A Graphophonemic Study of English Open-Mid Central Long Vowel (/ɜ:/) in Educated Nigerian English Accent

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DOI: 10.54882/14202414202317731

Abstract
From a graphophonemic perspective, this study examined the status of English open-mid central long vowel /ɜ:/ in Educated Nigerian English (ENEA). Lexical items with graphemes that correspond to /ɜ:/ in British Received Pronunciation (RP) were systematically located in *Longman Dictionary of Contemporary English*, and the phonetic realizations of the graphemes in ENEA were identified and phonemically delineated. One hundred and five words were purposively selected and their articulations in the spoken section of International Corpus of English, Nigeria (ICE-Nigeria) formed the data for the study.Seven hundred and fifty educated Nigerians, from different ethnic regions, were also randomly selected to articulate some of the words not found in ICE-Nigeria. These were analysed acoustically and perceptually. Eight graphemes were found to correspond to /ɜ:/ in RP within the selected items, and the participants realized six different sounds (/a, ɛ, ɔ, ʊa, ia, o/) for the graphemes in those words. It was found that /ʊa/, /ia/, and /o/ have not been recognized in earlier studies, except in Jowitt's (2019) study, which acknowledged /ʊa/. Based on this, it was concluded that graphophonemic studies could be effective in delineating the phonemic system of educated Nigerian English accent, as it will facilitate codification and standardization of the variety for the achievement of its end onormative stability.

Keywords: graphophonemics, grapheme, open-mid central long vowel, phonemic, educated Nigerian English

1. Introduction

Debates on the existence or non-existence of Nigerian Englishappear to have faded and no longer fashionable within the socio-linguistic discourse since the idea of World Englisheswas birthed. This is because Nigerian English is among the widely acknowledged unique varieties of World Englishes(Bamgbose, 1998), and as such its idiosyncratic norms reminiscent of Nigerian linguistic ecology needs to be delineated for the purpose of codification and possible standardisation (Adegbite, Udofot, &Ayoola, 2014;Graddol, 1997).Thus, scholarshavebeen identifying and describing theunique features of Nigerian English(see Adedimeji, 2007; Adetugbo, 1977; Jowitt, 1991, 2019; Kujore, 1985). These features,no doubt, have been shaped by certain psycho-sociolinguistic factors, and scholars (e.g.Bamgbose, 1998), from a dialectological perspective, have accepted themas been idiosyncratic of the varietyand no longer seen as errors.

The emergence of sub-varieties of Nigerian English, which are often classified along regional affiliations or educational qualifications of the speakers, has, over the years, posed the challenge of what variety to be adopted for codification purpose to serve as pedagogic model and for everyday communication (Odumuh, 1984). Banjo's (1971) Variety III appears to have gained wide acceptance among scholars(seeBamgbose, 1982; Gut, 2012)to serve that purpose. For instance, Bamgbose (1982) made this remark on the issue: "I accept Banjo's Variety III as the only plausible Standard Nigerian English."(p. 105), andthis Variety III is what has been tagged the educated Nigerian English (ENE)(seeAdegbite, et al., 2014;

Bamgbose, 1982; Odumuh, 1984).ENE has been described as the variety of English spoken by the majority of Nigerians who have attained literacy level at both the secondary and university levels (Opara, 2021).

Since the adoption of Educated Nigerian English as the *de facto* Standard variety of Nigerian English, scholars have continued to carry out research on both its written and spoken forms.Regarding the spoken form, considerable attentionhas been paid to accounting for its supra-segmental features (see Jowitt, 2000; Melefa&Amoniyan, 2019, 2023; Soneye&Oladunjoye, 2015; Udofot, 2003) and segmental features (see also Simo Bobda, 2007; Josaiah&Babatunde, 2011;Ugorji, 2010).However, concerning the description of the segmental features, conflictingresults have characterizedthephonemicization of the varietyby scholars (Josaiah&Babatunde, 2011), and this stems from the fact that the majority of earlier studies wereimpressionistic rather than empirical(see Jamakovic& Fuchs, 2019). For example, Josaiah and Babatunde's (2011) study found as conflicting the phonemic models of Nigerian English accent in twelve studies they reviewed,particularly the monophthongs and diphthongs. We have equally observed that some monophthongs are not included in the list of those designated in previous studies as ENEA's variants of English open-mid central vowel /ɜ:/, especially those emanating from orthographic judgment.For instance, inAdegbite, *et al.* (2014), only /e:, a, ɔ:/ were represented as the ENEA's variants of RP's /ɜ:/. But /ʊa/ can be identified in ENEA speakers' articulation of grapheme *eur* in entrepren*eur*and sabot*eur*, and <eur> corresponds to /ɜ:/ in RP within these words. Also, <*ere*>is usually realised as /ia/ by Nigerian speakers of English as could be observed in their articulation of*were*.

