jève	jève/nàva	jève/nàva/jèe	jève/nàva	jève/nàva	jèe/ jèbe/ nàba	jève /nàva	jèe/nàa	jève /nàva	jève /nàva
23	to know	imā	imālì	imā	imālì/imā	imā	imā	imālùù	imā	imālì	imā	ọọmā
24	to return	ināa	ināta	inā	ināta/inā	ināta	inā	inātaa	ināta	ināta	ināta	nnata
25	die	nwùrù	nwùo	nwùrunu	nwùo/ nwùrù	nwùa	nwùa	nwùa	nwùo	nwùo	nwùo	nwùo
26	defecate	nyùo	nyùo	nyùa	nyùo	nyùa	nyùa	nyùa	nyùo	nyùo	nyùo	nyùo
27	moon	onwa	onwa	onwa	onye ivè	onwa	onwa	onwa	ona	onwa	ona	ona
28	wound	onya	onya	onya	onya	onya	onya	onya	onyinya	onya	onya	onya
29	bee	anwū	anwū	anwū	anwū/ mbianwū	anwū	anwū	anwū	anwū	anwū	anwū	anwū
30	lion	agū	agū	agū	òdùmòdù	agū	agū	òdì m	agū	agū	agū	agū/ òdì m
31	drink	nwùo	nwùo	nwùo	nwùo	nwùa	nwùa	nì a	nwùo	nwùo/ nwùrù	nì o	nwùo
32	read	guo	guo	gua	guo	gua	gua	gua	guo	guo	gua	guo
33	penny	avù	avù	avù	avù	avò	avò	afù	avò	ahù	avù	avù
34	armpit	abù	abù	abù	abù	abù	abù	abù	abù	avù	abù	abù
35	wash	sàa/sùu	sàa/chùo	sàa/sùu	sàa/sùo	sàa/sùu	sàa/sùu	sàa/sùu	sàa/chùo	sàa/chùo	sàa/	sàa/sàchaa
36	sweep	zàchaa	zàa	zàa	zàa	zàa	zàa	zàa	ràchaa	zàa	ràchaa	ràchaa
37	to draw	isè	isè ive	isè	isè	isè	isè	isè	isè	isè	isè	ọọsè

38	to avoid	izè	izè ive	izè	izè	izè	izè	izè	irè	izèeli	irè	òòrè ive
39	weaver bird	arà	arà	arà	ègwùlò	arà	arà	arà	arìà	ahìà	arìà	arìà
40	name	avà	avà	avà	avà	avà	avà	afà	avà	ahà	avà	avà
41	bury	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe	nìe
42	eat	liè	liè nli	liè	liè	liè	liè	liè	liè	liè	liè	liè
43	to look	inē anya	inē anya	inē	inē	inē	inē anya	inē anya	inē	inē	òone	ine/òone
44	to sell	ilē avia	ilē ive	ilē	ilē	ilē	ilē avia	ilē ife/afia	ilē	ilē	òole	òole
45	fry	yèe	ghèe	yèe	vèe	yèe	ghèe	yèe	yèe	yèe	yèe	yèe
46	avoid	zèe	zèeli	zèe	zèe/zèli	zèeli	zèe	zèe/zèelu	rèe	zèeli	rèeli	rèe
47	disperse (seeds)	ìghā	ìghā	ìghā	ìyā	ìyā/ìkū	ìghā	ìyā	ìyā	ìyā	ìyā	òoya/òtà
48	to answer/swell	izā	izā	izā	izā/ izā òkù	izā/izā òkù	izā	izā/izā òkù	irā	izā	irā	irā/ òora
49	skin peel	àwòlò	àwòlò	àwòlò	àwòlò	àwòlò	àwòlò	àwòlò	àwòlò	àwùlù	ùwòlò	àwòlò
50	form of money (old)	àyòlò	àyò	àyòlò	anyaka/ego àyòlò	àyòlò	àyòlò	àyòlò	ego àyò	ego isì	ego ò kpu ime	àyòlò
51	pluck/be cunny	wọọ/wọta	wọọ	wọta	wọọ/wọlù/ nlavù	wọta	wọọ/wọta	wọọ/wọta	wọta	wọọ	ghọta	wọta
52	plead	yọọ	yọọ	yọọ	yọọ	yọọ	yọọ	yọọ	yọọ	lìọ	lìọ	yọọ
53	tie (with rope)	kèe	kèe	kèe	kèe	kèe	kèe	kèe	kèe	kèe	kèdo	kèe
54	listen	gèe	gèe	gèe	gèe	gèe	gèe	nàa/gèe ntì	gèdo/gèe ntì	gèe	gèe ntì	gèe ntì
55	be ripe	chàa	chàa	chàa	chàa	chàa	chàa	chàa	chàa	chàa	chàa	chàa
56	to cultivate	ìkọ	ìkọ	ìkọ	ìgbūgwò	ìkọ	ìkọ	ìkọ ife	ìlū̀ le / ìkọ ugbō	ìkọ	ọọlù ọlù	ọkọ ọlù/ ìvèagū
57	to become inlaw	ìgọg ọ	ìgọ	ìgọ	ìgọg ọ	ìgọ	ìgọ	ìgọg ọ	ìgọg ọ	ìgọ	ìgọg ọ	ọgọg ọ
58	fall	dàa	dàa	dàa/dàgodi	dàa	dàa	dàa	dàa	dàa	dàa	dàa	dàa
59	give chance	pùva /pùrù	pùta	pùva	pùọ/nyè evè/nye òvèlè	pùva/nyè evè	pùva	pùva/pùta/ nyè efè	pùọ	fùọ	pùrù n'eri	pùlù nòvù/ pùta
60	skin (of body)	akpọ ārù	akpukpọ ā rù	akpukpọ ā rù	anù ārù/akpọ ā rù	akpukpọ ā rù	akpukpọ ā rù	akpukpọ ārù	akpukpọ ā rù	akpọ āzì	akpọ àrì	akpọ àrì
61	inlaw	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ	g ọ
62	hole	oghēle	oghēle	oghēle	ovē le	oyē le	oghē le	oyē le	ntapu	oyē le	ntapu	oyē le/ mpu

