

Gbagyi Syllable and Phonotactics

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Abstract

This paper investigates the phonological phenomenon in Gbagyi, where a unit of sounds is made up of a central peak of loudness in a word; and certain sounds (either consonants or vowels) are not permissible to occur in certain positions or contexts. Descriptive method was employed to analyse the data which were elicited from primary source obtained from randomly selected native speakers of Gbagyi residents in Bwari Area Council of Federal Capital Territory, Abuja. Secondary data were also used in this study, especially data on Gbagyi phonemes from Dalhatu (2017). Major findings from this study show that the typology of Gbagyi syllable structure is characterised by V, CV, N, CGV, CNV and CNYV/CNWV. The phonotactics of Gbagyi, on the other hand, disallow the occurrence of coda, long vowels, and diphthongs in the language. In the same vein, it is observed that only the vowels /e/ and /a/ occur word-initially in Gbagyi. Consequently, this paper proposes that a vestigial noun class system attests in Gbagyi, where these two vowels occur to mark this system, thus reaffirming Blench's (2013) report that some Nupoid languages exhibit traces of remnant noun class system.

Keywords: suprasegmental phonology, syllable, syllable structure, phonotactics, Gbagyi.

1. Introduction

The syllable and phonotactics (alongside other prosodies such as tone, intonation, stress, rhythm, etc) are levels of linguistic analysis subsumed under suprasegmental phonology of the language.

The proposed definitions of the term *syllable* can be divided into three types: phonetic, phonological and phonotactic. Phonologically, a syllable is usually described as consisting of a centre, which has little or no obstruction to the flow of air out of the mouth. This centre is said to sound comparatively louder than the elements before and after this centre (Arbecrombie, 1967:39; Roach, 2002:67).

Phonologically speaking, a syllable is defined by Laver (1994:39) as 'a complex unit made up of a nucleus and marginal elements.' Nucleus elements are the vowels or syllabic

consonants. In the 'one-word syllable' try [traɪ], the diphthong /ai/ is the nucleus element; while the initial consonant cluster which consists of /t/ and /r/ are the marginal elements.

However, some scholars suggest that the term 'syllable' should not be used in either phonetic or phonological sense, but it should refer to a linguistic unit composed of phonemes that are arranged according to certain phonotactic criteria (McCarthy, 1978:107).

Further attempts have been made to provide physiological, acoustic, auditory and articulatory explanations of the syllable and these have been incorporated into two broad theories of the syllable. They include the phonetic and phonemic approaches and the phonetic approach is further divided into the prominence and chest pulse sub-theories (Omachonu, 2010:62). The prominence theory, which is based mainly on auditory judgements, believes that some sounds are more prominent than others and that the number of syllables in a word is determined by the number of peaks of prominence. The chest pulse sub-theory, on the other hand, describes the syllable in the context of muscular activities and lung movements in the process of speech. Experiment by this sub-theory shows that the number of chest pulses, accompanied with an increase in the air can determine the number of syllables produced in a word (Jones 1967; Sommerstein 1977; Gimson 1980; Roach 1997). The phonological theory, however, claims that syllable is based on the permissible phoneme sequence in a language.

Syllables can be classified to be either simple or complex, open or closed and strong or weak depending on the internal components that make them up. Michael (1994:253), explains that the constituents or components of the traditional syllable are depicted as shown in figure (1) below:

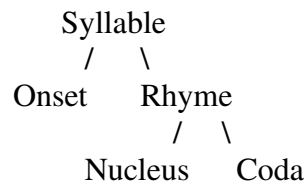


Figure 1: Internal Structure of Syllable (Michael, 1994:253)

Phonotactics, on the other hand, are language universal phenomena and parametric variations which abound across languages. Katamba (1989:165) defines phonotactics as the rules which reflect the speaker's knowledge of what combinations of sounds are allowed in their language. Giegerich (1992:151) avers that phonotactics are part of the phonological study of a language to address the question of how the phonemes of a language can be put together to make well-formed syllables and words; what consonant clusters are permissible; what sequences of vowels and consonants; and in what position within words and syllables that clusters and sequences are allowed. The domain of phonotactics is the syllable rather than the word. Further, Yule (1996:57) states that phonotactics involve

minimal sets which allow us to see that there are indeed definite patterns to the types of sound combinations permitted in a language. According to him, it is, no accident that forms such as [fslg] or [rnlg] do not exist or are unlikely ever to exist. They have been formed without obeying some constraints on the sequence or position of English phonemes. Such constraints are called the phonotactics of that language and are part of every speaker's phonological knowledge. In a similar development, Celata and Calderone (2015) reaffirm the above claims as they pronounce those phonotactics involve the principles according to which languages allow sound combinations and segment sequencing to form larger units such as syllable and words. This source advances further that in studying phonotactics, one is faced with some problems and one of them has to do with the universal versus language-specific nature of phonotactic rules and preferences.

Omachonu (2016) explains that phonotactics is the systematic phonological organization of segmental units, especially phonemes and their combination into syllables, morphemes or words, which follow definite natural ordering that a given language allows or permits. He stresses that while syllable structure deals with the combinatory sound sequence(s) which a language allows, phonotactics refers to the act of combining phonemes to form pronounceable units in the language as it follows the dictates of the inherent natural ordering of such segments permissible in the language. By implication, certain combinations which are allowed in one language may not be permissible in another.

