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Speech Rhythm in Ghanaian English: An Analysis of Classroom Presentations

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ABSTRACT

It has been argued that prosodic features (e.g. stress, rhythm, or intonation) contribute significantly to production and comprehension among speakers of English. While it is easy to come across studies that focus on these features in native Englishes, the same cannot be said of Englishes outside native speaker contexts, especially regarding rhythm in academic discourse, although such results greatly enhance our understanding of this prosodic phenomenon. This study examined rhythm in academic Ghanaian English, using Liberman and Prince's (1977) Metrical Phonology theory. Lessons were recorded from 24 lecturers in a public university in Ghana and analyzed using the computerized speech laboratory (CSL). Cues measured were duration, pitch, and amplitude to help determine the rhythmic patterns of these lecturers. The results suggest that the rhythmic patterns produced bear similarities as well as differences with those produced by inner circle speakers. The preponderance of rhythmic patterns of strong-strong and weak-strong or strong-weak syllables in certain words presented exceptions to the theory. Based on this, it is argued that Ghanaian English appears to be a more syllable-based than a stressed-based variety, and so teachers might consider using a variety local and familiar to students in order to achieve intelligibility.

KEYWORDS: Speech rhythm, Ghanaian English, Classroom presentations, Syllable-based, Rhythmic patterns

1. INTRODUCTION

One place where a huge chunk of daily interaction takes place is the classroom. With this, huge amounts of discourse are consciously created. Classroom discourse primarily concerns itself with the relationship between language, interaction and learning. Walsh (2011) observes that it is through the use of language in the classroom that new knowledge is accessed, while acquiring and developing new skills as well. Apart from these, teachers (and learners) identify problems of understanding, deal with breakdowns in communication, and establish and maintain relationships. This suggests that language lies at the heart of everything that happens in the classroom. In fact, Walsh (2011, p. 2) opines that language becomes not only the means of acquiring new knowledge in the classroom, but also the goal of study "the vehicle and object of study". Thus, the study of classroom discourse is the study of a communication system, mainly because the basic purpose of school is achieved through communication.

According to Cazden (2001), one important feature that makes communication in educational institutions so central is spoken language. In his view, spoken language serves as the medium by which much teaching takes place, and in which students demonstrate to teachers much of what they have learned. Also, the main person responsible for controlling all the talk that occurs while class is officially in session is the teacher. The teacher does this to enhance the purposes of education. Research (e.g. Cazden, 2001) points to the fact that teachers dominate class interactions, talking most of the time. They control topics and allocate turns, judge the acceptability of learners' contributions, and regulate inappropriate behaviour among learners. Learners, on the other hand, talk, depending on the type of class. For example, they talk less in a typical traditional lecture-style class and more in an interactive lecture class. This is because in most traditional lecture classes, they usually only talk for shorter durations and respond to teacher prompts. An interactive lecture class, such as a language class, allows them to contribute more to the lecture by engaging in discussions and conversations. Teachers therefore owe learners a duty to make sure that whatever material they present in class can be appreciated by learners.

In order for learners to appreciate teacher talk, teachers should remember that communication is a mutual relationship between the speaker and the listener. And so, a learner must comprehend what he/she hears in the teaching and learning process. In Ghana, English serves as the medium of instruction, meaning that English is used by teachers to teach all subjects, except in teaching French and Ghanaian languages. To be able to use English effectively, the teacher's English proficiency serves as an important aspect of his/her expertise (Canh & Renandya, 2017). This proficiency has actually been recognized as an essential factor affecting student learning (e.g. Richards, 2015).

A proficient teacher must know (1) how to create larger units of English utterances (2) when and when not to make utterances, and (3) how to avoid communication breakdowns. The teacher's ability to prevent miscommunication means that he/she should employ the use of contextualization cues (Gumperz, 1992). One significant contextualization cue that has been found to contribute significantly to production and comprehension of lectures among speakers of English is prosody (cf. Field, 2005; Munro & Derwing, 1995). For example, Pickering (2001) found that the inappropriate use of tone choice contributes to communication failure in the classroom. In fact, Hismanoglu (2006) argues that the teacher's ability to use the appropriate prosodic cues is of great importance because it is an important ingredient of communicative competence and contributes to effective communication when used appropriately (Varghese & Nilsen, 2020).

This study primarily focuses on teacher-student interaction and more precisely, examines one prosodic feature, speech rhythm, embedded in the English discourse generated by some university teachers in Ghana. With respect to the literature on Ghanaian English pronunciation, adequate attention has been given to the description of the segmental sounds, without a corresponding attention to the suprasegmentals. With few studies available, none is committed to examining the rhythm of classroom discourse. In fact, the only study that focuses on rhythm in Ghanaian English is dedicated to parliamentary discourse (Appartaim, 2009). Although Owusu-Ansah (1992) examined spontaneous speech from lecturer sessions, his study was limited to how new information is signaled, having no desire to go further to detail the use of prominence in producing rhythm and its effect on classroom language, be it negative or positive. Meanwhile, for the teacher to effectively make meaning to his students, Pickering (1999) observes that prosodic miscues (including inappropriate use of rhythm) in the classroom adversely affects lesson delivery and also affects rapport-building between teachers and students.

With the knowledge that prosodic features significantly contribute to the production and comprehension of English (Munro & Derwing, 1995), it would be unfortunate if we do not have such knowledge. Meanwhile, while it is important to know how prosody is utilized in some types of discourse, for example, conversations, it is even more significant to know how its rhythm affects students' understanding in an English-medium lesson as pertains in Ghana. This knowledge also includes both knowing the prosodic features that cue prominence as well as knowing the rhythmic patterns that are created with the prominence. Invariably, there is a gap in the research on the rhythm of lesson delivery in Ghanaian English. A study of this nature is necessary in order to fill this gap and also to add to our knowledge and understanding of Ghanaian English pronunciation features. Because all models of pronunciation rely heavily on native speaker data, most studies (e.g. Pickering, 2004) offer comparison between inner circle speakers and those from the other circles, and the results almost always appear to point to the inner circle as the benchmark with which all other varieties are measured against. In fact, the data analyzed for the present study suggest that the rhythmic patterns

of the lecturers are more geared towards a syllable-based variety than a stress-based one. This falls in line with results of studies that have examined non-native English varieties (e.g. Gut, 2005; Setter, 2003). Such knowledge therefore places Ghanaian English rhythm as one that is uniquely Ghanaian and yet similar to other non-native varieties and different from inner circle Englishes.

1.1 Rhythm in English language

According to Szczepek Reed (2011) and Low (2015), during the physical activities we engage in, for instance breathing, walking, or heart-beat is highly rhythmical, and so is speech. This means that whenever we speak, our speech tends to have a regular beat. Chun (2002, p. 7) observes that the rhythm of a language is determined largely by strong "beats" falling on the stressed syllables of phrases and sentences". She further notes that rhythm is "the perceived regularity of prominent units in speech" (p. 7). This means that it is easy to determine the rhythm of any language by noting the way syllables are produced. This assertion falls in line with Spencer's (2001) view that rhythm is the patterns of alternation between stressed and unstressed syllables. Cruttenden (1997) illustrates the relationship between prominence and rhythm and posits that prominences produced by some combination of length, loudness and pitch are not only linguistically important, but also important because patterns of prominent and non-prominent syllables produce a particular rhythmic effect. For instance, words such as *'IMport* (noun) consists of strong and weak syllables while *im'PORT* (verb) consists of weak and strong syllables respectively (**strong syllables are in caps**). Similarly, *'COmment* (noun) consists of strong and weak syllables while *co'MMENT* consists of a weak and a strong syllable. We thus see from these examples that it is the rhythmic patterns that help to determine the grammatical categories of the words import and comment. Chun (2002) therefore intimates that in English for instance, patterns of stress are important since they distinguish one word from another and that rhythm of the language is determined largely by strong "beats" falling on the stressed syllables of phrases and sentences. Thus, it is based on the 'beats' that are *counted*, when speech is produced, that languages are divided.

Languages of the world have been divided dichotomously; they can either be stress-timed rhythm or syllable-timed rhythm. Chun notes that in stress-timed languages, words are built from what she calls *metrical feet*, stressing that a metrical foot, which is a rhythmic unit, is a grouping of one strong syllable followed by any number of weak syllables. With this, Clark and Yallop (1990) opine that utterances are said to consist of a number of metrical feet or rhythmic units, each of which is dominated by the beat of the stressed syllable. Chun (2002, p. 8) defines a stress-timed language as "one in which stressed syllables are said to occur at approximately regular intervals of time, regardless of the number of intervening unstressed syllables". A syllable-timed language, on the other hand, is one in which syllables tend to occur at regular intervals of time and consequently, all syllables tend to have the same length. From these definitions, it can

be argued that the syllables in a stress-timed language might vary in length since there might be a varying number of syllables between the stressed ones. Languages such as English and Dutch are stress-timed languages. In English, for example, speech rhythm is accomplished as speakers place stress on syllables at roughly regular intervals of time which is perceived by listeners as creating a rhythmic pattern with every stressed syllable representing a rhythmic beat (Szczepek Reed, 2011).