63	witch	amō ōsu	amō ōsu	amō ōsu	amō su	amō ōsu	amō ōsū	amūnsu	amō ōsu	amō ōsu	amūns u	amō ōsu
64	friend	oyi	oyi/ okw u	oyi/ okw u	okw u	oyi/okw u	oyi/okw u	oyi	oyi/okw u	okw u	okw u	oyi/okw u
65	intimate girl friend	okw u	okw u	agiri	agiri	agiri	oyi	oyi	oyi/agidi	agidzi	nābe	naabe
66	shit	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nsi	nshi	nsi
67	shirt	avè	èvè	avè	avè	èvè	èvè	èfè	èvè	àwùle	èvè	akù
68	cloth/clothe	akwà	akwà	akwà	akwà	akwà	akwà	akwà	akù	akù	àbàda	akù
69	to fry	ighē	ighē	ighē	ivē	iyē	ighē	iyē	iyē	iyē	iyē	ooyē
70	war	agha	agha	agha	ogu	aya	*aya	aya	aya/ ogu	aya	aya	aya
71	fly	vepu/vèe	vèe	vèlù	vèe ū ve	vèe	vèe	fèe	vèe	hèrì	vèlì	vèe
72	burrying	onini	onini	ini ive	ooni	onini	onini	onini	ini	oni	ooni	oni
73	take/receive	weli/natiā	wèlù	wèlì	wèlù	wèlì	wèlì	wèlù/nàlù	wèlù	wòlù	ngaā	wòlù
74	carry	bùlù	bùlù	bùlù	bùlù	bùlù	bùlù	bùlù	bùlù	pàlì	pàlì	pàlì
75	pay	kwùo	kwùo	kwùà	kwùo	kwùà	kwùà	kwùà	kwùo	kwùo	kwùo	kwùo
76	sing	kwèe	kwèe	kwèe	kwèe	kwèe	kwèe	kwèe	kwèe	kwèe	kwèbe	kwèe/bùo
77	enter	bàga	bàga	bànye	bàa	bàa	bàa	bàa/bànye	kpùlù	bàa	bàba	bàì/bàba
78	go in	bàga	bànye	bàga	bàa n'imē	bàga	bànye	bànye	kpùlù	bàì	bàba	bàì
79	come in	bàta	bàta	bàta	bàta	bàta	bàta	bàta	kpùlù unò	bàta	bàtaba	bàta
80	wrapper	ukwù akwà	okà là	àbàda	okà là/akwà	àbàda	ukwù akwà	àbàda/ukwù akwà	akù	àbàra	àbàda	àbàda/obù akù
81	to cut	ibē bì	ibē	ibē cha	ibè	ibè	ibē	ibè	ibā/ ibācha	ibè	ibè	òbè ive
82	lie	ntù	ntù	onye n̄ tù	ntù	ntù	ntù onū	ntù	ntuyali	ukā ntì	ntuyali	mḡle
83	wear (clothe/dress)	yili	yili	yili	yili	tùlù	yili	yili	yili	tùlù	tùlù èvè	yili akù
84	life	ndù	ndù	ndù	ndù	ndù	ndù	ndù	ndù	ndù	ndù	ndù
85	leaves	aùkwò	mbechele akwùkwò	mcpalàmù aùkwò	mcpalìmù aùkwò	mcpalà akwùkwò	abùba	abùba akwùkwò	mcpalà aùkwò	mcpalà aakwò	mcpalà akwò	mcpalà aakwò
86	death	onwù	onwù	onwù	onwù	onwù	onwù	onwù	onwù	onwù	onwù	onwù
87	divination	ava	igbā ava	igbā ava	igbā ava	igbā ava	igbā ava	igbā afa	igbā ava	ogbugba aha	ogbugba ava	ogogba ava
88	development	mmeghe	mmeghe	mmeghe	mmeve	mmeghe	mmeghe	mmepe	mmepe	mmeye	mmeye	mmeye
89	joy	añ lì	anwulì	añ lì	anwulì	anwulì	anwulì	añ lì	anwulì	anwulì	anwulì	anwulì
90	drinking	onwunwù	onwunwù	olila/ilā	onwunwù	onwunwù	onwunwù	onunù	inwū	onwunwù	onwunwù	onwunwù
91	who	onye	onye	onye	onye	onye	onye	onye	onye	onye	o bue bu ivenù	onye