This study comprises five sections. First, the preceding section which gives the general introduction of the study; section (2) is the empirical review of previous studies relevant to present study; section (3), the general description of the methodology of this study; section (4), the presentation and analysis of data and section (5), the concluding remarks.

2. Empirical Studies

In his study, Michael (1994:253) explains that the nucleus is the syllable's essential core and this is evident in the primitive syllable inventories (CV, VC, V, CVC) from which the world's languages draw their syllable structure types. By implication, every language has its syllable structure forms; a language may have V, CV, CVV, CVC, VC as the case may be. The syllable structure typology of Igala, for instance, as described by Omachonu (2001:85), is characterized by; V, CV, CVV and N, arguing that, the vowels do not only form the peak of a syllable in Igala, but they could also constitute a whole syllable. He provides the following data for illustration: V: /o/ as in [ó.ló] 'poison', /u/ as in [ú.dó] 'navel', CV: *bí* 'to give birth', *kà* 'to say', CVV: *dúú* 'every', *bíá* as in [á.bíá] 'dog', N: [é.ń] 'what', [ágbá.ń] 'roofing zinc'

Also, Aziza (2007:279), describing the syllable structure of Urhobo stated that there are four (4) syllable structures in the language: V, CV, CCV and CVV. She presents the following data to illustrate her claim: V: *e* 'yes', *o/ɔ* 'he, she, it', CV: *gbè* 'dance', *sà* 'shoot', CCV: *brù* [brù] 'cut', *kri* [kri] 'be late', and CVV: *miè* 'take', *kwà* 'to pack'.

On the other hand, scholars appear to have paid equal attention to the phonotactics of languages as shown in the existing literature. For instance, Suomi, Toivanen and Yitalo (2008) researched on *Finnish sounds structure: phonetics, phonology, phonotactics and prosody*, and elaborately discussed (under phonotactics) the combination of individual phonemes as well as sound sequences that are either allowed or prohibited in the Finnish language. One of which is the word-initial CC that consists of a number of plosive + liquid sequences, such as /pl/, /pr/, /tr/, /kl/, /kr/, etc. Out of this possible word-initial plosive + liquid sequence, */tl/ is prohibited, this is very probably because this sequence is prohibited word-initially also in the languages from which words have mostly been borrowed to the language (formerly Swedish, now English). These sequences are also common in native descriptive words, e.g., *prätkä* ‘motorcycle’, *plötö* ‘liquor’ (both words have humorous connotations). Besides, CC sequences, according to their finding, can be divided into double consonants or geminates and sequence of two dissimilar consonants. The double consonants /dd/, /bb/, /gg/, /ff/ and /jj/ only occur in recent loanwords, but /hh/, /jj/ and /vv/ do not occur at all. Lastly, they also report that the glottal stop /h/ never occurs word-initially in Finnish, but it does occur elsewhere: between x-morphemes and vowel-initial words, before phonologically vowel-initial words, etc.

Furthermore, in his research on Igala phonetics and phonology, Omachonu (2011) devoted a section to syllable and phonotactics of English, where he explained the restrictions or non-occurrence of the glottal fricative /h/, the velar nasal /ŋ/ and others in certain environments in English. Likewise, the non-occurrence of consonant clusters in syllable-final position in most New-Benue Congo languages are also instances of such restrictions. In more recent time, Omachonu (2016) following his earlier study, examined aspects of Igala phonology entitled *vowel sequence and phonemic status of /h/ and /ŋ/ in Igala* and he revealed that although Igala does not permit consonant clusters, vowel sequences are permissible. He further notes that they occur with restriction to /i/ occurring either after or before any other vowel. He gives the following examples:

Table 1: Vowel Sequence in Igala

/ai/	/ie/	/ia/	/io/
aiba ‘female name’	bię ‘to defile’	ábía ‘dog’	hiọjà ‘to stroll’
kpài ‘and’	ẹbiẹ ‘blood’	íhia ‘sneeze’	ẹ’hiọ ‘bread fruit’
àidà ‘willful courting of trouble’	bięnę ‘to be bad’	ùhia ‘tiredness’	ẹbiọlọ ‘gruel’
àiko ‘cock’	ímię ‘dew’	hìàdé ‘to meet by chance’	hiọwó ‘to be the fault of’

Omachonu (2016:168-169) further reports that although the voiceless glottal fricative /h/ occurs in all the environments (i.e. word-initial, medial and final position), it does so

only before a high front unrounded vowel /i/ and when it occurs at the word-final position, the vowel /i/ consistently bears a low tone. He provides the following examples:

1) Word Initial	Word Medial	Word Final
hì ‘to cock’	àhímá ‘louse’	ègbàhì ‘name of a tree’
hí ‘to weave’	áhímú ‘mad person’	ògàhì ‘glory’
hìtè ‘to escort’	áhí ‘odour/smelling’	òhídáka ‘sacrifice’
híka ‘to be quick/fast’	éhí ‘weaving’	òtíhì ‘tail’

