

40 **Phonological Analysis of Resyllabification in Chris Nwamuo's *The Wisdom of the King***

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Introduction

The play "*The Wisdom of the King*" is a story of a typical contemporary African scenario with a Nigerian setting. Many Nigerians, mostly those in the lower societal cadre use firewood in cooking because the kerosene is expensive. The government on its own part through the National Orientation Agency (NOA) campaigns for preservation of our natural environment by discouraging indiscriminate tree felling, burning of bushes and encourages replanting of tress where and when one is felled in order to maintain a balance in the ecosystem. But this campaign is more of a lip service as the government is not doing anything to alleviate the suffering of the helpless and hapless masses in the area of provision of affordable prices of kerosene to them for domestic use. The play "*The Wisdom of the King*" is written to portray the Nigerian government position on the policy of discouraging this ugly incidence by the locales. The campaign against felling of trees cannot be achieved by the government alone but the joint efforts of those in governance at the grass root and the locales. Chris Nwamuo the playwright is a prolific writer and a professor of Theatre Studies in the University of Calabar, Calabar, Nigeria.

The play "*The Wisdom of the King*" focuses on mass literacy campaign to dissuade the locale from wanton destruction and deforestation of our ecosystem in order to conserve nature. According to Nwamuo (1996, p.7), "the play touches on the politics of development, the role of leadership and the power of traditional forces on modern thought system". The entire play gives a different message to different people: environmental education to the youth, political concern to the ruling class and stabbing of conscience to deforestation culprit. The play is one piece of meal that is served to satisfy all. Contemporarily, the situation in the story is a true replica

of what is obtainable in the Nigerian society today. The government through its National Orientation Agency (NOA) is campaigning to discourage her citizens from trees felling and the governments at the grassroots have been co-opted into the campaign. But the government is not doing enough to assist the poor masses from felling of trees when the cost of kerosene which would have been a better alternative to the use of firewood is extremely high. Firewood is mostly used by the poor in cooking while gas and kerosene is used by the more affluent. Firewood is obtained by felling trees. The felling of trees distorts the environment and predisposes to the environment and may result to gully erosion, severe heat, loose soil, whirlwind and the resultant removal of roofs and collapse of houses. In northern Nigeria, deforestation and whirlwind, for instance, have been identified as potential causes of environmental diseases and blindness. The negative impact of tree felling includes environmental, societal and economic devastations. As depicted in this play, the grass root chiefs had to be involved to complement government effort to discourage dissipation and deforestation of the environment. In this effort, Council of Chiefs was constituted and these Chiefs form the characters in the play. The characters are: King Duke (King of autonomous communities), Elsie (King Duke's wife), Ekwewe (1st Chief), Ndimele (2nd Chief), Nzeribe (3rd Chief), Obioha (Servant), Jide (Medicine man), Ndu (Guard), Young (Labourer) and Uwaga (Councilor). It is the speech form of the 1st chief (Ekwewe) that is of interest to us as his speech involves breaking of words into smallest pronounceable units. Thus, the objectives of the study are to investigate the pattern of resyllabification of words in Chief Ekwewe's speech, examine the pitch patterns of the resyllabified words and find out other acoustic cues that make Chief Ekwewe's speech to be different from other council members speech form.

To achieve these objectives of this paper, a general survey of literary works by Chris Nwamuo was done. The survey indicated that Nwamuo's works comprise the choice of 3 plays was captivating and out of the 3 plays, it is 'The wisdom of the King' that met our choice of data collection. The entire text was read and data were extracted from the speech repertoire on words from the 1st King that involve breakage of words into minutest units of

pronunciation. A phonological file was opened to contain these stammered, extracted speeches and given to a man of 55 years who naturally stammers to utter the same. The uttered words were recorded in an RSA digital voice midget and were transferred to PRAAT software Wavfile for wave storage. The recoding span took 235ms. The Wavfile was transferred from Praat object and converted into speech synthesis for resyllabification and other acoustic cues in the recorded file. These stammered words were grouped as monosyllabic, disyllabic and polysyllabic based on standard norms for word breakage. The variation in acoustic features was presented in tables for quantitative analysis.

Review of related literature and theoretical framework

Speech is very crucial to our existence as its functional in different domains of our lives. The study of speech has been approached from biological, physical, communicative and socio-psychological perspectives. According to Egbokhare (2003, p.3), "these activities are tied to three major approaches to the study of speech which are the study of speech activities, the functional approach to the study of speech and the study of speech event". This is why speech articulation is seen as a chain involving several stages such as psychological (conception of information), physiological (generation) and physical (transmission) stages. These activities are tied to the functionality of the brain. Ofulue and Ekpe (2009, p.49) assert that:

The ability of humans to generate an unlimited number of sentences based on certain rules...is a clear evidence of active involvement of the brain (the mind) in the production of language or speech" (italicized ours). They add that, "the brain controls several body functions which include movement, mental process - thoughts, comprehension, and learning. It is a greatly modified and enlarged anterior portion of the central nervous system which is located under the skull and its surface is covered by the cortex which is

made up of approximately 10 billion neurons, glial and billions of nerve fibres that connect them.