Greenbaum (1996) indicates that in connected speech, the alternation between strong and weak syllables conveys a rhythm, with strong syllables providing the beat. Thus, the amount of time it takes to produce a sentence in English would depend largely on the number of syllables that receive the primary stress and not on the total number of syllables. In effect, the rows in-between unstressed syllables tend to be compressed and some syllables can even disappear, resulting in the rhythm of that word or utterance. The rhythm of English is therefore set on what is commonly known as The Principle of Rhythmic Alternation (Schlüter, 2005). This principle refers to an ideal eurhythmic structure which alternates stressed and unstressed syllables on a regular basis. In a phrase such as a *red and yellow hat*, a strong syllable alternates with one weak syllable and forms a stressed-unstressed pattern. With regard to syllable-timed languages, the rhythm of speech is based on the syllable; every syllable is pronounced with equal amount of time. Examples of such languages are Spanish, French and Ghanaian languages. In Akan (a Ghanaian language), for instance, the same amount of time is used to produce every syllable in a word, and contractions rarely occur.

It is worthy to note that researchers such as Crystal (2003) and Low (2015) reveal that there is no language that is purely stress-timed or syllable-timed. They add that languages tend to behave more like one or the other pattern. In this vein, Sabater (1991) argues that German, for instance, takes a position midway between English and Spanish with respect to rhythm. Therefore, Crystal (2003) and Low (2015) remind us to use the labels stress-based or syllable-based rather than stress-timed and syllable-timed. This is as a result of the fact that the languages have more syllable-based or more stress-based features. As already indicated, the rhythm of English consists of stressed syllables and unstressed syllables. Stressed syllables are so-called because they appear to stand out in the word or utterance. In the next section, we present a discussion of stress as well the features that cue in English.

1.2 Stress

In linguistics, stress is seen as "a syllable [which] is heard as more prominent than others" (Matthews 2007, p. 383). That is, we usually hear a word or syllable as that which is heard more than the others. For example, in the pronunciation of the words CONvert and conVERT, we hear that the first syllable is stressed (with caps) in the first instance to mean one who has been converted (in this case, a noun) and the second syllable stressed in the second instance to mean the art of conversion (in this case, a verb). In the view of Tarr (1994), stress is the relative degree of force used by a speaker on the various syllables being uttered. Thus, stress is a *relational* feature.

Hence, a syllable is identified as stressed because it is relatively more prominent than the rest. Low (2015) discusses the notion of stress from two standpoints; phonetic and phonological or linguistic. Phonetically, Low (2015) discusses stress using articulatory, auditory and acoustic dimensions. The articulatory dimension focuses on the speaker's perspective, that is, the vibration of the vocal cords, physical effort, timing of movements and position of the tongue and lips. In the auditory dimension, the listener perceives the articulatory cues of stress as pitch, loudness, length, and vowel quality. In the acoustic dimension also, pitch (or F0) is measured in Hertz (Hz). The acoustic correlate of loudness is amplitude and it is measured in decibels (dB) while that of length is duration, measured in milliseconds (or seconds). Lastly, the acoustic correlates of vowel quality are the first and second formants measured in Hz. Low (2015) therefore argues that stress can be marked phonetically using pitch, loudness, duration, and vowel quality.

With regard to her second view, she discusses the notion of stress from a phonological or linguistic perspective. At this level, stress is found at both word level and sentence level. As such, Low (2015) distinguishes between word stress and sentence stress. Word stress is a property of the word while sentence stress is a property of the sentence or utterance. Although Cruttenden (1997) uses the term stress to mean prominence and indicates that stress has sometimes been used to refer to syllables made prominent either in words or in sentences, Chun (2002) uses stress to mean word stress or lexical stress. Crystal (1969, p. 120) also makes it clear that prominence is exclusively a phonetic notion "used to refer to the general distinctiveness of an utterance of any length". In this study, stress is used to refer to word or lexical stress while prominence is used to refer to sentence stress. In this paper, we use stress to represent both lexical stress and utterance stress and sometimes may be interchanged with prominence. This is because, similarly to Tarr (1994), Liberman and Prince (1977) also consider prominence as a relational notion. This is expressed in Terken and Hermes (2000), who define prominence as a property of a linguistic entity *relative* to an entity or a set of entities in its environment.

In order to achieve the objectives set out, the study seeks to answer the following research questions:

1. What are the cues to prominence in Ghanaian English classroom presentations?
2. Based on the prominence, what are the rhythmic patterns used by lecturers in their classroom presentations?

The next section discusses the theoretical framework adopted for the study, followed by a discussion of the methodology in the fourth section. The results and discussion are presented in the fifth section, while the study is concluded in the sixth section.

2. THEORETICAL FRAMEWORK: METRICAL PHONOLOGY THEORY

There are different competing theories that can be used to account for the study of stress and rhythm in English (e.g. Optimality theory, Autosegmental Phonology, Moraic theory, Metrical Phonology theory). However, Spencer (2001) argues that many of the analytical tools phonologists use in the study of stress and rhythm are derived from the study of metrics. Therefore, according to him, the Metrical Phonology theory is frequently spoken of in the study of such systems. He argues that Metrical Phonology in many respects is the most straightforward theory for the study of stress and rhythm. Similarly, Kehoe (1997) is of the view that Metrical phonology offers a departure from previous linear approaches to stress, by representing stress not as the property of a segment, but as the hierarchical relationship of relative prominences (Liberman & Prince, 1977). In metrical theory, stress is viewed as the relative prominence of syllables and higher-level units. Most metrical theories are couched within a parametric framework, where stress assignment is expressed in terms of the setting of binary parameters. It is in this regard that Metrical Phonology is adopted as the framework used in the analysis of data.

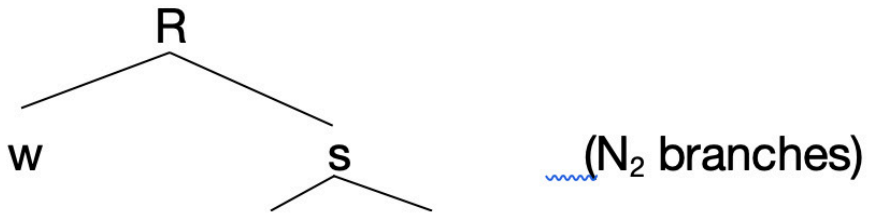
Metrical Phonology theory was first proposed in Liberman's (1975) doctoral dissertation and was further developed by Liberman and Prince (1977). The theory employs two basic ideas about the representation of traditional prosodic concepts: first, the notion *relative prominence* is represented in terms of a relation defined on constituent structure; and second, certain aspects of the notion *linguistic rhythm* is represented in terms of the alignment of linguistic material with a "metrical grid". This theory is an alternative approach to stress within generative phonology which forms the basis of generative models of intonation (Chun, 2002). It is a formal system in which stress is defined by metrical tree structures whose nodes have a binary division of strong (s) and weak (w) branches. It should be noted, however that, stress levels are relative rather than absolute (McMahon, 2002). Therefore, the labels do not necessarily mean 'strong' and 'weak', but 'stronger than an adjacent weak' syllable and 'weaker than an adjacent strong' syllable respectively. The relational nature of the categories "strong" and "weak", making one element strong necessarily makes its sister weak, and vice-versa. This can be applied to the word as well as the utterance.

In this framework, two rules govern the assignment of the s and w nodes: Lexical Category Prominence Rule which caters for words and compounds, and Nuclear Stress Rule which also caters for phrase and utterance levels. When a stressed syllable is weighed against an unstressed syllable, it accords quite directly the notion behind metrical comparison to regard the stressed syllable as strong and its unstressed counterpart as weak. This, taken with the restriction to binary branching, dictates a tree shape and labeling. At the core of the metrical framework is a unit called a *foot*, which typically consists of a stressed and an unstressed syllable. Feet are described as bounded if they contain two syllables, and unbounded if they contain more than two syllables. Terms from traditional metrics are employed in the labeling of foot types: an iambic foot

has the head syllable on the right and a trochaic foot has the head syllable on the left (Kehoe, 1997).

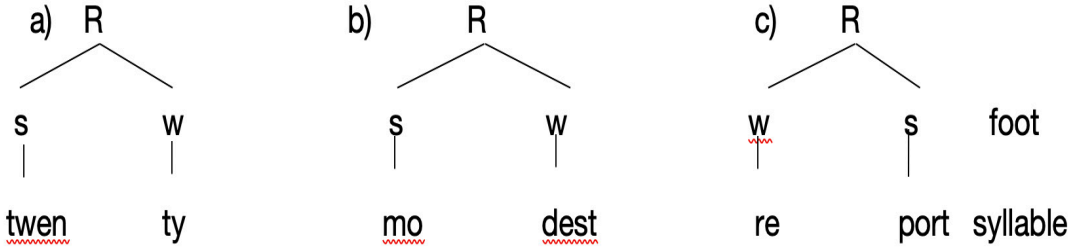
2.1 Lexical Category Prominence Rule (LCPR)
This rule caters for words and compounds. The rule states that in a pair of sister nodes [N1N2], N2 is s if it branches. This is illustrated in Example 1 below as follows:

Example 1



This simply means that in a lexical category with two sister notes [N1 N2], N2 can branch to other nodes if, and only if, it is a strong node. This also means that N2 cannot branch if it is dominated by a weak node. Another meaning from this is that if a right node fails to branch, it will be marked as weak and its sister node on the left, as strong. Thus, every metrical unit in a word tree falls under one of these two descriptions. An example is shown in Example 2 below with the words *twenty*, *modest*, and *report*. The symbol 'R' is used here as a convenient label for the root of the tree which is neither s nor w.