However, going by data in (1) above, we observe that the sound /h/ which is claimed to occur in all environments in Igala may be restricted to occur only word-initially and medially because the data used to illustrate its occurrence in word-final position does not constitute closed syllable. Present researcher’s argument is supported by Unubi’s (2018) in whose data it is clearly shown that /h/, just like other consonants (except /ŋ/) occurs only at the beginning and middle of words. This goes without saying Omachonu (2016) and Unubi (2018) agree on the fact that no consonant is allowed to occur in word-final position in Igala (not even /h/) except it is a velar nasal or bilabial nasal /ŋ/, /m/. The examples as given in 2) are from Unubi (2018):

- 2) /ŋ/
 éŋ ‘what’
 éŋ ‘something’
 òŋ ‘he/she/it’
 ùchẹun ‘programme’

- /m/
 ágbám ‘roofing zinc’
 egbè ‘a thud’
 àgbam ‘bit’
 àgwóm ‘a type of Igala music’

Gleaning from the existing literature few of which are explicated above, it is apparent that the concept *syllable* structure and phonotactics has over the years received a high level of scholarly attention. And as reviewed above, this has resulted in the formulation of competing schools of thought by different scholars in their attempt to adequately describe the concepts. However, there has barely been any extensive and substantive study hitherto on this subject(s) (as well as other linguistic aspects) in Gbagyi (this does not in any way neglect the fact that a few earlier works exist), and for this reason, Gbagyi has remained under-researched. This, therefore, informs the researcher’s decision to explore this area of linguistic study, given that the syllable is said to be “an abstract unit of the prosodic organization through which language expresses much of its phonology” (Michael, 1994:252).

Gbagyi belongs to the Nupoid sub-group of the Niger-Congo family of languages (Blench, 2013). The Gbagyi people occupy what is politically known as central Nigeria. The language is spoken in five states of the Federation. They are Kaduna, Kogi, Niger, Nasarawa

and the Federal Capital Territory, Abuja. According to the Nigeria Population Census in 2006, the number of Gbagyi speakers was estimated to be 4.8 million but because Gbagyi has a high birth growth rate of 3% per annum, one can project from the 2006 national census estimation of 4.8 million that by 2012, the Gbagyi people were not less than 8,000,000. The language has two major dialects which are Gbagyi-Nge and Gbagyi-Nkwa. Gbagyi, being one of the minority Nigerian languages is under-researched and seems to be barely known especially within its linguistic context. Hence, this paper serves as a worthy addition or contribution to the existing literature on the language, particularly, regarding its syllable and phonotactics to facilitate the efforts of bringing its phonology into the limelight. Very worthy of mention is that Gbagyi operates a six (6) vowel system, comprising /a, e, u, i, o, ə/. It is further revealed that there are twenty-five (25) phonemic consonants in Gbagyi. They are /p, b, t, d, k, g, ɓ, kp, gb, f, v, h, s, z, ʃ, ʒ, ʎ, ɖʒ, m, n, ɲ, ŋ, l, j, w/. The distributional patterns of both vowels and consonants in Gbagyi as culled from Dalhatu (2017) will be presented in section (4) as the take-off for data presentation and analysis. However, of equal importance is the mention of the fact that Gbagyi has both register and contour tones, with four register tones (Super high, High, Mid and Low) and two contour tones (Super-high rising and High falling). It must be noted that while all other tones are marked using some conventional annotations, the Mid-tone is generally left unmarked. Therefore, any unmarked tone bearing unit in the presented data would signify Mid-tone.

As earlier acknowledged, attempts have been made by some scholars to describe the syllable of Gbagyi. The earliest of them is that which was put forward by Hyman & Magaji (1970), who although had rightly observed that there are six consonant clusters in Gbagyi, they failed to adequately describe them. Instead, they made an ambiguous description of the CN syllable structure type, in that while they explicitly described it as a cluster, their explanation of them gives the impression that they consider them to be either post-nasalized or simultaneously articulated with the consonants they occur as the following quote testifies ‘CN represents a consonant with nasal release followed by the oral vowel /a/’ and ‘the co-articulated consonants /kp/, /gb/, /km/, and /gm/ are produced with a minimum of implosion.’ Thereby implying that /km/ and /gm/ are analogous to the simultaneously articulated /kp/ and /gb/. A re-examination of such syllable structures in Gbagyi that seem controversial. Also, Shekwo (1988), whose efforts towards the scholarly development of the language are highly commendable, revealed in his study that there are 44 consonant clusters in Gbagyi. However, while the present researcher acknowledges that there are consonant clusters in the language, she observes that most of the so-called consonant clusters in Shekwo’s text are either instance of secondary modifications of consonants, which include palatalization (C^j), labialization (C^w) or mere orthography where two letters are used to represent single phonemes in the language. For instance, Shekwo (1988:3-7) presents the consonants /yn, zh, ch, gw, kw, sh, fj and pj/ as consonant clusters but in the real sense, they are orthographic letters (zh for /ʒ/, ch for /tʃ/, sh for /ʃ/) and palatalized and labialized sounds (/f^j/, /p^j/).