Adegbite (2013, p.67) adduces that "the brain is a major constituent of the nervous system which features prominently in the study of human anatomy and physiology and receives the greatest emphasis in the field of neurology. It controls ...all activities of the senses and the body..."

Based on the quotations above, for speech production to occur, there must be the presence of the airstream which is displaced by the activities of the articulatory organs. This airstream being egggressively pushed out from the pulmonary tracts has its first contact or fundamental frequency (F_0) at the larynx. It is the rate of vibration of the vocal strands at the larynx that determines the pitch of the utterance. The psychological stage as raised by Egbokhare (2003) is the stage at which various organs of speech under instruction from the brain move to generate sound waves. The involvement of the airstream, phonatory and articulatory mechanism must be synchronized through the activities of the brain. Ofulue and Ekpe (2009) citing (Yule 2002, p.168) touched on localization of the brain in that different components of the brain have different functions to perform at every point in time and specific functions of language ability are linked to a specific location in the brain. A damage or malfunctioning of any localized portion of the brain can lead to speech deformity, one of which is stuttering or stammering.

Stammering (U.K) and stuttering or dysfluency (America) are used interchangeably in speech pathology and other related fields. It is a process whereby a speaker speaks in such a way that the rhythmic or free flow of utterance is interrupted by repetition, blocks or syllables and sometimes may be accompanied by contortion of face and body or hitting of the body mostly the laps or the hands. In the play under study, the writer had not ascertained the severity of stammering by the 1st chief. Stuttering (according to <https://www.stammering.org>) is a neurodevelopmental disorder involving many different brain systems active for speech -

including language, motor, and emotional networks. It also adds that children or adults who stammer do so on words which carry information and when using complex words of several syllables. They tend to stammer more at the start of sentences. This speech defect can be classified as hereditary (inherited in family lineage), congenital (premature birth, head injury), acquired (neurogenic :< head trauma, tumor>, psychogenic :< prolonged stress, psychological conflict> and drug induced). In our instance, it is believed that Chief Ekwewe's speech defect is either hereditary or a congenital language organ physiology. His own seems to be caused by unobstructed air flow of airstream as he accumulates much airstream before speaking. In normal speech habit the vocal cords have to be relaxed and flexible enough to maintain the needed phonation (fast paced-movement), contrarily, in that of stammerers the stream of air as stored in the lungs and vocal cords make the muscles of the cord to be tensed, non-flexible as such phonation is weak and in a forced state. Neef, Anwander, Butfering, Schmidt-Samoa, Friederici and Sommer (2017) affirm that:

"G-g-g-g-good morning' is a daily obstacle for people who stutter. ...they add that scientists have recently discovered that a hyperactive network in the right frontal part of the brain plays a crucial role in this deficit and this inhibits speech movement planning and execution, thereby interrupting the flow of speech".

Articulatorily, the deficiency and inhibition of speech movement between the pressure of the airstream and the velocity rate in the vibration of the vocal strands causes the F_0 to decrease more than usual thereby resulting in droppage in subsequent harmonics taking cognizance of the fact that frequency dies down with distance. The reduction in pressure and the affected velocity lead to breakage in word structure into minute syllables.

Phonologically, a syllable is the smallest pronounceable unit in words in tandem with the phonotactic principles of the language being that phonology is language specific. No matter the level of

breakage every language must comply with linguistic universal of syllable rule, which states that every syllable must have a nucleus and the nucleus must be a vowel or a syllabic consonant (N) (C) V. Units in bracket are optional elements while unbracketed element is obligatory. This shows that there is no syllable without an obligatory element because it is the obligatory elements that carry the pitch of the voice. Fabb (1977, p.30) affirms that:

“Segments are grouped into syllables. At the centre of each syllable is a segment with a high degree of sonorance: in English, high sonorance usually means segment which is a vowel but can also be mean a semi-vowel, a liquid...or a nasal... in fortification. The segment or ...segments which are at the centre of the syllable are called its nucleus”.

This is evident that to every syllable there must be a nucleus and every other segments (consonants) within the phonological context of the nucleus is tied and dependent on the nucleus as a unit of pronunciation. In stuttering, the breakage mostly at the start of a word does not always contain a nucleus if the onset segment is a consonant sound, but if the starting segment is a vowel sound, the vowel is broken to form a unit of pronunciation itself. This unusual breakage without adherence to syllable constraint is what resyllabification is all about.