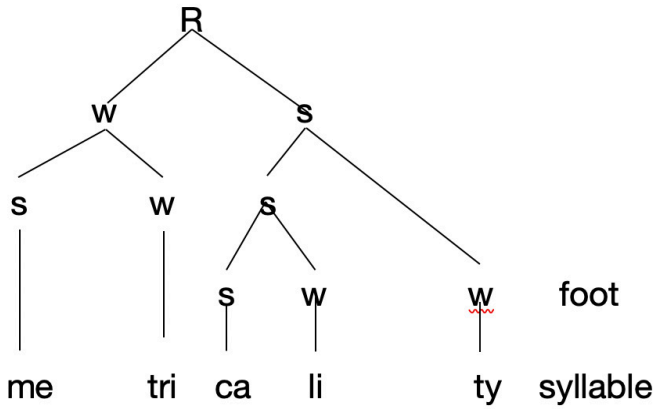
Example 2



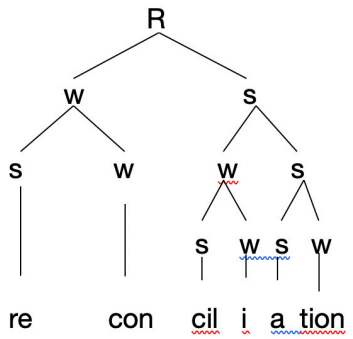
In Example 2, we see that the first syllable in 'twenty' and 'modest' are strong while the second ones are weak. However, the first syllable in 'report' is weak and the second is strong. It must be noted that even in polysyllabic words, metrical trees can only branch in a binary way; that is, each higher s or w node only branches into two lower-level constituents. In words with both primary and secondary stress, the trees are more helpful in that they show the different patterns and allow for easy identification of

the main stress of the word as it is dominated by nodes marked s all the way up the tree. Examples of polysyllabic words are shown in 3 and 4 respectively.
Liberman and Prince (1977) believe that relative prominence tends to be assigned one way in lexical compounds and another way in phrases since words like *knéel-haùl* for instance, are different from words such as *rèd cóws*. Thus, if the constituent in question constitutes a lexical category (noun, verb, adjective, etc.), then the "compound stress" pattern of relative prominence will be assigned; if it is a phrasal category (noun phrase, verb phrase, adjective phrase, etc.) then the "nuclear stress" pattern of relative prominence will be assigned. Compound stress also branches into s and w nodes. Examples 3, 4, and 5 are some graphical illustrations of compounds on tree diagrams.

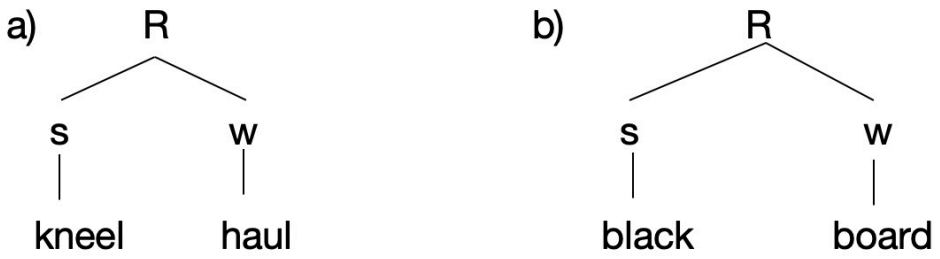
Example 3



Example 4



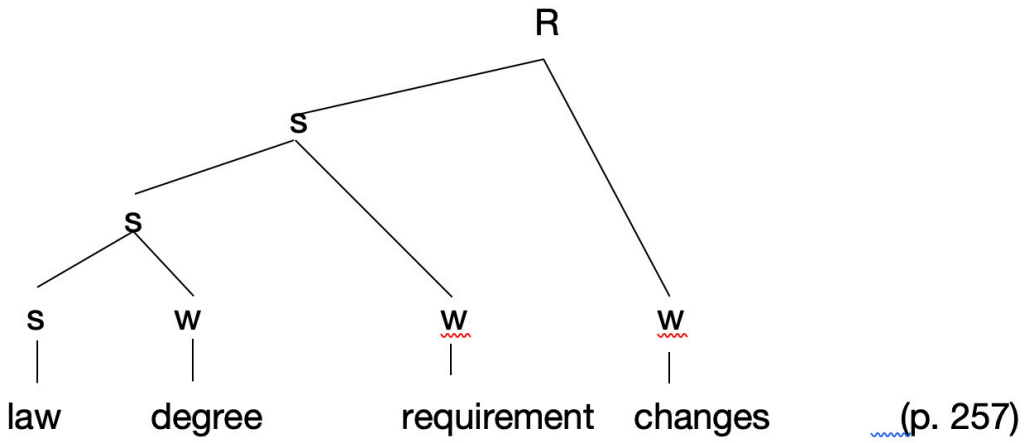
Example 5



2.2 Nuclear Stress Rule (NSR)

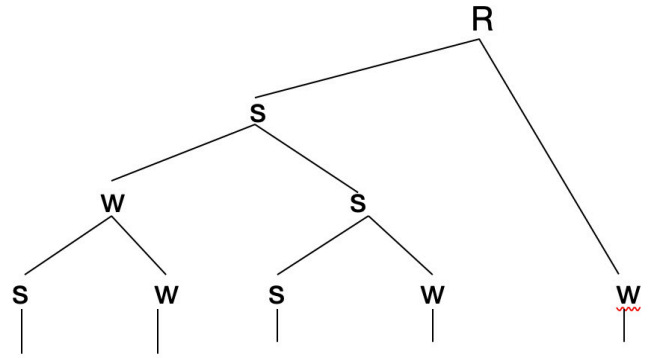
This rule also caters for phrase and sentence levels, that is, nuclear stress pattern of relative prominence is assigned to a phrasal category (noun phrase, verb phrase, adjective phrase, etc.) and a sentence. Relative prominence is represented in terms of a binary relation defined on pairs of nodes on a tree. Therefore, relative prominence is defined on constituents and represented graphically by annotating the nodes of the syntactic tree with the symbols *s* for strong and *w* for weak. The rule states that NSR: If [N1 N2]P where P is a phrasal category, then N2 is strong. For illustration, two examples by Liberman and Prince (1977) are cited in Examples 6 and 7.

Example 6



(p. 257)

Example 7



(p. 259)

In this theory, the element which is entirely dominated by a strong node is the main word or syllable that carries the main stress. So in Examples 6 and 7, *law* and *finance* are the most stressed words. According to Liberman and Prince, the *most prominent* terminal element (main stress) of a given constituent, which is the *Designated Terminal Element*, must surely lie somewhere in its *more prominent* daughter. Udofot (2003) calls this the point of *pitch change*. In the opinion of Udofot (2003) or Liberman and Prince, metrical hierarchy is hierarchical and as such tree structures do not serve the purpose very well. They therefore suggest a very simple and direct approach of presenting the rhythmic structure of a phrase from a tree diagram to a metrical grid. The grid is made up of a series of rows containing marks *x* placed above the units which receive relative stress. Examples 8 and 9 are illustrated on metrical grids as follows:

Example 8

x							
x		x		x		x	
x	x	x	x	x	x	x	x
law	de	gree	re	quire	ment	chan	ges

Example 9

				x							
x				x							
x		x		x			x			x	
x	x	x	x	x	x	x	x	x	x	x	x
la	bor	u	nion	fi	nance	co	mmi	tee	pre	si	dent

Spencer (2001) explains how the grid is constructed and shows that every syllable is assigned a mark at the lowest level of the grid. This is done to mark all potentially stressable units. At the second level, each stressed syllable is assigned a mark. At the third level, a mark is placed over the most stressed syllable. Finally, at the fourth level, a mark is placed on the most prominent syllable of the entire compound.

Liberman and Prince (1977) acknowledge the importance of this theory, among others, in that the phonological effect of the rules defining relative prominence is a local one. No counterpart to the stress-subordination convention is required. That is, the domain is a pair of sister constituents, and the conditioning factors are the category of the parent and the terminality (branching or non-branching) of the right-hand sister. No variable is required since the nodes of a tree structure are annotated, rather than locating segments, in order to adjust their feature specification. The trees also help to indicate at a glance the stress patterns of words, phrases, and sentences. In this sense, Udofot (2003) claims that the trees are more helpful because they show the different patterns and allow easy identification of the main stress of each word because of the presence of the s nodes dominating stressed syllables. In conclusion, it can be said that the Metrical Phonology theory removes from linear representation of those aspects of stress and rhythm that are essentially hierarchical in nature, and provides them with a truly appropriate formal characterization. It is a greatly simplified and narrowly restricted theory of stress phenomena and prosodic processes. In effect, it is useful to this study since it can be used to determine the stress and rhythmic patterns of words or phrases.

3. METHODOLOGY

This section presents the methodology adopted for the present study. It includes description of the research participants, instruments and data collection, and data analysis.