3. Methodology

It is pertinent to clearly state that this study is purely descriptive. Data were primarily sourced from three randomly selected competent native speakers of Gbagyi, who are resident in Bwari Area Council of the Federal Capital Territory, Abuja. Equally used were data on the phoneme inventories of Gbagyi which were originally identified and described with their patterns of distribution by Dalhatu (2017). The researcher's native intuitive knowledge of the language under study came in handy being a linguist and a competent native speaker of Gbagyi. Data were collected using a constructed list of terms in English which the language assistants were required to give their equivalence in Gbagyi. Afterwards, these words were elicited, translated and transcribed for systematic analysis and adequate description of the phonological phenomenon under study in Gbagyi. And from these data, conclusions were drawn based on the findings of the research.

4.1 Consonants and Vowels of Gbagyi

In her research, Dalhatu (2017), using an acoustic instrumental tool of Praat, found that there are six (6) vowels and twenty-five (25) consonants in Gbagyi. They are:

Vowels: /a, e, u, I, o, ə/

Consonants: /p, b, t, d, k, g, ɓ, kp, gb, f, v, h, s, z, ʃ, ʒ, ʧ, ɗ, m, n, ŋ, l, j, w/.

These phonemes are distributionally patterned in the following fashion:

3) Consonants:

Bilabials

Initial	Medial	Final
/p/ pa [pa] 'to tie'	ópé [ópé] 'hill'	-
/b/ bà [bà] 'to count'	ábâ [ábâ] 'a place'	-
/ɓ/ ɓe [ɓe] 'to come'	óbí [óbí] 'child'	-
/t/ tuná [tuná] 'to put on fire'	òta [òta] 'dept'	-
/d/ dàwiyà [dàwiyà] 'masquerade'	òda [òda] 'father'	-
/k/ ka [ka] 'to write'	àkatá [àkatá] 'lie(s)'	-
/g/ gà [gà] 'to give'	àgù [àg ^w ù] 'chest'	-
/kp/ kpéyè [kpéjé] 'to know'	ókpí [ókpi] 'wickedness'	-
/gb/ gba [gba] 'to revenge'	ógbá [ógbá] 'a skill'	-

Fricatives

/f/ fí [fí] 'pour in'	àfa [àfa] 'spinach'	-
/v/ ví [ví] 'to follow'	òvì [òvì] 'thief'	-
/s/ sí [sí] 'to buy'	òsà [òsà] 'time'	-

/z/ zò [zə] ‘to become’	ózâ [əzâ] ‘a person’	-
/ʃ/ shiya [ʃija] ‘to uproot’	oshe [əʃè] ‘heaven, the sky’	-
/z/ zhèpo [zèp ^w o] ‘traditional dish’	ózhî [əzî] ‘town, village’	-
/h/ ho [hə] ‘you (Obj)’	òho [əhə] ‘you (Subj)’	-

Affricates

/tʃ/ che [tʃe] ‘to cut’	óchî [ətʃî] ‘an injury’	-
/dʒ/ jìya [dʒija] ‘to scrub’	òje [ədʒe] ‘cloth’	-

Nasals

/m/ ma [mã] ‘to born’	àma [àmã] ‘zobo fruit’	fan [fam] ‘weed not’
/n/ nányí [nãjĩ] ‘body’	óná [ónã] ‘dream’	tan [tan] ‘iron not’
/ŋ/ nyi [njĩ] ‘to lick’	ànyà [ànã] ‘dispute’	-
/ŋ/ ñgè [ŋgè] ‘that’	ǎngèná [ǎngèná] ‘that what’	búm [búm] ‘run not’

Approximants

/l/ lo [lə] ‘go’	ólú [əlú] ‘bird’	-
/j/ ye [je] ‘to agree’	óyé [ójé] ‘name’	-
/w/ wo [wə] ‘to hear’	òwá [əwá] ‘snake’	-

Table 2: Vowels

Vowels	Initial	Medial	Final
/i/	-	ányíknã [ánĩknã] ‘teeth’	àchi [ətʃi] ‘injection’
/e/	-	òjékpé [ədʒékpé] ‘a blouse’	ókpé [ókpe] ‘a cover’
/ə/	ónã [ónã] ‘fire’	àbòkwó [àbək ^w ó] ‘a boast’	ábó [ábó] ‘predicaments’
/u/		òsugbmà [əs ^w ugbmã] ‘honey’	òsu [ós ^w u] ‘bee’
/o/		àbwoknu [àb ^w oknu] ‘outer court’	yàko [jàk ^w o] ‘uncle’
/a/	àmula [àmũla] ‘wedding’	àkalá [àkalá] ‘strengths’	zhna [znã] ‘to wash’

4.2 Gbagyi Syllable Structure

Languages have peculiar ways of structuring syllables. The syllable structure of a language is constituted by the way phonemes are patterned in a word, including the basic elements such as the onset, the nucleus, and the coda. The vowel or vowel-like segment

constitutes the nucleus, which is obligatory in the syllable. The consonant which usually precedes the nucleus is the onset. In some languages, the onset is obligatory, while in others, it is not. The coda, on the other hand, is also constituted by a consonant usually preceded by the nucleus in the word, and as in the case of the onset, it is an obligatory element in some languages, but optional in other languages. While Gbagyi predominantly operates an open syllable type, closed syllable type is also attested.