Universal theory of syllable by Clements and Keyser (1983) is adopted as the theoretical frame for this work. The theory's emphasis is on the timing of segmental organization and allows for interesting and useful possibilities of assigning segments to phonologically appropriate units of utterance. According to Clark, Collins and Fletcher (1990, p.347) “the tiers not only define the timing of segmental organization ...but also take over the role of the feature...by tree structure domination the CV tier. In the Universal Theory of Syllable (UTS) the CV units constituting a syllable and the syllable are dominated by a node. This theory is useful in syllabification and resyllabification of words in that it allows for

flexibility in assigning and reassigning structures where it is phonologically possible. This is in line with descriptive adequacy where the duty of the linguist is to describe and not to prescribe rule(s) for the user of a language. Through the description possible rules may be arrived at to solve not only structural problems but provide speech therapy as well.

Data Presentation and Analysis

The corpuses gathered from the text were grouped into monosyllabic, disyllabic and polysyllabic word for analysis.

Monosyllabic words

Monosyllables are the words with a unit of pronunciation or a release of an air breathe. The words may or may not have any onset or coda but must have a nucleus depending on the phonological constituents as presented 1.i-xxiv below:

1. Monosyllabic words

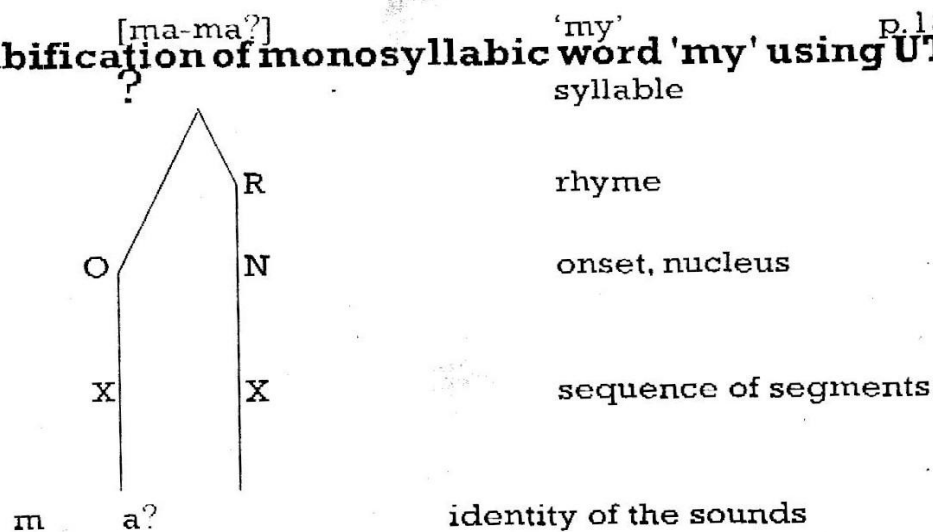
i.	/lɔŋ ɒ /	[l- l- lɔ ɒ]	'long'	p.12
ii.	/wɪə/	[wɪ- wɪ- wɪə]	'where'	p.13
iii.	/ðɪz/	[ðɪ- ðɪ-ðɪz]	'this'	p.13
iv.	/meɪ/	[me- me- meɪ]	'may'	p.13
v.	/maɪ/	[ma-maɪ]	'my'	p.13
vi.	/ɪz/	[ɪ- ɪ- ɪ- ɪz]	'is'	p.14
vii.	/hæz/	[hæ- hæ- hæz]	'has'	p.14
viii.	/aɪ/	[a- a- aɪ]	'I'	p.15
ix.	/fə/	[fə- fə- fə]	'for'	p.15
x.	/ɪt/	[ɪ- ɪ- ɪt]	'it'	p.16
xi.	/ðæt/	[ðæ-ðæ-ðæt]	'that'	p.16
xii.	/wɒt/	[wɒ-wɒ-wɒt]	'what'	p.17
xiii.	/æsk/	[æ- æsk]	'ask'	p.17
xiv.	/ɡʊd/	[ɡʊ-ɡʊ-ɡʊd]	'good'	p.17
xv.	/tə/	[tə-tə-tə]	'to'	p.21
xvi.	/trɪ/	[t-t-trɪ]	'tree'	p.22

xvii.	/sɒm/	[s-s-sɒm]	'some'	p.23
xviii.	/ððə/	[ð-ð-ððə]	'other'	p.23
xix.	/waɪv/	[wa-wa-waɪv]	'wife'	p.35
xx.	/mæn/	[m-mæn]	'man'	p.35
xxi.	/wɒmæn/	[wɒ-wɒmæn]	'woman'	p.35
xxii.	/wɪtʃ/	[wɪ'-wɪtʃ]	'which'	p.35
xxiii.	/ðeə/	[ðeə-ðeə]	'there'	p.38
xxiv.	/keɪəs/	[k-k-keɪəs]	'chao'	p.38
xxv.	/vɔɪs/	[v-v-vɔɪs]	'voice'	p.39