3.1 Participants

The study presented in this paper is descriptive in nature, and the analysis employs qualitative measures in order to determine the rhythm and prominence of Ghanaian English classroom discourse. The aim here is to understand the meaning that people construct of the real world. In all, 24 lecturers from six faculties in a public university in Ghana were recruited for the study. Their ages range from 33 to 53; there nineteen males and five females, and they have taught for between two and eleven years. Of the 24, seven had PhD Degrees while 17 had MPhil Degrees. Purposive sampling was employed since it involves selecting certain units “based on a specific purpose rather than randomly” (Tashakkori & Teddlie, 2003, p. 713) and identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with a phenomenon of interest (Creswell & Plano Clark, 2011).

All the lectures were delivered with English as the medium of instruction. This means that, where there was a lecture in which the lecturer did not make use of English, that class was not selected. The 24 classes comprised of four lecturers from four departments in each faculty. Four lecturers were picked because the faculty with

the lowest number of departments had four. The faculties were Foreign Languages and Communication, Social Sciences, Educational Studies, Creative Arts, Science, and Ghanaian Languages. Setting the number to four was therefore to ensure that no faculty had more than four departments represented and to have equal number of lecturers from all six faculties. It was only in one instance that two lecturers were picked from one department. This was because a language other than English was used, and where this happened, a lecturer teaching a general course in the said department was chosen to make up the 24 lecturers.

3.2 Data Collection

Data were collected from naturally occurring classroom lectures presented by all the 24 lecturers during the regular semester. The classes were typically made up of first-year, second-year, third-year or fourth-year undergraduate students and graduate students pursuing various programmes of study. Once the lecturers granted permission, a Sony IC Digital Audio Tape (DAT) recorder was connected to a PZM microphone and positioned at a place close to each lecturer so that all speech could be captured accurately. Only the lecturer and the students were left in the room to allow them to feel comfortable with their talk. Each recording lasted forty minutes, and this produced a total of 16 hours of data from all the 24 lessons.

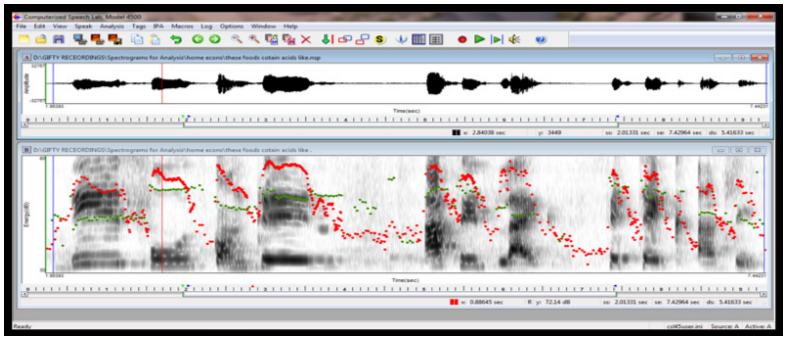
3.3 Data Analysis

The data were subjected to both auditory and instrumental analysis for prosodic features (duration, pitch, and amplitude). Both auditory and acoustic analyses were conducted because Edge and Richards (1998) observe that these analyses help to achieve internal reliability. Both analyses also help to be objective in making conclusions. In the auditory analysis, the data were played back and orthographically transcribed. This was a verbatim record of what was actually said. Discourse features such as repetitions, fillers, hesitations, and false starts were taken into consideration and transcribed. After each transcription, the sound files were played several times to identify and mark prominent syllables. In order to ensure the quality of the transcription, tests of reliability were conducted using a second transcriber. The test involved the proper identification of prominent syllables, pitch, amplitude, and duration measures. To ensure reliability, the transcriptions were subjected to rigorous checking and re-checking. To do this, samples of the transcription were regularly cross-checked by a trained phonetician of considerable experience to establish inter-rater reliability. The results obtained showed that agreement level was around 78%, and this was considred very reliable.

After the auditory analysis, the data were transferred onto a Computerized Speech Laboratory (CSL) model 4500 at a sampling rate of 44100Hz for the instrumental analysis. The CSL displayed the waveforms, the spectrogram, pitch and energy contours for the analysis to be made. The spectrogram on the CSL shows a three-dimensional display of time indicating duration (in seconds) at the bottom on the horizontal axis, frequency (in Hertz) on the vertical axis ranging from 0-350 Hz indicating pitch and amplitude in decibels (dB) ranging from 30-80dB. The following cues to prominence were measured: pitch, intensity and duration for all the prominent

syllables. In addition, fundamental frequency (F0) traces were computed for all the prominent syllables using the pitch extraction function of the CSL. Figure 1 is an example of what the data revealed. It shows the acoustic waveform and the spectrogram of the utterance *These foods contain acids like phytic acid*. In Figure 1, the syllables **these** and con***tain*** are made prominent by all the three cues; duration, pitch, and amplitude. ***Foods***, ***a****cid* and *phy****tic*** received prominence as a result of a combination of pitch and amplitude.

Figure 1
A pitch track of ↑***THE:SE*** ↑***FOODS*** *con*↑***TAI:N*** ↑***A****cids like phy*↑***TIC*** *acid*



4. RESULTS AND DISCUSSION

The results of the analysis show that lecturers use pitch, duration, and amplitude as cues to prominence, but in different combinations: pitch only, amplitude only, or a combination of pitch and amplitude, duration and pitch, duration and amplitude or a combination of all three - pitch, duration, and amplitude respectively. The analysis also revealed that duration was not used alone, but in combination with others to cue prominence. In relation to the framework, the analysis of rhythm showed that the rhythmic patterns show similarities with and differences from what is produced in inner circle Englishes. It was noted that the differences with inner circle Englishes were actually similar to what pertains in some outer and expanding circle Englishes. The results are discussed as follows:

4.1 Cues to prominence

4.1.1 Pitch

Chun (2002) notes that pitch functions in English to mark prominence. She further asserts that it is the most significant cue to prominence followed by duration and then loudness. In the data, pitch was found to be used as a single cue to mark prominence. In Extract 1, lecturer N introduces his students to few characteristics of writing illustrations. He makes the words *few, one, rel****e****vant, thesis, clear, once this, how, readers, give* and *relev****ant*** prominent to emphasize the fact that illustrations must first be relevant to the thesis. In the second characteristic that he describes, the lecturer again

assigns prominence to ***su**fficiently, de**tailed**, too, ma**ny**, few*, and *ones* by means of pitch only.

Extract 1

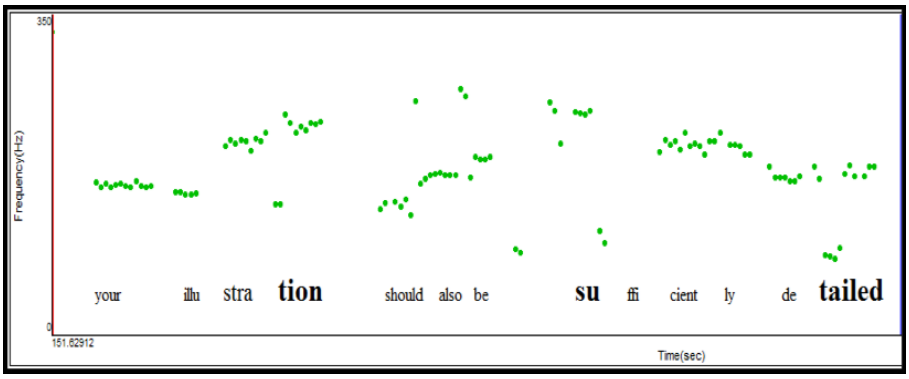
N: But let's look at a ↑**few** characteristics of writing your illustrations, some few issues of interest. [0.55] ↑**One**, your illustration must be re↑**le**vant. If you are writing and you want to use illustrations it must be re↑**le**vant especially to the the↑**sis**. That is why you have to be ↑clear what ↑**the**sis you will be defending in your essay and ↑**once** you know that ↑**this** is the thesis, ↑**how** do I get my ↑**rea**ders to to be persuaded or accept the theses. So ↑**give** rele↑**vant** illustrations that will bring out your thesis. And your **illuSTRA↑tion** should also be ↑**su**fficiently de↑**tailed**, it should be sufficiently detail. That is why we don't give ↑**too** ma↑**ny** illustrations, but the ↑**few** ↑**ones** you select should ↑**TAR**get the **RE**le↑**vant** issues in your work. Your illustrations should even ↑**su**pport your con↑**clu**sion, once you know the kind of conclusion you are going to draw. [0.76] ↑**So** make it re↑**le**vant, make it su↑**ffi**ciently ↑**de**tailed ↑**and** your illustration must also ↑**o**ffer ↑**e**nough **E↑vi**dence to support your point.

With these, he communicates to his students that the illustrations should be sufficiently detailed. He uses these syllables/words to caution students that they should avoid giving too many illustrations. Again, he assigns prominence to ***su**pport* and *con**clu**sion* as points of emphasis to communicate to his students about another characteristic feature of illustrations. He alludes to the fact that the illustrations should support the kind of conclusion students draw. Finally, he assigns prominence to *so*, *re**le**vant, suf**ffi**ciently **de**tailed*, and, ***o**ffer* and ***e**nough* to recapitulate the key issues raised in the lecture. Figure 2 presents a pitch track of the prominent syllables of one of the key issues in Extract 1. The green dots represent the pitch while the prominent syllables are in bold style.