In Gbagyi, while both the onset and coda are optional elements, the nucleus is obligatory such that no syllable can be formed without it. The syllable structure typology of the Gbagyi language is characterized by the following syllable structure types: V, CV, N, CGV (consonant-glide vowel), CNV (consonant-nasal vowel) and CNYV/CNWW (consonant-nasal-glide vowel). While the first three-syllable structure types are common in nearly all the world's languages, the last three appear less common, therefore, (while describing all) the researcher will focus more on them.

4.2.1 The V (Type)

The vowel is observed to constitute a whole syllable without the help of any other segment. Example:

- 4) [a] 'indefinite article'
[a-] 'plural marking prefix' as in *ápítâ* 'legs'
[ó] 'yes'
[ò] 'I see'

From data (4) above, it is illustrated that the vowel /a/ and /o/ do not only form the peak of a syllable but also, they form an entire syllable, for instance, in *ápítâ* 'legs, the vowel /a/ serves as a syllable and a bound morpheme which is added to a singular noun to make it plural.

4.2.2 The CV (Type)

CV is another syllable structure type in language constituted by onset and a nucleus. Sometimes the C in the CV syllable type in Gbagyi may secondarily be modified in that the consonants may be palatalised or labialized depending on its environment of occurrence. These are discussed in the following.

- 5) CV
be [be] 'come'
se [se] 'to marry'
ka [ka] 'to write'
shi [ʃi] 'to keep'

(with palatal modification)

- bi [bʲi] 'to bury'

si [s̄i] ‘to buy’
bi [b̄i] ‘to be riped, cooked’

(with labial modification)

bò [b̄^wò] ‘to rotten’
bù [b̄^wù] ‘to hide’
fù [f̄^wù] ‘to bathe’

From data (5) above, it is observable that this syllable structure generally codifies verbal items in Gbagyi as one can notice the consistency of the structure in its occurrence in all the verbs.

4.2.3 The N (Type)

One unique feature in Gbagyi syllable structure is the syllabic nasal phoneme which does not only constitute a nucleus of a syllable but just like the vowels, constitutes a whole syllable. Examples are given below:

- 6) [ń] ‘at’
[ň] ‘and’
[ñ] ‘with’

In data (6), it is observed that the syllabic nasal /n/, forms an entire syllable of itself without being supported by any other element in Gbagyi. Apart from the nasal consonant constituting a syllable independently, it also occurs as an initial syllable of a word, retaining its syllabic status as a word-initial element. Some examples are:

- 7) ńgě [ńgě] ‘that’
ńgěná [ńgěná] ‘that what?’
nta [nta] ‘three’
nbà [mbà] ‘two’

Nasals also occur at the syllable-final position, this time, nasal is suffixed to the verbs to express negation. It is observed to occur in agreement with the place of articulation (POA) of the initial consonant of the verb. Examples are provided below:

- 8) tu ‘put’ tún [tún] ‘put not’
da ‘to tell’ dan [dan] ‘tell not’
gà ‘to give’ gan [gàŋ] ‘give not’
fa ‘to stop’ fan [fám] ‘stop not’
pa ‘to remember’ pan [pám] ‘remember not’

In data (8), observe that the nasal /n/ occurs as the final syllable of the word. Note, however, that when the nasal, that is, the negator which is underlying /n/, occurs in the environment of a bilabial consonant, it assimilates the place feature of the consonant thereby becoming [m]; it changes to [ŋ] when it occurs in the environment of a velar consonant accordingly. But it retains its place feature of alveolar when it occurs after an alveolar consonant as in data (8) respectively. It is important to note also, that the nasal consonant in this context is not syllabic but a purely consonantal coda as it appears to bear no tone feature.

4.2.4 The CGV (Type)

This syllable structure type is in line with Hyman & Magaji's (1970) earlier position. It describes when a consonant co-occurs with a glide (/w, j/) in words. Data is provided below to illustrate this in the meantime before a further discussion is made.

- 9) pyányí [pjáɲí] 'clean'
 fyàya [fjája] 'to loosen'
 óbyá [óbjá] 'grass roof'
 ópyá [ópjá] 'moon'
- bwa [bwa] 'to pound'
 kwàkwà [kwàkwà] 'hammer'
 óbwa [óbwa] 'hand'
 bwa [bwa] 'to find'

Based on data (9) above, it is observable that the glides /j and w/ co-occur with other consonants in Gbagyi. However, this is not as a result of the assimilation process of palatalization or labialization. Going by the data, it is obvious that the environments where these occur do not meet the requirement stated for such assimilation processes to take place. For instance, palatalization takes place when a consonant precedes a high front vowel and labialization process takes place when a consonant precedes a round vowel. This, therefore, follows that they are clusters and not secondary modifications of consonants.