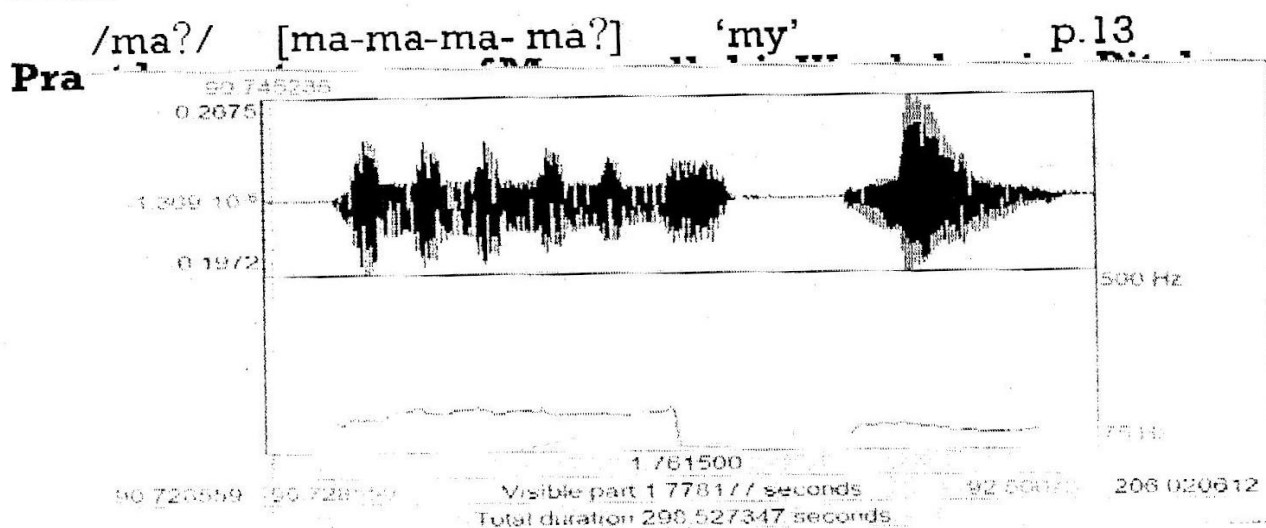
Source: *The Wisdom of the King*

Using 1 v. Above a normal and standard syllable structure is made of the rhymes which comprise the nucleus as an obligatory element and may or may not have onset (starting consonant) or coda (ending consonant). But in the speech of a stammerer as extrated from '*The Wisdom of the King*' the syllabic structure of monosyllabic words has been restructured by the faulty pressure of the fundamental frequency (Fo) to multiple beats of air breathe in relation to the velocity of the vocal strands. The data attest that no matter the minutest unit of breakage or reysyllabication every minutest unit still takes a nucleus which other segemnts are dependent on. In situations where the first segment of a word is a vowel sound, the vowel being an obligatory element is isolated and resyllabified to for a unit of pronunciation as seen in 'is', 'I', 'it' and 'ask'. Apart from vowels constituting the sonoric peak of a syllable, in its absence the nasal and liquid sounds can occupy the same syllabic slots and this is what is obtainable in 'i' where [ɪ] is resyllabified as a unit of pronunciation.

Fig. 1: Syllabification of monosyllabic word 'my' using UTS p.13



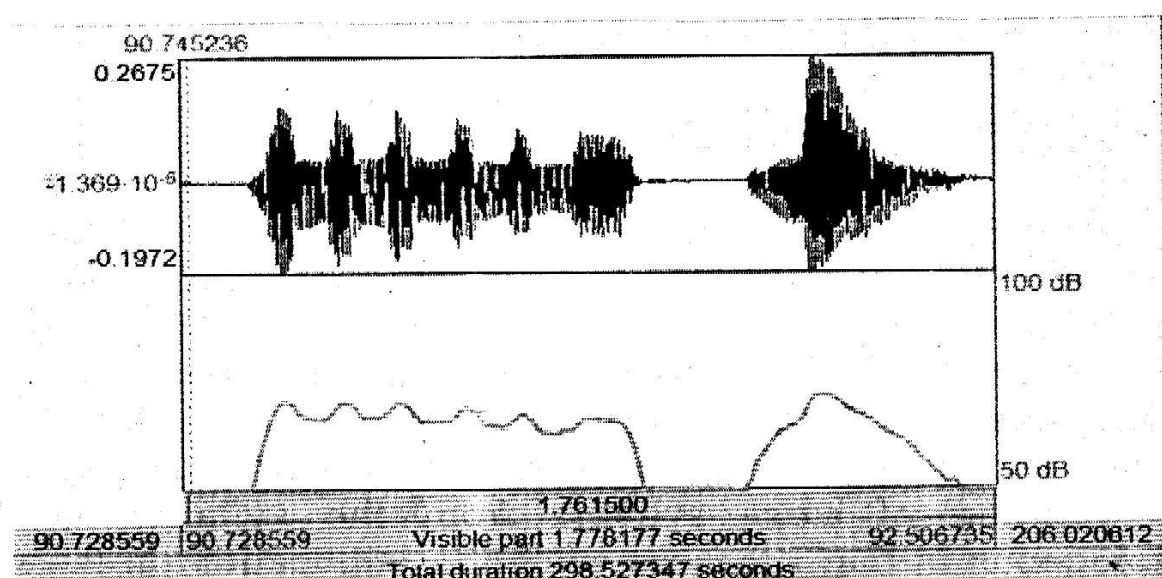
Laboratorily, acoustic cues like pitch, intensity, spectrum, formant and duration are presented as proofs to the fluctuation that lead to unusual breakages in units of pronunciation. The pitch, which marks the sonority peak in a unit of pronunciation, is measured in hertz (Hz). [ma] as a unit of utterance is made of a nasal sound which is voiced and a vowel which is equally voiced. The bulkiness of the wave form in the first resyllabified unit of pronunciation in the spectrogram in Praat 1 on the next page is larger in the vowel sound than the nasal sound, a proof that though the two sounds are voiced the vowel still remains the more sonorous. In the last unit of pronunciation which is taken as a whole without syllabication, the wave form is bulkier, darker and longer as the last segment is a diphthong and a heavy syllable though an open syllable without a coda.