It is, however, the thesis in this study that the non-graphophonemic approaches adopted inthese earlier studies could also be responsible for the observed insufficient delineation of ENEA phonemic forms. This is because pronunciation of English lexical items in any English as a second language (L2) contexts is usually influenced, remarkably, by spelling and analogical pronunciations (Li, 2010). It has been acknowledged by scholars (Awonusi,2007; Ekundayo, 2016, Jowitt, 1991; Ugorji, 2010) that aside mother tongue interference, some ofthe fossilized or institutionalized pronunciation patterns of Nigerian spoken English emanated from incidences of spelling and analogical pronunciation.

Consequently, it is the belief in this study that adopting a graphophonemic approach in the study of phonemic system of ENEA will aid remarkably in identifyingsounds that are inherent in the variety, which have emanated from orthographic judgements. This is significant because those who, in the past, had made attempts towards identifying the predominant phonological models of educated Nigerian English and designing them into dictionaries of Nigerian English (see Adegbite, Udofot, &Ayoola, 2014; Igboanusi, 2002, 2010)have equally emphasised the inadequacies of such resources (see Adegbite, Udofot, &Ayoola, 2014, p. 13), thereby calling for further efforts towards developing comprehensive resources that will give birth to widely accepted model, which will be adequate for both teaching purposes and everyday discourse in Nigeria. Recently, more scholars (see Soneye, 2021; Surakat, 2021) have also lent their voices to that. Soneye (2021)had noted that "we do need dictionaries on the pronunciation of Nigerian English" (Slide 16). This study, therefore, is an attempt to contribute towards addressing this yearning.

What has become obvious so far is that while a lot has been written on the segmental features of Nigerian English accent, there still exists a gap on the delineation of the status of some RP's monophthongs in ENEA. This is the gap this study targets to fill. This study aims to perceptually identify the sounds, which educated Nigerian speakers of English ascribe to English graphemes that correspond to open-mid central long vowel /ɜ:/ in RP, phonemically delineate the sounds and determine theirdegree of spread in ENEA, whether entrenched, widespread, common, free variant, emerging, or isolated (following Ekundayo's 2014 model).

2. Literature Review

Of course, there exist remarkable studies on the segmental features of Nigerian English. However, as noted in Jamakovic& Fuchs(2019) and Josiah&Babatunde(2011), much is still unknown on the subject. One of such gaps which informed this study is that there are ENEA's variants of English monographs, particularly those of /ɜ:/, which have not been accounted for in previous studies, and these are idiosyncratic norms of ENEA that mainly result from orthographic judgments, and that a graphophonemic approach can facilitate

their adequate outlining. To justify this hypothesis, a review of selected relevant works on segmental aspects of Nigerian spoken English is carried out in what follows.

2.1 Related Studies

From a generative phonology perspective, Bobda (2007) described some major processes which characterise Nigerian English (NigE) phonology at the segmental level. In analysing the vowels,Bobdaadopted Wells' (1982) standard lexical sets as a model of analysis. However, we observe that for NURSE vowel /ɜ:/, he presented three of its NigE counterparts—/a, ɛ, ɔ/. We consider this submission incomplete because, observably, /ɜ:/ is orthographically determined in some instances to realize /ʊa/ in words like *entrepreneur*.