92	scar	àpà	àpà	àpà	àpà	àpà	àpà	àpà	àpà/onyiny a	àpà	àpà	àpà
93	bush	ìkpo	ovia	ovia	ovia	ovia	ovia	ofia	ime ègbè	ohia	ovia	ovia
94	cow	evi	evi	evi	evi	evi	evi	efi	evi	ehi	evi	evi
95	tongue	ile	ile	ile	ile	ile	ile	ile	ile	ile	ile	ile
96	dream	nlo	nlo	nlo	nlo	nlo	nlo	nlo	ula	nlo	nlo	ula
97	crayfish	ira	ira	ira	ira	ira	ira	ifa	ira	ihia	iria	iria/kàràfishì
98	sheep	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù	atì ù
99	chewing stik	atu	atu	atu	atu	atu	atu	atu	osisi atù	oshi	àkpulà	atu
100	comb	h̄ra	h̄ra	h̄ra	h̄ra	h̄ra	h̄ra	h̄ra	h̄racha	m̄vo	h̄racha	m̄bo
101	split	k̄ewaa	k̄ewee	k̄ewee	k̄ewee	k̄ewee	k̄ewaa	k̄ewaa	k̄ee	k̄ewee/tujie	k̄ewaa	k̄ee
102	pleading	ayiyọ	ayiyọ	ayiyọ	aayọ	ayiyọ	ayiyọ	ayiyọ	ayiyọ	aaliọ	aariọ	ooriọ
103	sieve	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ	nyọ
104	pig	ezi	ezi	ezi	ezi	ezi	ezi	ezi	erì	ezi	erì	erì
105	pursue	ìchì ọ̄ so	chụọ	chụa	ochụ	ochuchụ	ìchì ọ̄ so	ìchì ọ̄ so	ìchì mmadụ	ọ̄ hụ	ọ̄ochụ	ọ̄ochụ
106	again	ozo	ozo	ozo	ozo	ozo	ozo	ozo	oro	oro	ofo	ofo
107	patience	ndidi	ndidi	ndidi	ndidi	ndidi	ndidi	ndidi	ndidi	ndzidzi	ndidi	ndidi
108	python	eke ogbà	eke	eke	eke	eke	eke ogbà	eke ogbà	eke ogbà	eke	eke	eke
109	fly out	vepu	vepu	vèlì	vepu	vepu	vepu	fepu	ùve	hefu	vepu	vepu
110	to worship	ivè òvùvè/ òvè	òvùvè nrù	òvùvè nrù	òvìvè chukwu	òvìvè nrù	òvùvè nrù	ifè òfufè/ òfufè nrù	ivè chukwu	òhè chukwu	òvè chukwu	òvè chukwu
111	suffering	avuvu	itā avuvu	avuvu	avuvu	avuvu	avuvu	afufu/aufu	itā avuvu	aahu	oota avu	aavu
112	yawning	ughelē	ughelē	ughelē	uvelē	uyelē	ughelē	uyelē	uyelē	uyelē	uyelē	uyelē
113	a lie	ntu	onye ntu	onye ā si	onye n̄ tu	onye n̄ tu	onye n̄ tu	ntu	ntu	ukà/ntu	ntuyali	mḡ le
114	lizard	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè	ngwèlè
115	afternoon	evivìò/ eivìò	evivìe	evivìe	èevìe	evivìò	evivìò	efifiè/ eifiè	evivìò	eèhìe	eèvìò	eèvìò
116	authority symbol	ofo	ofo	ofo	ofo	ofo	ofo	ofo	ofo	ofo	ofo	ofo
117	raffia palm stalk	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo	ofo lo
118	blindness	isi	isi	isi	isi	isi	isi	isi	isi	isi	ishi	isi
119	hat	okpu	okpu	okpu	okpu	okpu	okpu	okpu	okpu	okpu	okpu	okpu
120	he goat	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi	mkpi