Acoustic Cues	1st resyllabified unit	2nd resyllabified unit	3rd resyllabified unit/Hz	Full Syllable
Pitch	156.5 Hz	171.3 Hz	172.3Hz	124.Hz
Intensity	70.21db	69.87db	69.86	65.65db
Duration	0.164ms	0.284ms	0.421ms	0.509ms

As presented in the frequency moderation table below the first, second and third resyllabified units exhibit frequency fluctuation of 157Hz, 171.3Hz and 172.3Hz, respectively, while the fully un-syllabified unit stabilized at 124Hz.

Table 1: Acoustic Cue Table (ACT) of Monosyllabic Word



Sounds are either tensed or lax and intensity is measured in decibel (db). The intensity just as pitch equally exhibits an avalanche of fluctuation in measurement from 70.21db, 69.87db, 69.86db for the 1st, 2nd and 3rd resyllabified units respectively, while the full syllable word stabilized at 65.65db. The duration of each resyllabified unit increased progressively from 0.164ms, 0.284ms and 0.421ms from the first to the third, whilst of the full unit of pronunciation it skyrocketed to a staggering 0.509ms because of the onset nasal and the twin vowel which form a unit as a diphthong and a heavy syllable.

Disyllabic words

Disyllabic words are words with two units of pronunciation or double release of air breathe. Words with this structure must have two nuclei on which other segments must hang. In instances where the syllables have no onset or coda, the nucleus stays by itself and constitutes a syllable. Disyllabic words that were subjected to resyllabification as found in *"The Wisdom of the King"* is as presented in 2 i-iv on the next page:

1. Disyllabic words

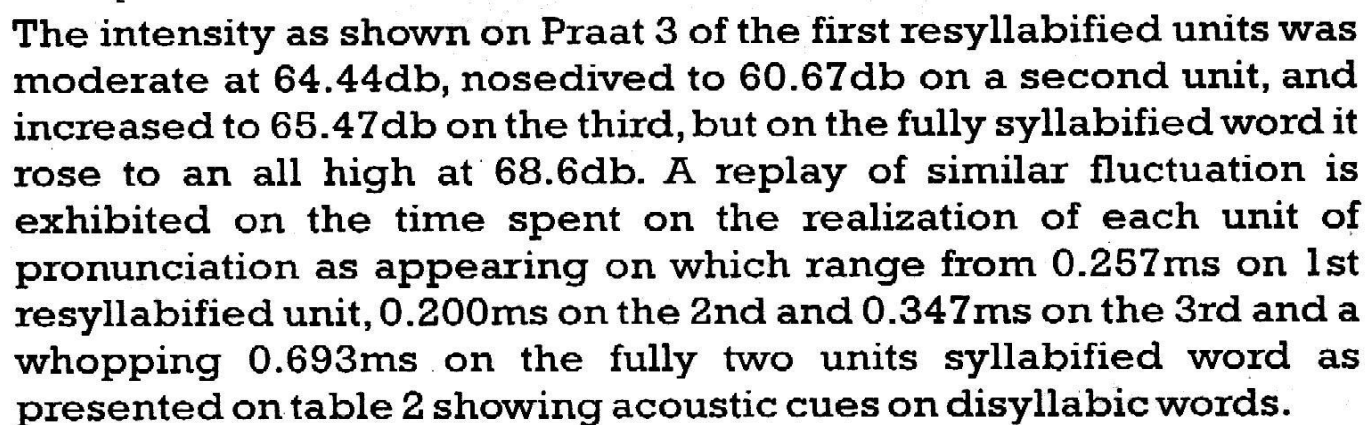
i. /oluoha/	[o-o-oluoha]	'name of the King'	p.17
ii. /weðə/	[we-weðə]	'weather'	p.18
iii. /vɛrɪ/	[vɛ-və:vɛrɪ]	'very'	p.22
iv. /niəlɪ/	[n-n-n-n-niəlɪ]	'nearly'	p.35