4.2.5 The CNV (Type)

This is also another syllable structure type observed in this study to exist in Gbagyi. It is a syllable structure type that consists of a consonant, a nasal and a vowel. Data are provided below to illustrate this:

- 10) gni [gnĩ] 'to stand'
 fnì [fnĩ] 'to sweep'
 kna [knã] 'to fry'
 gbmì [gbmà] 'to remove'
 òkpmi [òkpmĩ] 'okra'
 bmà [bmã] 'to break, reduce'

Going by data (10) above, Gbagyi is observed to manifest a CN cluster which always precedes a nasalized vowel. Note importantly that only vowels which are receptive of nasality can occur in this environment, this is why in the above data, no CN cluster is followed by either /e/, /ə/ or /o/. This challenges Hyman and Magaji's (1970:12-14) controversial position that suggests that CN is both a cluster and a postnasal consonant followed by oral vowels; and refutes Blench's (2013:8) assertion that most consonants in Gbagyi are produced with a nasal release.

4.2.6 The CNY/CNW

Gbagyi also exhibits the syllable structure type, whereby within the CNV structure, a glide is also observed to occur, this consequently results in a possible three consonant cluster in the words in the language. Although these glides may occur as a result of the assimilation process (as shown in 5), they also occur as clusters. Data are given below to illustrate this:

- 11) òbm̩yí /əbm̩í/ 'outside'
 pmyáya /pmjájá/ 'to wipe'
 pm̩jì /pm̩í/ 'to twist'
 òbm̩ja /əbm̩ja/ 'fish'
 òknwu /əkn^wu/ 'knuckle'
 óknwú /ókn^wú/ 'war'

The above last three-syllable structure types appear controversial as compared to the first three, following the restricted occurrence of consonant clusters in the Benue-Congo languages (evident by the fact that borrowed words which include clusters are resyllabified by vowels inserted), hence, they require a close examination and analysis. The stated restriction implies that if we assume that there are no consonant clusters, we may as well assume that the CGV is not a cluster but the manifestation of the assimilation process, that is when a consonant becomes palatalized or labialized and if so, we may need to generate a coalescence rule for cases where glide formation is indicated, such that, the glide will now fuse with the consonant to form palatalized or labialized consonants, but this is not explanatorily adequate as it complicates the grammar by adding one more rule to it. On the other hand, if the researcher assumes consonant clusters, it might be necessary to account for why the consonants in the C2 position is occupied only by a glide (CGV). However, this inadequacy is obviated when we look at cases of consonants followed by nasals, which could be argued to be post-nasalization (CNV), but for which a difficulty springs up in cases of (CmyV) (which the researcher would preferably categorize as (CNY/CNW), where a glide co-occurs with CN or a consonant receives double superimposition or secondary articulation of nasal and palatal/labial, but it would be difficult to account for this articulatorily. The researcher reverts, therefore, to the assumption that such cases are clusters of CN, proposing that there are three types of consonant clusters in Gbagyi: CN,

CG and CNG (where the G is either Y or W), as part of the six types of syllable structure which includes V and CV respectively.

4.3 Gbagyi Phonotactics

Going by the data presented to illustrate the distributional pattern of consonants and vowel phonemes in Gbagyi, it is observed in this study, that phonemes; vowels or consonants are permissible or prohibited to occur depending on the environments or positions in words. This is according to the dictates of the phonotactic rules of the language. For instance, in the case of the consonants, all consonant phonemes occur only in word-initial and word medial positions. However, an exception is observed in the case of nasal consonants; m, n, ŋ where they occur in word-final position. This is illustrated below:

12) Word Initial	Medial	Final
/m/ ma [mã] ‘to born’ ma [mã] ‘to be offended’ mi [mĩ] ‘to build’	àma [ãmã] ‘zobo fruit’ ómí [ómĩ] ‘oil’ òmì [òmĩ] ‘inside’	fan [fam] ‘weed not’ vín [vín] ‘follow not’ bàn [bàm] ‘count not’
/n/ nányí [nãní] ‘body’ nakó [nãk ^w ó] ‘cow’	óná [ónã] ‘dream’ ónǎ [ónǎ] ‘fire’	tan [tan] ‘iron not’ dan [dan] ‘tell not’
/ŋ/ ñgě [ŋgě] ‘that’ nká [ŋká] ‘who?’	ǎngèná [ǎŋgèná] ‘that what’ nyìngnangnana [nyìngnãŋgnã] ‘earth worm’	búúm [búúm] ‘run not’ gàn [gàn] ‘give not’

Observe from data (12) above that the nasals m, n and ŋ occur in all environments. This is unlike the rest of the consonants in Gbagyi which are prohibited to occur in word-final position. It is noteworthy that the nasals occur as negation morphemes, suffixed to negate affirmative verbs in Gbagyi. It implies that, although Gbagyi predominantly operates an unchecked syllable, it also exhibits checked syllable type but in a high degree of rarity.