Ugorji (2010) explored both the segmental and suprasegmental aspects of NigE. For what Ugorji tagged 'complex vowels', he identified twelve sounds, eight diphthongs and four triphthongs (see p. 99). However, his adoption of the RP model in the representation of these sounds as acrolectal forms is somewhat disputable. This is because glides in ENEA differ from those of RP. For example, the Schwa part of the diphthongs as in RP is not usually realized as such in ENEA, rather it is realized as something close to /a/. This is the reason scholars have been adopting /a/ instead of /ə/. For instance, in Adegbite, *et al.* (2014), the RP's /ɪə/ is represented as /ia/ in ENEA.

Josaiah and Babatunde (2011) evaluated the various models on Standard NigE phonemes as provided intwelvestudies (between 1958 and 2007)on NigE varieties.In their analysis, Josaiah and Babatunde presented a set of phonemes which they proposed to serve as pedagogical models of NigE.They identified /ɛ:, ɔ, e, ɛ/ as the onlyNigE variants of British RP's /ɜ:/. The observation that informed our study has been that there exist other variants apart from these. It is to be noted, however, that the chronicle of scholarly development of NigE accent by Josiah and Babatunde is quite remarkable, for such provides this study with evidence of scholarly findings on NigE phonemes; this, of course,will help a great dealin drawing conclusions on our analytical findings in comparison with existing positions.

Like in other studies, Jowitt (2019) identified existing English phonemes, particularly the RP and GA forms, and discussed their alternatives in NigE accent. Although he adopted spelling reflexes (what is tagged graphemes in this study) in his description of variants of NURSE vowel /ɜ:/, we noticed that he did not acknowledge sound /ia/ as one of the NigE variants of /ɜ:/, as can be found in ENEA speakers' articulation of *were*.

With the claim that previous studies on features of Nigerian spoken English were mainly impressionistic, Jamakovic and Fuchs (2019) sought to determine the number of monophthongs of educated southern NigE as well as their realizations in comparison with the RP. The researchers' intention was to evaluate the patterns documented in previous studies. According to them, the lack of reliable studies in the area of ENEA prompted their study. They also decried, as surprising, the paucity of reliable works on the phonological features of NigEgiven that Nigeria is the most populous African country. Jamakovic and Fuchs adopted Wells' (1982) lexical sets in their analysis.For the NURSE vowel /ɜ:/, theyfailed to include /ʊa/ as its ENEA's variant.Another shortcoming observed in Jamakovic and Fuchs' study is the researchers' failure to use lexical items to exemplify their claims. Again, their work differs from the current study because they limited their study to L1 Igbo speakers and restricted the study to only stressed syllables, hence another reason some ENEA variants of /ɜ:/ were excluded.

2.2 The Graphophonemic Approach

English has been adjudged to have a deep orthography, meaning that there are no direct one-to-one correspondences between sound and spelling segments in different contexts. Thus, English as a second language (ESL) users often transfer the sound of a grapheme from one context to another. This is what Ekundayo (2014) refers to as incidence of intransference. The business of describing the relationship between the grapheme and phoneme in different lexical environments has been tagged graphophonemics (see Anderson, 2014; Deschamps, *et al.*, 2004), and it is a linguistic approach (Baroni, 2016; Pukli, 2017). In this study, graphophonemics is conceived as agrapheme-to-phoneme-correspondencedescriptive approach. A grapheme as used in this study means an alphabetical letter or a combination of such which represents a phoneme in a word, especially in alphabetic orthographies such as English.

It can also be seen as the smallest unit of a writing system of any given language. It spells a phoneme in a word. This is also true in tonal languages even with those that admit direct one-to-one correspondence between graphemes and phonemes because we can liken the bare spelling units as graphemes, and those accompanied by the tonal signs as phonemes. Worthy of mention is that a grapheme, observably, is different from a morpheme. While the latter performs a grammatical function, the former does not, but some morphemes can as well be regarded as graphemes, especially where they represent single sounds. For example, the *s* in *bags* corresponds to phoneme */z/*; thus, it is a morpheme performing a grammatical function of indicating plurality, but in terms of its physical structure, it is a grapheme. Graphemes can be categorized into monographs (those made of up of one letter), digraphs (those formed by a combination of two different letters realizing single sounds), doublets (those formed by a combination of two same letters realizing single sounds), and polygraphs (those formed by a combination of three or more different letters realizing single sounds). To be noted also is that the idea of the phoneme as conceived in this study is that which is projected by the Classical phonemicists, who see the phoneme as the smallest unit of sound which makes a difference in meaning (Omachonu, 2010, p. 20). The phoneme is also considered in this study, in line with the psychological reality school (Eka&Udofot, 1996), as the intention of the speaker or the impression of the hearer, or both. Thus, allophones are not considered, but rather the speech segment that can cognitively represent all its allophones. For example, phoneme /p/ will cover all of its allophones—[p^h, p=, p^j, p^l], which express phonetic features of /p/ but cannot affect meaning in a lexical environment.