Source: *The Wisdom of the King*

Using 2 iv, the tautosyllabicity of 'nearly' a two syllabic word into four units of pronunciation as shown in Fig 2. is of the fact that nasal sounds like the liquids can occupy the nucleus slot of a syllable in the absence of a vowel sound. Subjecting this to UTS principles the 1st King was able to make a derivation of [Cn- Cn-Cn- CV-CV] from a CV-CV structure (Cn syllabic nasal, - syllable boundary, changes to). Creating of extra syllable from the syllabic nasal is tautologeous in that it has no semantic implication on the word rather it exhibits a faulty F₀ which leads to an unnecessary fluctuation in waveform between the tautosyllabic units and the normal inherent syllabic units in the utterance.

Acoustically Praat 2, the spectrogram of a disyllabic word 'nearly' confirms the tautologeous resyllabification by a derivation process of variation in pitch on each resyllabified unit. The resyllabified units appear as 154Hz, 171Hz and 171Hz on the 1st, 2nd and 3rd units of pronunciation and stabilized 138Hz on the fully syllabified unit. The pressure was excessively low at the 1 unit to be able to pulsate the subsequent harmonics. The take-off velocity and frequency thereby resulted in a not so high but a stable frequency of 171Hz, successively and stabilized fully at 138Hz on the last unit

Fig. 2: Syllabification of Disyllabic word 'nearly' using UTS

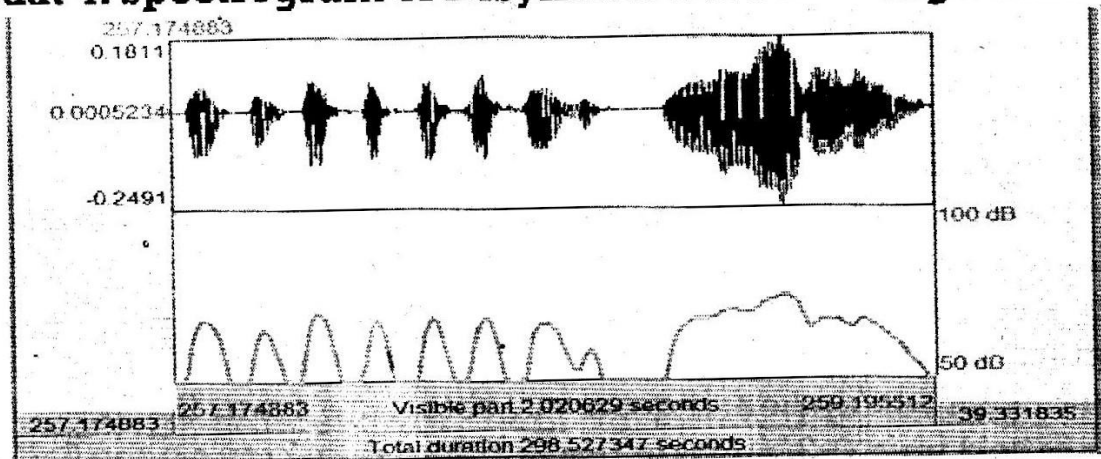


Praat 3: Spectrogram of Disyllabic Word 'nearly'



Table 2: Acoustic Cue Table (ACT) of Disyllabic Word 'nearly'

Acoustic Cues	1st resyllabified unit	2nd resyllabified unit	3rd resyllabified unit/Hz	Full Syllable
Pitch	154Hz	171Hz	171Hz	138Hz
Intensity	64.44db	60.67db	65.47db	68.6db
Duration	0.257ms	0.200ms	0.347ms	0.693ms

Praat 4: Spectrogram of Disyllabic Word showing Intensity

Polysyllabic words

Polysyllabic words are the words articulated with more than two units of pronunciation or air breathe. The units of pronunciation could range from three to any number of which the highest known is eleven in the English word 'an-ti-dis-es-ta-blish-men-ta-ria-nis-tic'. It is a standard rule that any unit of the syllable must contain a nucleus and no other segment. Polysyllabic words found in the text under study are as shown in 3 i-v below:

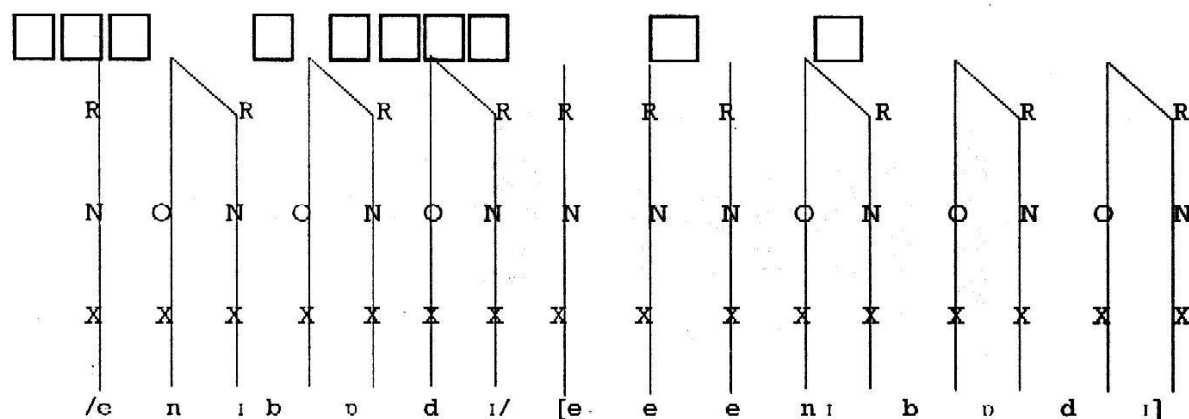
- i. /gəðə:ri ɒ/ [gə-gə-gə-gə-gəðə:ri ɒ] 'gathering' p.14
- ii. /ɪmbærəsi ɒ/ [e-e-embærəsi ɒ] 'embarrassing' p.17
- iii. /enɪbɒdi/ [e-e-enɪbɒdi] 'anybody' p. 19
- iv. /lækɪli/ [læ-læ-lækɪli] 'luckily' p. 20,
- v. /enθɪ ɒ/ [e-e-enɪθɪ ɒ] 'anything' p.21

Source: *The Wisdom of the King*

Structurally, polysyllabic words using UTS principles maintain the below structure as shown in Fig.3. using example iii above:

/enɪbɒdɪ/ [e-e-enɪbɒdɪ] 'anybody'

Fig. 3: Syllabification of Polysyllabic word using UTS
V-CV-CV-CV **V-V-V-CV-CV-CV**



As a thumb rule, a nucleus can break out and form a syllable by itself without other components as in the first syllable before derivation. Even during derivation of the tautosyllabic units of the stammering, the the first three syllables broke to form individual syllables without any other supporting segments.

Spectrographically, the tautosyllabic units maintain pitch frequencies of 152Hz, 132.8Hz and 130.2Hz respectively on the derived first, second and third resyllabified units, while the last fully realized syllable has 132.2Hz which showed a stabled frequency range as shown in Praat 5. Other acoustic cues like intensity and duration also vary in tandem with each unit of the syllable as shown in Table 3 of ACT.

Praat 5: Spectrogram of Polysyllabic Word 'anybody'