In like manner, the distributional patterns of vowels in Gbagyi reveals that while some vowels occur in all environments without restriction, others occur restrictively in specific contexts or environments in words. For analysis, data on vowel distributional patterns are presented below:

Table 3: Vowels distributional patterns in Gbagyi

Vowels	Initial	Medial	Final
/i/		ányíkná [ányíknã] ‘teeth’	àchi [àtʃi] ‘injection’
/e/		òjékpé [òdʒékpé] ‘a blouse’	óképé [óképé] ‘a cover’
/ə/	ónǎ [ónǎ] ‘fire’	àbók ^w ó [àbək ^w ó] ‘a boast’	ábó [ábó] ‘predicaments’

/u/		òsugbmà [ə̀s ^w ugbmá̀]	òsu [ə̀s ^w u] ‘bee’
/o/		àbwoknu [àb ^w oknu]	yàko [jàk ^w o] ‘uncle’
/a/	àmula [àmũla] ‘weddings’	àkalá [àkalá] ‘strengths’	zhna [ʒnã] ‘to wash’

Long Vowels do not Occur

In Gbagyi, there is rarely any case of vowel sequence occurrence, in most cases what is obtainable is a scenario where the vowel occurs in a word with a complex tone value. A vowel in a word, for instance, may bear a contour rather than a particular level tone. Observe the following data:

- 13) shnúnwá [ʃnú^wá] ‘tree’
nyaknú [ɲakⁿú] ‘room’
pita [pítâ] ‘leg’
ámî [ámî] ‘blood’
snúknú [snúⁿknú] ‘borne’
sháknú [ʃáknú] ‘pot’
núbó [núb^wó] ‘stomach’
tnútnú [tnúⁿtnú] ‘work/ message’

Observe that in data (13) above, the final syllable of the words does not contain any vowel sequence, rather, it contains a complex tone.

Diphthongs do not Occur

The word formedness constraint (WFC) of Gbagyi does not permit any form of vowel sequence. In other words, no two (different) vowels co-occur, especially, across word boundary, in the language. However, when lexical items are collocated, this constraint is sometimes violated, especially, when the first lexical item ends with a vowel and the second one begins with another vowel. In such instances, if the V1 is a high vowel, this violation is repaired through the process of glide formation, but if the V1 is a non-high vowel, the violation is resolved through vowel elision. When the resulting sequence at a word boundary, for instance, is *lia/* or *lua/*, the initial vowels *li/* and *lu/* are transformed into glides */j/* and */w/* which are articulatorily equivalent to them so that the resultant segments are CG clusters rather than the hiatus of diphthongs. Examples are provided below to illustrate this:

- 14) a) V1 [+high] # V2 [+plural] = Glide Formation
/i, e/ before */a/* → *[j]*
óbí # ábwá [ə̀bjá'á^wá]

child	hands	‘child’s hands’
óbí	# àje	[óbjá’ dʒě]
child	clothes	‘child’s clothes’
àshèwì	# ányí	[àʃewjani]
rice	soup	‘rice’s soup’
magí	# ásnú	[màgjá’ snú]
magi	smell	‘smell of magi’
ófí	# àje	[ófjá’ jě]
death	dress	‘the death’s clothes’

b) /u/ before /a/ → [w]

álú	# ápyí	[álwá’ pjí]
births	hold	‘birth’s homes’
òmu	# áwyě	[òmwáw’jě]
dog	eyes	‘dog’s eyes’
ásháknú`	# ákpé	[ásháknwá’kpé]
pots	covers	‘covers of pots’
cheknú`	# ábwó	[ʃeknwá’ bwó]
basket	holls	‘holes of a basket’
ónú	# ázâ	[ónwá’ zâ]
husband	people	‘husband’s relatives’

From data (14) above, we can observe that when nouns are joined together, there is a hiatal configuration of vowel sequence, for instance, in *óbíàje*, and in a bid to resolve this dispreferred configuration, the initial vowel of the sequence, becomes a glide /j/, to conform to the well-formedness constraint of the language, since the language is said to allow CGV syllable structure.

Only /ə/ and /a/ Occur Word Initially

In this study, we propose that Gbagyi has a vestigial noun class system, having two classes of nouns, consisting of a zero-noun marker class and a schwa noun marker class. While nouns belonging to the zero class have CVCV word structure, nouns belonging to the schwa class, have VCV structure. Both classes derive their plural form through the prefixation of a low vowel /a/. However, a process of merger is observed in this study to be on-going; it has changed some of the elements of /ə/ class to /a/ initial nouns. The effect of this is that, for some group of nouns, number distinction has been neutralized, in other words, some nouns, though not plural, have /a/ initial syllable as seen in the table (1 & 2), àchi [àʃí] ‘needle’ and àbwàdà [àbwàdà] ‘shoe’.

5. Conclusion

The present study is in line with Hyman & Magaji's (1970) earlier report that there are six (6) types of syllable structure in Gbagyi, only that they were not adequately described by the authors. The study further refutes Hyman and Magaji's assertion that CN is both a postnasal consonant based on the discovery that it is rather a sequence of a consonant and a nasal and not a nasal feature superimposed on single consonants. Also, it was found in this study that there are three types of consonant clusters in Gbagyi, which are CN, CG and CNG. This is contrary to Shekwo's claim of 44 consonants in the language. Further, this study has revealed that Gbagyi predominantly operates an open syllable system. However, an exceedingly rare case of a closed syllable is recorded in the language. This is permissible if and only if the coda element is nasal. On the other hand, some phonotactic rules are observed to operate in Gbagyi, for instance, while all consonants (except nasals) occur only in word-initial and medial position, only two vowels (/ə, a/) out of the six occur in word-initial positions in Gbagyi, uniquely to mark a vestigial noun class system which is observed in this study to attest in the language. Also, it was discovered that while some consonant clusters are permissible in Gbagyi, no vowel sequence can occur in the language.