In the extract, the lecturer retains the strong-weak rhythmic patterns of multi-syllabic words such as ***rea**ders, **tar**get* and ***o**ffer* as might be expected in native Englishes. This confirms Gimson's (1962) assertion that the rhythmic pattern of a word remains constant irrespective of its environment. He further claims that a word may lose its nuclear pitch change in connected speech in isolation without changing its stress pattern.

Figure 2

*A pitch track of 'your illu**STRA↑tion** should also be ↑**su**fficiently de↑**tailed***



The lecturer again produces words such as *ma**ny*** and ***e**nough* but this time, with rhythmic patterns different from native English patterns. For example, *ma**ny*** is assigned prominence on the second syllable resulting in a weak-strong rhythm while ***e**nough* receives prominence on the first syllable resulting in a strong-weak rhythmic pattern.

The word *relevant* appears five times in Extract 1. In three instances, relative prominence is perceived on the second syllable as in *rel**e**vant* giving it a weak-strong-weak rhythmic pattern instead of a strong-weak-weak pattern. In the fourth instance, the final syllable is made prominent as in *rele**vant*** resulting in a weak-weak-strong rhythmic pattern. The fifth time lecturer N makes *relevant* prominent, the prominence is perceived on the first and last syllables with loudness and pitch as in ***RE**le↑**vant*** giving it a strong-weak-strong rhythmic pattern. The placements of prominence in the word in all these instances are exception to what the theory proposes. In similar vein, *thesis, sufficiently* and *detailed* appeared twice with prominence perceived on different syllables resulting in different rhythmic patterns which present exceptions to the theory.

4.1.2 Amplitude

As earlier indicated, amplitude (or loudness) is the amount of energy present in the production of sound or sequence of sounds (Cruttenden, 1997; Chun, 2002; Szczepek Reed, 2011), and it is perceived by the listener as the breath-force with which a speaker uses in the production of speech. Showing the variations in amplitude of syllables, these authors maintain that prominent syllables are produced with greater loudness than non-prominent ones. The analysis showed instances of loudness as a means of cueing prominence. In Extract 2, Lecturer S assigns loudness to ***suggest**, **se**ction* and *re**peat*** for emphasizes. He communicates to students that a section of music can be repeated.

Extract 2

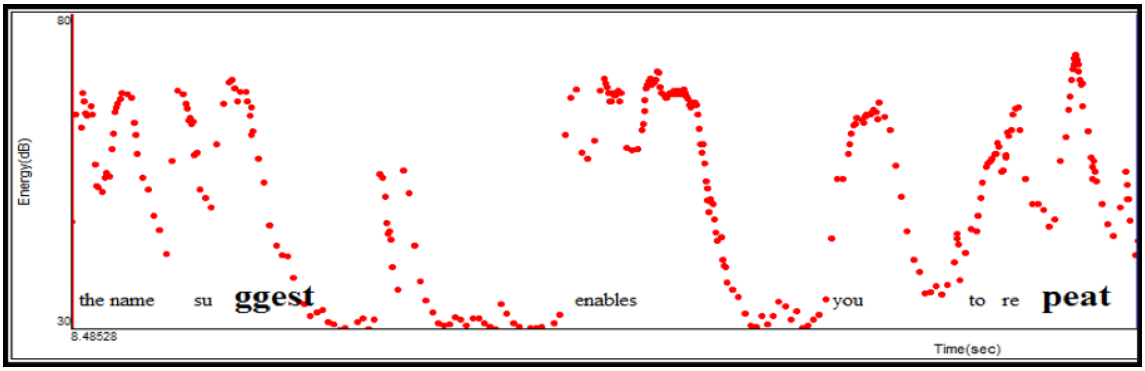
S: What did we say about that? [2.29] ↑**We** said a re↑**pea:t** ↑**tool** as the name su**GGESTS**, enables you to re**PEAT** which part of the work you want to **SHOW↑case**. For instance, if you are writing your ↑**mu**sic, for instance this is our music we have just **COM↑pose**d and as it plays you [1.48] would love to

repeat a **SEC↑tion** of it, this is the music we have just written and we want a **SEC**tion of it to **RE↑peat. ↑So** we listen to it.

Figure 3 shows loudness track of the utterance: the name *su**GGESTS***, enables you to *re**PEAT***.

Figure 3

*Loudness track of the utterance: the name su**GGESTS**, enables you to repeat*



In Extract 2, the disyllabic words *su**ggest***, ***sec**tion* and *re**peat*** have the rhythmic of weak-strong, strong-weak and weak-strong pattern. These are similar with inner circle Englishes.

4.1.3 Pitch and Amplitude

Another means of marking prominence in the lectures is the use of a combination of pitch and loudness. In disyllabic words especially, there were instances where, as pitch falls on the first syllable, loudness is heard on the second and vice versa making most of the words fully stressed. On the spectrograms (i.e. Figure 4), green dots represent pitch while red dots represent loudness. In Extract 3, lecturer B makes *bomb*, ***distrust***, *new*, ***soldiers***, *own*, *guard*, and ***reg**iments* prominent by means of a combination of pitch and loudness to communicate to his students that *Nkrumah created a new unit of soldiers called 'the president own guard regiment' after the Kulungugu bomb attempt because he had no trust for his regular army again*.

Extract 3

B: Following that e↑**VENT**, that Kulungugu ↑**BOMB** ↑**aTTEMPT** and Nkrumah's ↑**disTRUST** for the regular army, he created a ↑**NE:W** unit of [0.92] **SOL↑diers**. He created a ↑**NEW** unit of **SOL↑diers** and the name of the unit is the Presidential ↑**O:WN** ↑**GUARD** Regiment or The President ↑**OWN** ↑**GUARD** ↑**REG**iment, capital letters beginning those words.

Figure 4 displays a spectrogram showing the pitch and loudness tracks of the prominent syllables in the first utterance lecturer B makes in Extract 3.

The disyllabic words ***attempt, distrust, soldiers*** are made prominent by either

pitch on the first syllable and loudness on the other or vice versa. These are illustrated in Example 10:

Example 10

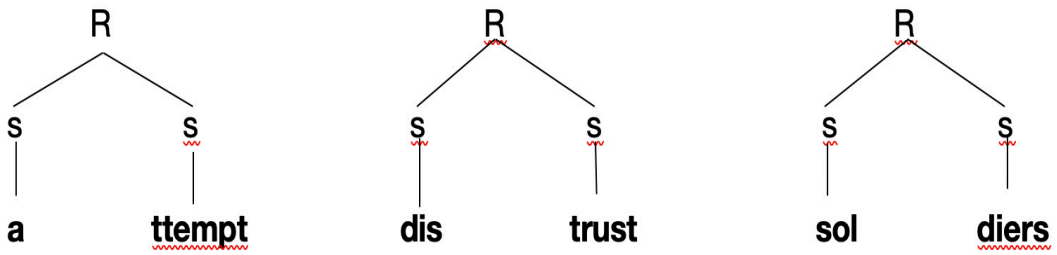
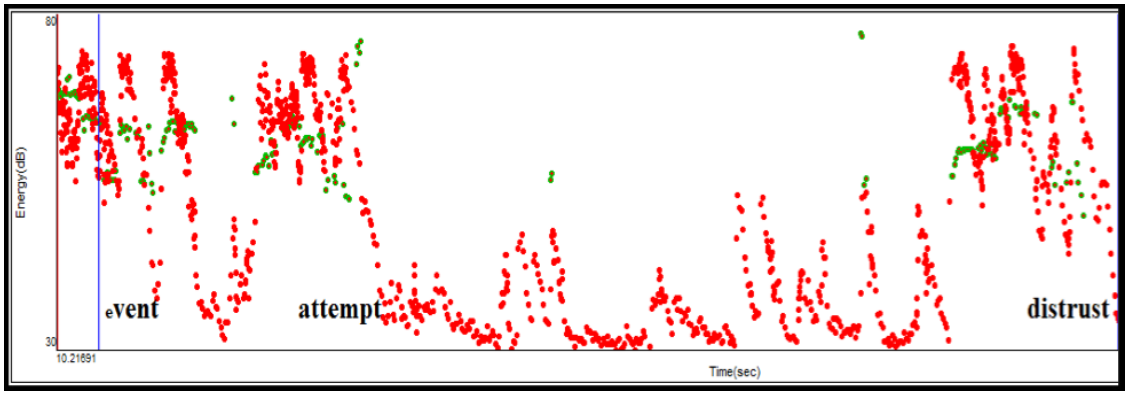


Figure 4
*Pitch and loudness track of e↑**VENT**, ↑**aTTEMPT** ↑**disTRUST***



It is realized from the tree diagrams that a strong-strong rhythmic pattern, different from inner circle Englishes, result in all cases.

4.1.4 Duration and Pitch

Duration and pitch are also combined to mark prominence. In Extract 4, Lecturer G cues prominence by combining pitch and duration on *foods, these*, teas and drinks as she communicates to students. She alludes to the fact that certain foods interfere with iron absorption. She lengthens *teas* and *drink* as she draws students' attention to fact that these interfere with iron absorption. Extract 20 illustrates this.