While arguing in favour of graphophonemics as an important aspect of linguistics, Baroni (2016) opines that the medium through which language is expressed affects language itself or at least its analysis. A careful observation will reveal that the majority of L2 users or learners of English rarely pay attention to the stem from which a word is inflected or derived when pronouncing the word; instead, they try to decode a sound which a spelling unit represents within that lexical environment, which is one of the reasons overgeneralizations (analogies) and spelling pronunciations have characterized L2 Englishes.

3. Methodology

The data for this study were gathered from the spoken part of the International Corpus English, Nigeria (ICE-Nigeria) and fromread-aloud tasks administered to seven hundred and fifty educated Nigerians who were randomly selected from the University of Jos, Federal University Dutse, Jigawa State and Karu Local Government Secretariat, Nasarawa State. The International Corpus of English (ICE)—Nigeria was compiled between 2007 and 2014 at the Universities of Augsburg (2007–2011) and Münster (2011–2014) as part of the ICE project (see Oladipupo&Akinola, 2022). It contains a total of 1,010,382-word corpus of spoken (609,586) and written (400,796) NigE usage in the early 21st century.The corpus comprises informal and formal spoken and written discourses by Nigerians from different ethnic (e.g., Yoruba, Igala, Igbo, Hausa, Edo, Urhobo, Efik, Tiv, Esan, Etsakor, Yakurr, Ibibio, Itsekiri, Nupe, Anaang, Ogoni, Ijaw, Ukwuani, etc.) and occupational (e.g., undergraduate and postgraduate students, lecturers, doctors, politicians, clerics, journalists, TV modelists, teachers, lawyers, police officers, etc.) backgrounds, and the files are available at www.sourceforge.net.

In collecting data for the study, one hundred and fivemono-syllabic, di-syllabic and poly-syllabicwords were selected through a purposive sampling technique. Queries were systematically uploaded onto an online word database (wordbyletter.com) to generate words that contain each of the target graphemes, particularly the vowel digraphs and polygraphs. The generated results were then manually transcribed phonemically using the transcription model in*Longman Dictionary of contemporaryEnglish, 5th Edition* to identify graphemes that correspond to /ɜ:/ in the selected words. From the transcribed results, words in which the phonemic realizations of their graphemes have been observed to differ from the British RP as represented in the dictionary, or having different variants among educated Nigerians, were purposively filtered from those whose realizations are similar or consistent with the RP versions. These formed part of the one hundred and five selected words. The same steps were also taken to filter words with vowel monographs, although words with vowel monographs were rather gathered systematically and manually by creating different patterns (representing the contexts where the target grapheme is expected to be) and

searching, in the electronic version of the dictionary, for words containing a target grapheme in those created contexts.

The selected words were divided into three frames, each frame containing a list of thirty-five words.A search into the transcript of the spoken part of ICE—Nigeria was conducted using AntConc, a corpus analysis toolkit version 4.2.0 (Anthony, 2022), to identify those selected lexical items that exist within the spoken part of the ICE--Nigeria. The words not found in the corpus, or those having less than two hundred and fifty occurrences were identified and administered to the selected respondents to pronounce in a read-aloud task. This is to enable us generate data for all the graphemes within the various identified lexical items.The respondents were divided into three groups of two hundred and fifty. That is, each group comprises two hundred and fifty respondents, who read only a list of words in a frame. The respondents' performances were recorded using an Android mobile phone's recorder. The recorded performances were further converted into WAV files using Freemake Audio Converter Application. This is to enable the reading of the files in Praat, a software that was used to validate claims made during the perceptual analysis of recorded performances by comparing the formants of the perceived sounds with those of the IPA inventories (illustrated audio-wise by J. Esling, J. House, P. Ladefoged, and J. Wells in *IPA i-Chart 2023*.) adopted as the model for thephonemictranscriptions of the target outputs of the participants.