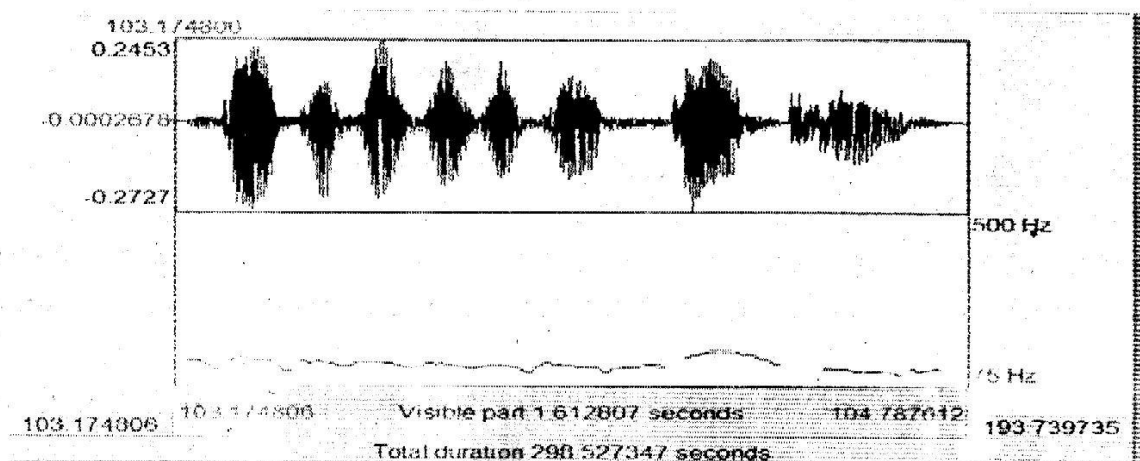
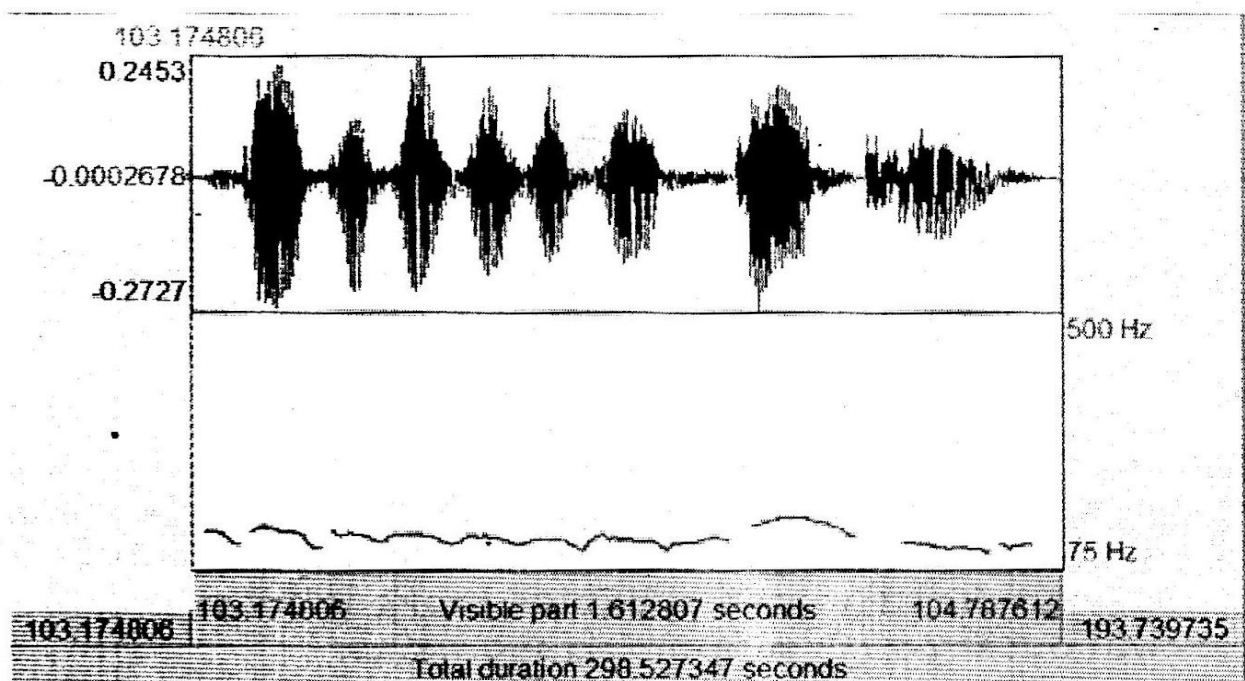


Table 3: Acoustic Cue Table (ACT) of Disyllabic Word 'nearly'

Acoustic Cues	1st resyllabified unit	2nd resyllabified unit	3rd resyllabified unit/Hz	Full Syllable
Pitch	152Hz	132.8Hz	130.2Hz	132.2Hz
Intensity	69.91db	66.51db	69.54db	65.58db
Duration	0.090ms	0.102ms	0.109	0.730



Discussion of Findings and Suggestion for further study

The findings show that first; there is no fixed pattern in resyllabification of words in Chief Ekwewe's speech as some words are resyllabified to contain only the onset of words for example in /tri/ [t-t-tri] 'tree', /sɒm/ [s-s-sɒm] 'some', /keɪəs/ [k-k-keɪəs] 'chaos', /vɔɪs/ [v-v-vɔɪs] 'voice', while others are resyllabified to contain the onset and rhyme either as an opened or closed syllable as attested in /fə/ [fə-fə-fə] 'for', /ðæt/ [ðæ-ðæ-ðæt] 'that', /wɒt/ [wɒ-wɒ-wɒt] 'what' and /ɡʊd/ [ɡʊ-ɡʊ-ɡʊd] 'good'.

Secondly, pitch of the voice which is determined by the rate of frequency of the vocal cord vibration fluctuates based on the number of resyllabified units. Since the F_0 which ought to be strong on normal speech turns out to be weak on the onset of stammered words their F_0 ranges from 157 Hz, 154Hz and 152Hz on monosyllabic, disyllabic and polysyllabic words respectively, and

124.Hz (monosyllabic), 138Hz (disyllabic) and 132.2Hz (polysyllabic) on full syllable words.

Other acoustic cues like intensity and duration variation were also found to be in co-efficient relationship with the waveforms, pitch, harmonics, formants and pulses of the syllables and resyllabified words. Based on our observation it is true that it is at the start of a word that stammerers stutter much. We however disagree with the assertion that they stutter on words that carry information, in that they also have blockage of non-information content words. It is suggested that further studies be conducted in the area of prosodies to see if stuttering equally affect prosodic features such as stress, intonation and rhythm.

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Appendix

Notations and Abbreviations

F ₀	Fundamental frequency
NOA	National Orientation Agency
Hz	Hertz
U.K	United Kingdom
N	Syllabic nasal sound
C	Consonant sound
V	Vowel sound
O	Onset
X	Sequence of segments
R	Rhyme
()	Optional element
UTS	Universal Theory of Syllable
δ	Syllable Association line
[]	Phonetic brackets
//	Phonemic slants