This paper concludes, following the above findings that there are six (6) syllable structure types in Gbagyi: V, CV, N, CGV, CNV and CNYV/CNWV. The last three-syllable structure types constitute the three types of consonant clusters in Gbagyi. Also, Gbagyi is observed in this study to operate predominantly, an open syllable system, but an instance of a closed system is recorded in the language with restriction to nasal consonants. It follows that all consonants in Gbagyi occur only in word-initial and final positions except nasals which occur in word-final position in Gbagyi, specifically, to mark negation. Also, in Gbagyi, no vowel occurs in word-initial position except /ə/ and /a/. These initial vowels which are prefixes are reported in this study to mark a vestigial noun class system which is observed to attest in Gbagyi. Schwa {ə-} representing schwa noun class marker and {a-}, plural marker. Although, there are some residual cases of seemingly /a/ initial vowels; the researcher thinks that these are cases of underlying schwa merging with /a/. This is evident in zero-noun class. Note, that /a/ is assumed to be a central vowel on the strength of a systematic morphological alternation with /ə/, which is also a central vowel. Evidence for the merger stems from the fact that cases where the merger has occurred, the plural and singular forms of the zero-noun class are pronounced the same as shown in table (1 & 2).

References

- Arbuckle, D. (1967). *Elements of General Phonetics*: Edinburgh: Edinburgh University Press.
- Aziza, R. (2007). Igbo Phonology. In Yusuf, O. (Ed.). *Basic Linguistics for Nigerian Language Teachers*. Port Harcourt: M & J Grand Orbit Communication Ltd. Pp 131-161.

- Blench, R. M. (2013). *The Nupoid Languages of West-Central Nigeria: Overview and Comparative Wordlist*. Cambridge: CBI 2AL.
- Celata, C., & Calderone, B. (2015). Introduction to Phonotactics: Cross-linguistic Perspectives from Acquisition, Speech Production and Corpus Studies. *Italian Journal of Linguistics*. 15:143-158.
- Dalhatu, A. M. (2017). Assimilation and Morphophonemic Processes in Gbagyi in Gbagyi. An Unpublished M. A. Dissertation Submitted at Nasarawa State University, Keffi.
- Katamba, F. (1989). *An Introduction to Phonology*. London: Longman.
- Giegerich, H. J. (1992). *English Phonology: An Introduction*. Cambridge: Cambridge University Press.
- Gimson, A. C. (1980). *An Introduction to the Pronunciation of English*. London: Edward Arnold.
- Gimson, A. C. (1995). *The Handbook of Phonological Theory*. Cambridge, Mass & Oxford: Blackwell Publishers.
- Hyman, L. M., & Magaji, D. J. (1970). *Essentials of Gwari Grammar*. 27, 1-20. Institute of African Studies. Ibadan: University of Ibadan Occasional Publication.
- Jones, D. (1967). *The Phoneme: Its Nature and Use*. Cambridge: W. Heffer and Sons.
- Katamba, F. (1989). *An Introduction to Phonology*. London: Longman.
- Laver, J. (1994). *Principles of Phonetics*. Cambridge: Cambridge University Press.
- MacCarthy, P. (1978). *The Teaching of Pronunciation*. Cambridge: Cambridge University Press.
- Michael, K. (1994). *Phonology in Generative Grammar*. Oxford: Blackwell Publishers.
- Omachonu, G. S. (2001). Igala Phonetics and Phonology: An Overview. An Unpublished M.A. Thesis. Department of Linguistics and Nigerian Languages, University of Nigeria, Nsukka.
- Omachonu, G. S. (2010). *Fundamentals of English Phonetics and Phonology*. Enugu: Rossen Publications Ltd.
- Omachonu, G. S. (2011). *NSUK Text in General Linguistics*. Vol 1, Enugu: Rossen Publications Ltd.
- Omachonu, G. S. (2016). Vowel Sequence and Phonemic Status of /h/ and /ŋ/ in Igala. In *Ihafa: A Journal of African Studies*. 8:154-175.
- Roach, P. (2002). Syllable, Stress and Accent. www.peronal.rdg.ac.uk/staff/peterRoach.

- Roach, P. (1997). *English Phonetics and Phonology*. Cambridge: Cambridge University Press.
- Summerstein, A. H. (1977). *Modern Phonology (Theoretical Linguistics)*. London, England: Hodder & Stoughton Educational.
- Suomi, K.; Toivanen, J. & Yitalo, R. (2008). Finnish Sound Structure: Phonetics, Phonology, Phonotactics and Prosody. The University of Oulu, Oulu, Finland. [online] Available: <https://jultika.oulu.fi/files/isbn9789514289842.pdf.02/01/2020>.
- Unubi, A. S. (2018). Igala Syllable and Phonotactics. *The expression: An International Multidisciplinary E-journal*. 4.6.
- Yule, G. (1996). *The Study of Language*. Cambridge: Cambridge University Press.