121	do	mèè	mève	mève	mève	mève	mève	mèbe/mèè	mève ivenì	mèbe	mève	mève	
122	knife	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà ekwū	mmà nsikili	mmà ekwū	
123	to suck/bear fruit	mĩa	òmìmì	òmìmì	òmì	òmìmì	mĩa	mĩa	òmìmì	ìmì	òmì	òmì	
124	accept	nàta/ kwèè	kwèè	kwèè	kwèè	kwèè	kwèli/kwèè	kwèlù/nàlù	kwèlì	kwèlì	kwèè	kwèè	
125	joy	añ lị	añ lị	añ lị	anwụlị	anwụlị	anwụlị	añ lị	anwụlị	anwụlị	anwụlị	anwụlị	
126	garden egg	ìkà	ìkpùlu	ìkà	ìkà	anàlà	anàlà	àfufā/anàlà	àvuvā/anàlà	à	àaha/ìkà	àava/anàlà	àava/anàlà
127	monkey	ènwè	abìdì	ènwè	ènwè	ènwè	ènwè	ènwè	abìdì	abìdì /ènwè	abìdì	abìdì /ènò	
128	temptation	onw unw à	ive okpikpa	onw unw à	onw unw à	onw unw à	onw unw à	onw unw à/ ounw à	ounà	ounwà	ive okpa	onwunà	
129	pepper	osè	osè	osè	osè	osè	osè	osè	osè	osè	osè	osè	
130	flute	ojà	ojà	ojà	ojà	ojà	ojà	ojà	ojà	ojà	osu	ojà	
131	another	ñke ọzọ	ọzọ	ọzọ	ọzọ	ọzọ	ọzọ	ọzọ/ñke ọzọ	oro	oro	ofo	ofo	
132	wilderness	ozàlà	ovia	ugbokō	nnekwu ovia	oke ovia	nnekwu ovia	oke ofia	ivè agū	okephia	ivè agū	oke ovīā	
133	mushroom	elō	elō	elō	elō	elō	elō	elō	elō	elō	ijàjà	elō	
134	sponge	ogbo/ aisa	ogbo/ asisa	ogbo/ asisa	ogbo/ àasa	ogbo/ asisa	ogbo/ asisa	ogbo/ aisa	ogbo/asisa	ogbo/aasa	ogbo/asa	ogbo/asa	
135	clay	ul o	ul o	ul o	ul o	ul o	ul o	ul o	ul o	ul o	ul o	ul o	
136	toad	awo	awo	awo	awo	awo	awo	awo	awo	awo	awo	awo	
137	leopard	odi m	odumodu	odi m	odi m	odi m	odi m	agū	agū	agu owulù	agū	agū	
138	barren	agà	agà	agà	agà	agà	agà	agà	agà	okpoò	agà	agà	

Appendix IV
Researcher-adapted phrase and sentence list

1	Give me water		
2	Sit down		
3	Sit down there		
4	Sit down here		
5	My mother went to the market		
6	She went to the farm		
7	Our farmland is far		
8	What is your name?		
9	You are a native of where?		
10	My mother is cooking		
11	My teacher will flog me		
12	My father has bought a car		
13	Today is our new yam festival		
14	The king will address the community today		
15	Come and see us today		
16	The radio is not good		
17	Go and off the light		
18	We shall not go		
19	Come here		
20	Stand up		
21	Take it easy		
22	I will drink water		
23	No, I do not agree		
24	The tree is very long		
25	Our problem are so many		
26	My father is old		
27	He behaves like a mad person		
28	We are in famine period		
29	They have killed the snake		
30	He has washed her school dress		
31	Go and sleep		
32	Will you come now?		
33	Do it now		
34	Bring it immediately		
35	Do as I said		
36	The hunter killed a grass cutter		
37	He is very cunny		
38	They will come tomorrow		
39	They are sweeping the village square		
40	My uncle takes snuff		
41	Do you drink alcohol?		
42	I do not drink alcohol, but I drink mineral		
43	Jesus Christ is a friend of everybody		

44	My father has gone to bed		
45	Thank you		
46	Go and wash the plates		
47	My wife is sick		
48	She eats fish		
49	The child still sucks breast		
50	Lit the lantern/ lamp		
51	Her dress is dirty		
52	Bring the palm fruits for me		
53	She goes to school everyday		
54	She has gone to fetch water from the steam		
55	Our people are mainly farmers		
56	Today is our big market day		
57	It rained heavily today		
58	This year will be good		
59	The Community is fighting		
60	The community is mourning		
61	The corpse has been brought home		
62	This is a big goat		
63	He is afraid		
64	He/ She is going to school		
65	It is going back		
66	The baby is crying		
67	What is your occupation?		
68.	It is good		