Extract 4

G: [6.59] ↑**A**gain, we need to know that there are some ↑**foo:ds** which interfere with iron absorption. [6.60] ↑**The:se** ↑**FOODS** con↑**TAI:N** ↑**A**cids **LIKE** phy↑**TIC** acid phytic acid and o↑**XA**lic acid. [2.62] ↑**The:se** are found in some ↑**FRUITS** and some vegetables. Phytic acid and o**XA**lic acid which are found in some ↑**FRUITS**, some vegetables and ↑**WHO:LE** ↑**GRAINS**. [6.07] ↑**THIS** can interfere with iron absorption. [1.27] ↑**AL**so the ↑**taNNINS** that we find in ↑**tea**:

and coffee, tannins in ↑**tea** and coffee interfere with iron absorption. So we have **TA↑nnins** in ↑**teas**: and coffees, and then cola ↑**dri:nks** and then red ↑**wine**.

Table 1 shows the duration and pitch values for the prominent syllables in Extract 4.

Table 1

Duration and pitch values for the prominent syllables in Extract 4

Word	Syllable(s)	Duration (sec)	Pitch (Hz)
food	foods	0.72	266.24
these	these	0.74	309.86
these	these	0.76	266.51
tea	tea	0.66	255.49
teas	tea	0.53	253.77
drinks	drinks	0.50	186.93

In Table 1, we see that the syllable with the longest duration is *these*, followed by *foods*, while the syllable with the shortest duration is *drinks*. This is also reflected in the pitch values where we have 309.86 Hz (these), 266.51Hz (these), 266.24Hz (foods), and 186.93Hz (drinks). These values suggest that there is a direct proportional relationship between the pitch and the duration of these syllables.

4.1.5 Duration and Loudness

Another means by which lecturers cued prominence is by a combination of duration and loudness. In Extract 5, Lecturer G assigns prominence to *child, food, mashed, girl* and *needs* with a combination of duration and loudness. With these words she brings students' attention to the fact that particular attention needs to be taken of the kind foods a child who has been taken off breast milk is given. Another emphasis she makes is on the adolescent girl.

Extract 5

G: After the **CHI:LD** has been taken **OFF** breast milk, iron is one of the nutrients that are very difficult to pro**VIDE**. And that is the reason why you need to pay particular attention to the ↑**ki:nds** of **FOO:D** you give to the **CHI:LD** when you are **WEAN**ing it. I've already mentioned egg yolk, I've also mentioned **MA:SHED** em leafy green. The other group to ↑**LOOK AT** is the **A↑do**lescent **GI:RL**. When **ME↑nace** begins then the adolescent girl **NEE:DS** to take a more critical look at the iron intake.

4.1.6 Pitch, Duration, and Loudness

The analysis also shows that pitch, loudness and duration were combined to cue prominence. In such instances, it was observed that as the syllable is prolonged, pitch and loudness are also perceived on it. In the extract, a raised arrow (↑) indicates pitch,

colon (:) indicates duration and *all CAPS* indicates loudness on syllables that are in formatting bold style. In Extract 6 pitch, duration and loudness are perceived on *now, style, by, five, five, this, to, so* and *for* as lecturer D makes known *styles of leadership* to students. He explains that there is a style of leadership that is manned by moderate concern for people and moderate concern for production.

Extract 6

D: ↑**NO:W** we have another leadership ↑**STY:LE** at the middle of the grid [2.73sec] ↑**AND** ↑**to**: Blake and Moltin, this kind of leadership style is ↑**MANNED** ↑**BY**: [1.24] **MO**↑**derate** con↑**CERN** for pro**DUC**↑**tion** and ↑**MO**derate concern for people. So definitely we are going to have [1.72sec] ↑**FI:VE** [1.14] ↑**FI:VE**, [2.18] ↑**MO**derate concern for production and ↑**MO**derate concern↑**FO:R** the people, five -five. And so ↑**THI:S** will ↑**be**: a ↑**leadE:R** who will be going a↑**LONG** you know with the normal ↑**FLOW** of life within the organization. The ↑**WEL**fare of the ↑**peoPLE** is not ↑**SO** much of a concern ↑**TO**: [1.49] ↑**THIS** ↑**lea**der. [0.75] **BUT** you realize that to a **CER**↑**tain A**↑**ppre**ciable **LE**↑**vel** he has concern for the people. The ↑**A**chie**v**ement of the ↑**TASK** will not be ↑**SO**: much of a **PRI**or↑**ity** to this leader but to a certain signi↑**fiCANT** level this person has concern ↑**FO:R** erm you know produc↑**tion**.

Sabater (1991) argues that the general rule where content words are stressed and grammatical words are unstressed is only applicable to normal default stressing but does not apply when contrastive or emphatic meaning is intended. Extract 6 affirms this as several grammatical words are made prominent to communicate the speakers' intentions. At the sentence level therefore, any word can receive prominence depending on what the speaker wants to emphasize. However, as these grammatical words, which are supposed to be weakened, are made prominent, it results in too many strong syllables which slow down the rhythm of the utterances.

4.2 Metrical Analysis of Rhythmic Patterns

Two groups of patterns were revealed from the metrical analysis of the words that were assigned prominence: rhythmic patterns similar to the theory and rhythmic patterns different from the systems proposed in the theory. In each case, the values obtained from the instrumental analysis are provided as evidence to show the strong-weak syllable patterns. A few are presented as follows:

4.2.1 Similarity with the Theory

Disyllabic Words

The rhythmic patterns of some disyllabic words are shown in Table 2.

Table 2

Disyllabic words with rhythmic patterns that show similarity with inner circle English

Word	Syllable	Duration (sec)	Pitch (Hz)	Amplitude (dB)	Rhythmic Pattern
involve	in	0.25	187.26	71.06	w
	volve	**0.31**	**216.24**	**75.52**	s
women	wo	0.27	**252.63**	**71.69**	s
	men	0.35	250.25	68.53	w
parent	pa	0.10	**206.56**	**68.73**	s
	rent	0.37	142.54	67.16	w
attempt	a	0.14	175.64	70.24	w
	ttempts	**0.63**	**293.06**	71.70	s
leader	lead	**0.26**	**313.58**	**66.81**	s
	er	0.24	158.14	55.14	w

Table 2 presents the measures for duration, pitch, and amplitude as well as the rhythmic patterns of the syllables of some disyllabic words. Here, we see that while pitch and amplitude are combined to mark prominence for some syllables (as in *wo*men and *par*ent), or all three cues (as in in*volve*, a*ttempts*, and *lead*er). These values are relative to those of the other syllables within the words.

Trisyllabic Words

The rhythmic patterns of some trisyllabic words are shown in Table 3. These are words whose prominence placement resulted in rhythmic patterns similar to those of inner circle Englishes. In this table, prominence is assigned to strong syllable of the words while weak syllables are weakened.

Table 3

Trisyllabic words with rhythmic patterns that show similarity with inner circle English

Word	Syllable	Duration (sec)	Pitch (Hz)	Amplitude (dB)	Rhythmic Pattern
important	im	0.25	204.91	63.83	w
	por	**0.33**	**268.47**	**74.70**	s
	tant	0.34	226.21	66.02	w
director	di	0.21	158.40	69.41	w
	rec	**0.23**	**245.53**	**73.40**	s
	ter	0.17	148.23	68.98	w
pyramid	py	0.13	**241.89**	66.31	s
	ra	0.15	216.49	67.07	w
	mid	0.22	206.38	60.56	w

engender	en	0.24	131.92	65.27	w
	gen	0.20	**165.99**	**74.47**	s
	der	0.16	161.71	69.99	w
advancement	ad	0.18	201.33	67.08	w
	vance	**0.27**	**234.00**	**71.50**	s
	ment	0.25	199.12	67.11	w

Table 3 shows the values for duration, pitch, and amplitude as well as the rhythmic patterns of the syllables of some trisyllabic words. From the table, pitch is used to cue prominence on the word *py*ramid; a combination of pitch and amplitude on en*gen*der, and pitch, amplitude, and duration on im*por*tant, di*rec*tor, and ad*vance*ment.

4.2.2 Exceptions to the Theory

Disyllabic Words

The disyllabic words in this Table 4 show the rhythmic patterns different from inner circle Englishes. The rhythmic patterns that resulted are mostly strong-strong patterns with few showing either weak-strong or strong-weak patterns. These do not conform to the theory.

Table 4

Disyllabic words with rhythmic patterns showing exception to inner circle English

Word	Syllable	Duration (sec)	Pitch (Hz)	Amplitude (dB)	Rhythmic Pattern
insist	in	0.19	**225.41**	**59.29**	w
	sist	0.23	150.45	46.99	s
error	e	0.12	145.82	63.78	w
	rror	**0.21**	**242.29**	60.04	s
colleagues	co	0.13	134.35	58.16	w
	lleagues	**0.28**	**164.51**	**60.85**	s
never	ne	0.28	268.11	72.21	w
	ver	0.22	**272.58**	**74.47**	s
absorb	ab	0.16	**136.17**	**73.09**	s
	sorb	0.43	128.90	70.44	w
members	mem	0.25	128.23	70.39	w
	bers	**0.31**	118.45	**71.42**	s

Table 4 presents the measures for duration, pitch, and amplitude as well as the rhythmic patterns of the syllables of some disyllabic words. It can be seen that speakers used cued prominence on words such as *in*sist, ne*ver*, and *ab*sorb using pitch and amplitude; duration and pitch on e*rror*; duration and amplitude on mem*bers*, and duration, pitch, and amplitude on co*lleagues*. Such combinations resulted in variable

rhythmic patterns, and these are different from inner circle speaker patterns.

Trisyllabic Words

The rhythmic patterns that resulted from the prominence placement on these trisyllabic words are exceptions to inner circle Englishes.

Table 5

Trisyllabic words with rhythmic patterns showing exception to inner circle English

Word	Syllable	Duration (sec)	Pitch (Hz)	Amplitude (dB)	Rhythmic Pattern
redundant	re	0.22	**249.00**	51.34	s
	dun	0.18	119.30	60.30	w
	dant	0.23	176.24	52.16	w
gradually	gra	**0.30**	204.40	**71.26**	s
	dua	0.21	222.56	64.01	s
	lly	0.17	220.52	61.18	w
official	o	0.18	225.78	55.76	s
	ffi	0.19	221.97	64.92	w
	cial	**0.28**	218.23	**69.35**	s
anything	a	0.22	206.37	70.29	w
	ny	**0.27**	208.86	**73.04**	s
	thing	0.25	315.38	62.92	s

Table 5 presents the values for duration, pitch, and amplitude as well as the rhythmic patterns of the syllables of some trisyllabic words whose patterns differ from those of inner circle speakers. From the table, pitch is used to cue prominence on the word *re*dundant and duration and amplitude on *gra*dually, offi*cial*, and a*ny*thing. The results suggest that pitch, loudness and duration were used to cue prominence individually or in combination at different times (cf. Chun, 2002; Dyrud, 2001; Roach, 2009). In the data, only duration was not used as a single cue to prominence. However, it was observed that any time it was used alone, lecturers used it for online verbal planning (which is not the focus of this paper). Previous studies (e.g. Adjaye, 2005; Appartaim, 2009; Koranteng, 2006; Lomotey, 2015) on Ghanaian English have shown these variations in the placement of prominence in words. The analysis in the present study shows similar instances which confirm the claim made by Adjaye (2005) and Koranteng (2006) that speakers apply *Forward Stress Shift*, a tendency to place stress on a syllable later than it would be normally done in inner circle varieties. Examples of such words produced are *descrip**tion**, produc**tion**, ma**ny**, the**sis**, be**tter**, me**nial**, con**scious**, co**lleagues**, effi**cient***, and *signa**ture***. There are instances where speakers also placed prominence on the first syllable of words including ***ex**periences, **e**nough, **to**wards, **de**fending*, and ***re**sources*. The way speakers place stress confirms the fact that there is fluidity in stress placement in Ghanaian English (Lomotey, 2018).

With prominence, different rhythmic patterns presenting similarities and

exceptions to the systems proposed in the theory are produced. These patterns ultimately showed both similarity to and difference from inner circle Englishes. The assertion that no language is purely stressed-based or syllable-based (e.g. Crystal, 2003; Low, 2015) but tends to behave more like one or the other pattern, is true as Ghanaian speakers of English show similarity with and difference from inner circle Englishes. However, the preponderance of strong-strong and weak-strong or strong-weak patterns which are exception to the theory seems to make Ghanaian English more syllable-based than a stressed-based language.

5. ENGLISH RHYTHM AND LECTURE DELIVERY

Rhythm in English is a consequence of stress (Odisho, 2003). English is often described as a stress-timed language because the time between stressed syllables is always somewhat isochronous (Peacock, 2005). Thus, this rhythm can be achieved when there is basically a lengthening of prominent syllables and shortening of non-prominent syllables (Chela-Flores, 1997). In native speech therefore, unstressed syllables take less time to be produced in order to keep the rhythmic beat on the stressed syllables. For example, Lehiste (1977) indicates that in a language like English, attention needs to be given to stressed syllables because they carry greatest amount of information. This is facilitated by rhythmic regularity which creates expectancies as to when the next stressed syllable is likely to occur. She further remarks that utterances should be produced with a perfect rhythm of waning trochaic prominence profiles, with sequence of foot structure that cut through the words. With this, she intimates that putting words in focus is more easily intelligible than the meaning-oriented structuring in which foci of meaning are highlighted and the prominences in-between are suppressed, destroying the perfect rhythmic structure. In agreement, Hahn (2004) and Field (2005) also argue that misplaced stress (and in effect, rhythm) may lead to incomprehensibility and ultimately, communication problems. In addition, Jenkins (2000) believes that nuclear stress misplacement can impair intelligibility in ELF interactions, resulting in serious misinterpretation and misunderstanding between interlocutors.

Celce-Murcia, Brinton and Goodwin (1996) however note that speakers of English whose first language is syllable-based show comprehensibility as they put similar effort and emphasis on each syllable. Native speakers can find this as having a negative impact on intelligibility. Although the data analysis showed instances where Ghanaian speakers of English exhibit similarity with inner circle English rhythmic patterns, they mostly showed differences. The differences resulted from stressing weak syllable as well as assigning equal relative prominence to syllables. They also tend to place prominence on most syllables in words. While the lecturers appear to show exceptions to English rhythm, it has to be noted here that it did not appear to negatively affect students' intelligibility or comprehension. This is probably because students have become accustomed to their lecturers' talk or accent. This is an important point to note as Ghanaians accommodate each other's speech during interaction. In relation to this, it can also be argued that the rhythmic patterns produced are not typical of only the lecturers, but have been found to be largely common among Ghanaians, including

members of Parliament (e.g. Appartaim, 2009).

The analysis has showed that no matter the patterns produced, they are not likely to negatively affect the way students understand the lectures. Thus, there is no expectation for the lecturer to deliver the lesson in any variety other than what they as well as their students are familiar with. While there were no data collected from the students (which is a limitation in this study), results of studies on Ghanaian English phonology (e.g. Akpanglo-Nartey, 2009; Appartaim, 2009; Koranteng, 2006; Lomotey, 2016, 2018) suggest that the production of segmental and suprasegmental features of this variety is common among the speakers. Nelson (1995, p. 276) recognizes that the native speaker is a rare sight in most international interactions in English and that many speakers "may never have had the dubious good fortune even to have met a native speaker". Unfortunately, researchers such as Nakano (2007) are of the view that the direction of teaching English is from NSEs to non-NSEs. This is because native speakers provide norms for English. This is countered by others such as Axelsson (2002, p. 144) who observes that "it is clear that a one-accent-only approach is not the best alternative for the teaching of English today". In effect, it is more appropriate to legitimize non-native speaker varieties and recognize the paradigm shift that the increasing use of English as an international language required.

If English is to be used for international purposes, then we need to recognize that the focus of the communication (in this case, the lesson) is not the native speaker, but all who listen; native or non-native. In the current situation, both lecturer and students come from L1 backgrounds that may influence their English speech. As such, they do not have any problems decoding the contents of the lesson, whether the 'appropriate' rhythm is used or not. In essence, there are no problems regarding intelligibility and comprehensibility since the speech is considered normal and meets their needs as far as the course or programme is concerned.

6. PEDAGOGICAL IMPLICATIONS

The teaching of English Language in Ghana has largely been based on British English especially at the senior high school level where students are examined on oral skills. However, it is likely not possible to find an SHS English teacher who can claim that he/she speaks British English or any of its varieties. It is also important to note that the teachers who teach at the Primary, Junior and Senior High and Tertiary levels are/were taught by university lecturers. From the results of this study, it is not possible to find many Ghanaian university lecturers who can claim to speak any of the inner circle varieties. The analysis has showed that no matter the patterns produced in the data, they are not likely to negatively affect the way students understand the lectures. Again, the results of this study have shown that it is possible to speak Ghanaian English with its own rhythm and still succeed in communication. This means that the Oral English examination may be modeled on the variety that is used in the classroom. This suggests that a native speaker model cannot continue to be the norm as interactions in Ghanaian English do not include any native speaker and some may never come across one, as confirmed by Nelson (1995, p. 276) that the native speaker is a rare sight and many

speakers "may never have had the dubious good fortune even to have met a native speaker". If this is the case, then there is no need to expect teachers, no matter the level, to teach following a British or an American model. This also enjoins curriculum developers not to force teachers to mimic an English speaker they do not know of. Rather, teachers should be encouraged to utilize a variety local to them that they find comfortable using.

7. CONCLUSION

With data from the University classroom, this study has examined the rhythm and prominence of Ghanaian English using Liberman and Prince's (1977) Metrical Phonology theory. The analysis has shown that the rhythmic patterns that result from the assignment of prominence to word suggests both similarity with and differences from the theory, indicating that they sometimes produce patterns just as inner circle Englishes do while they do not at other times. The study suggests that Ghanaian English tends to be more syllable-based than the stressed-based varieties of the inner circle as a result of their stress placement. The results confirm those of earlier studies (e.g. Adjaye, 2005; Appartaim, 2009; Koranteng, 2006; Lomotey, 2018) regarding prominence placement. Based on the results, it is suggested that there is the need for curriculum developers to allow teachers to focus on the content they teach using their local English, rather than relying on a model they cannot actually associate with.

It has to be pointed out here that the study recorded lessons from lecturers, without any data from students. In this sense, the results are based on the recordings and observation. This is considered a limitation of the study as data from the students would have helped confirm the results. Another limitation is the non-segregation of the data; that is, the lessons from the language lecturers could be separated from those of non-language lecturers. This would have enabled a comparison of the rhythmic patterns to understand those who produced patterns similar to native speakers and those who did not. The last limitation is our inability to cover more lecturers due to time constraints. Although this study does not directly focus on the comprehension of lecturers' lessons, it contributes to the body of literature on rhythm in Englishes. As the results have shown, the teacher needs to understand that the Ghanaian child only needs to be taught in an English variety that he or she is familiar with and which is local to them. This phenomenon is an area that has not been given adequate attention in Ghanaian English, meaning that more work needs to be done in this area. The study made use of spontaneous unrehearsed speech. Other studies can be conducted using scripted speech to help determine what rhythmic patterns that may be found. Other theories can also be applied to investigate such features.

REFERENCES

Adjaye, S. A. (2005). *Ghanaian English pronunciation*. New York: The Edwin Mellen Press.

Akpanglo-Nartey, R. A. (2009). *Acoustic description of the vowels of Ghanaian English* (Ph.D. Thesis). University of Education, Winneba.

Appartaim, A. B. (2009). *Prominence and rhythm of Ghanaian English speech: A case study of parliamentary discourse*. (Master's Thesis), University of Cape Coast.

Axelsson, M. W. (2002). "Refined" or "relaxed" English pronunciation: Usage and attitudes among Swedish university students. In M. Modiano (Ed.), *Studies in Mid-Atlantic English* (pp. 132-146).. Gävle: Högskolan i Gävle.

Canh, L. V., & Renandya, W. A. (2017). Teachers' English proficiency and classroom language use: A conversation analysis study. *RELC Journal, 48*, 67-81. https://doi.org/10.1177/0033688217690935

Cazden, C. B. (2001). *Classroom discourse: The language of teaching and learning* (2nd ed.). Heinemann.

Celce-Murcia, M., Brinton, D., & Goodwin, J. (1996). *Teaching pronunciation: A reference for teachers of English to speakers of other languages*. Cambridge University Press.

Chela-Flores, B. (1997). Rhythmic patterns as basic unit in pronunciation teaching. *Onomazein, 2*, 111-134.

Chun, M. D. (2002). *Discourse intonation in L2: From theory and research to practice*. John Benjamins.

Clark, J. & Yallop, C. (1990). *An introduction to phonetics and phonology*. Blackwell.

Creswell, J. W. & Plano Clark, V. L. (2011). *Designing and conducting mixed method research* (2nd ed.). Sage.

Cruttenden, A. (1997). *Intonation* (2nd ed.). Cambridge University Press.

Crystal, D. (1969). *Prosodic systems and intonation in English*. Cambridge University Press.

Crystal, D. (2003). *English as a global language* (2nd ed.). Cambridge Universities Press.

Dyrud, L. O. (2001). *Hindi-Urdu: Stress accent or non-stress accent?* (Master's Thesis), University of North Dakota.

Edge, J. & Richards, K. (1998). May I see your warrant please?: Justifying outcomes

in qualitative research. *Applied Linguistics, 19*, 334-356. https://doi.org/10.1093/applin/19.3.334

Edwards, A. D., & Westgate, D. P. G. (1994). *Investigating classroom talk* (2nd ed.). The Falmer Press.

Field, J. (2005). Intelligibility and the listener: The role of lexical stress. *TESOL Quarterly, 39*(3), 399-423. https://doi.org/10.2307/3588487

Gimson, A. C. (1962). *An Introduction to the pronunciation of English*. St. Martin's Press.

Greenbaum, S. (1996). *The Oxford University grammar*. Oxford University Press.

Gumperz, J. (1992). Contextualization revisited. In P. Auer & A. Di Luzio (Eds.), *The contextualization of language* (pp. 39-54). John Benjamins.

Gut, U. (2005). Nigerian English prosody. *English World-Wide 26*(2), 153-177.

Hahn, L. (2004). Primary stress and intelligibility: Research to motivate the teaching of suprasegmentals. *TESOL Quarterly, 38*(2), 201-223. https://doi.org/10.2307/3588378

Hismanoglu, M. (2006). Current perspectives on pronunciation learning and teaching. *Journal of Language and Linguistic Studies, 2*(1), 87-100.

Jenkins, J. (2000). *The phonology of English as an international language*. Oxford University Press.

Kehoe, M. (1997). Stress error patterns in English-speaking children's word productions. *Clinical Linguistics and Phonetics, 11*, 389-409. https://doi.org/10.1080/02699209708985202

Koranteng, L. A. (2006). *Ghanaian English: A description of its sound system and phonological features*. (PhD dissertation), University of Ghana.

Lehiste, I. (1977). Isochrony reconsidered. *Journal of Phonetics, 5*(3), 253-263. https://doi.org/10.1016/S0095-4470(19)31139-8

Liberman, M. (1975). *The intonational system of English* (PhD dissertation, Massachusetts Institute of Technology).

Liberman, M. & Prince, A. (1977). On stress and linguistic rhythm. *Linguistic Inquiry, 8*(2), 249-336.

Lomotey, C. F. (2015). *Intonational meaning in Ghanaian English discourse* (PhD Dissertation, Texas A&M University).

Lomotey, C. F. (2016). The significance of the level tone in Ghanaian English: Evidence from discourse. *Legon Journal of Humanities, 27*(1), 144-171.

Lomotey, C. F. (2018). Fluidity and variation in lexical stress placement in Ghanaian English discourse: A case for systematicity in communication in World Englishes. *Journal of English as an International Language, 13*(1), 37-56.

Low, E. L. (2015). *Pronunciation for English as an international language: From research to practice*. Routledge.

Matthews, P. H. (2007). *The concise Oxford dictionary of linguistics*. (2nd ed.). Oxford University Press.

McMahon, A. (2002). *An introduction to English phonology*. Edinburgh University Press.

Munro, M., & Derwing, T. (1995). Foreign accent, comprehensibility, and intelligibility in the speech of second language learners. *Language Learning, 45*(1), 73-97. https://doi.org/10.1111/j.1467-1770.1995.tb00963.x

Nakano, M. & Pak, K. (Eds.). (2007). *Asia Englishes and miscommunication: Englishes spoken in Asia*. Korea University Press.

Nelson, C. (1995). Intelligibility and World Englishes in the classroom. *World Englishes, 14*(2), 273-279. https://doi.org/10.1111/j.1467-971X.1995.tb00356.x

Odisho, E. Y. (2003). *Techniques of teaching pronunciation in ESL, bilingual & foreign language classes*. Lincom Europa.

Owusu-Ansah, L. K. (1992). So what is new? An initial statement on signaling new information in non-native spoken English. *Revista Camaria de Estudios Ingleses, 25*, 83-94.

Peacock, M. (2005). *English pronunciation. Course material for students* (3rd ed.). University of Jyvaskyla.

Pickering, L. (1999). *An analysis of prosodic systems in the classroom discourse of native speakers and nonnatives teaching assistants* (PhD Dissertation, University of Florida).

Pickering, L. (2001). The role of tone choice in improving ITA communication in the

classroom. *TESOL Quarterly, 35*(2), 233-255. https://doi.org/10.2307/3587647

Pickering, L. (2004). The structure and function of intonational paragraphs in native and nonnative speaker instructional discourse. *English for Specific Purposes, 23*, 19-43.

Richards, J. C. (2015). *Key issues in language teaching*. Cambridge University Press.

Roach, P. (2009). *English phonetics and phonology: A practical course* (4th ed). Cambridge University Press.

Sabater, M-J. S. (1991). Stress and rhythm in English. *Revista Alicantina de Estudios Ingleses, 4*, 145-62.

Schlüter, J. (2005). *Rhythmic grammar: The influence of rhythm on grammatical variation and change in English*. Mouton de Gruyter.

Setter, J. (2003). A comparison of speech rhythm in British and Hong Kong English. In M. J. Solé, D. Recasens, & J. Romero (Eds.), *Proceedings of the 15th International Congress of Phonetic Sciences* (pp. 467-470). Barcelona.

Spencer, A. (2001). *Phonology*. Blackwell.

Szczepek Reed, B. (2011). *Analyzing conversation: An introduction to prosody*. Palgrave.

Tarr, D. (1994). Stress in the English language. An-242 *English phonetics-phonology seminar*. Siptár Péter.

Tashakkori, A. & Teddlie, C. (2003). *Handbook of mixed methods in social and behavioural research*. Sage.

Terken, J., & Hermes, D. (2000). The perception of prosodic prominence. In M. Horne (Ed.), *Prosody: Theory and experiment. Studies Presented to* Gösta Bruce (pp. 89-127). Springer.

Udofot, I. (2003). Stress and rhythm in the Nigerian accent of English: A preliminary investigation. *English World-Wide, 24*(2), 201-220.

Varghese, A. L. & Nilsen, E. S. (2020). Is that how you should talk to her? Using appropriate prosody affects adults', but not children's, judgments of communicators' competence. *Journal of Language and Social Psychology, 39*(5-6), 738-750. https://doi.org/10.1177/0261927X19871692

Walsh, S. (2011). *Exploring classroom discourse: Language in action*. Routledge.