For data analysis, the perceptually identified sounds assigned to each of the target graphemes by the participants (representing ENEA speakers) in their phonetic outputs were phonemically represented in tables as the participants'phonemic realisations of the graphemes. In addition, the degree of spread of each identified sound in the studied lexical items as quantitatively determined in percentages is indicated, following Ekundayo's (2014) model in which 80-100% realisations are designated as entrenched, 60-79% as widespread, 50-59% as common, 40-49% as free variant,30-39% as emerging, and 0-29% as isolation.

4. Data Analysis and Discussion

Graphemes <er>, <ir>, <ear>, <eur>, <ere>, <or>, <ur>, and <our>wereidentified to correspond to /ɜ:/in British RP in the one hundred and fifty lexical items selected for this study. Out of these lexical items, twenty-eight were found to contain grapheme <er>, eighteen with grapheme <ir>, seven with <ear>, six with <eur>, one with <ere>, nine with <or>, twenty-nine with <ur>, and seven with <our>. In this section, thesoundsassigned to these graphemesin ENEA and their degrees of spread (as demonstrated by the participants) in the studied words are analysed. The identified degreeof spread of each sound in each lexical item quantified in percentages is indicated beside each word, while words with 100% spread have no figures specified beside them.

4.1 Phonemic Realisations of the Graphemes

4.1.1. Grapheme <er>

Table 1 shows that out of the twenty-eight studied lexical items, grapheme <er> was realised as open front vowel /a/ in nineteen of the words while it was realised as open-mid front vowel /ɛ/ in ten.

Table 1: Phonemic Realisations of <er>in the Studied Lexical Items

Phonemic Realisations	**/a/**	**/ɛ/**
No. of Lexical Items	19	10
Lexical Items	h**er**bivorous, v**er**tebrae, v**er**batim, v**er**dure, hyp**er**bole, cons**er**vatoire, univ**er**sity, adv**er**sity, asp**er**sion, sw**er**ve, obs**er**ve, adv**er**se, n**er**ve (**60%**), p**er**m, av**er**t, perv**er**t, ass**er**t, disc**er**n, al**er**t	h**er**culean, p**er**petuity, cl**er**gy, inf**er**no, in**er**tia, allergic, n**er**ve (**40%**), b**er**th, st**er**n, pref**er**

In the word *nerve*, while some participants (60%) realised <er> as /a/, some (40%) realised it as /ɛ/. All this shows that /a/ and /ɛ/ are the two sounds, which ENEA speakers assign to grapheme <er> that corresponds to /ɜ:/ in British RP. Based on a careful observation, we could claim that these patterns of realization might have resulted from participants' imitation of exoglossic(particularly the British English) forms. This is because in the *Longman Dictionary of Contemporary English*, the audio correspondent of grapheme <er> in those words where it was realized as /a/ (e.g.,*h**er**bivorous, v**er**tebrae, v**er**batim, v**er**dure, hyp**er**bole, cons**er**vatoire*), sounds something a little similar to /a/ while in those where it was realized as /ɛ/ (e.g.h**er**culean, p**er**petuity, cl**er**gy, inf**er**no, in**er**tia), it sounds something close to /ɛ/, a sound that has been acknowledged in earlier studies (see Awonusi, 2004; Bobda, 2007) as the NigE localized version of RP's /ɜ:/.

4.1.2. Grapheme <ir>

It can be seen in Table 2 that ENEA speakers (as demonstrated by the participants) assign sounds /ɛ, a, ia/ to grapheme <ir> in lexical items where it corresponds to open-mid central long vowel /ɜ:/ in inner circle Englishes, particularly the British RP.

Table 2: Phonemic Realisations of <ir>in the Studied Lexical Items

Phonemic Realisations	**/ɛ/**	**/a/**	**/ia/**
No. of Lexical Items	15	4	1
Lexical Items	c**ir**cuit, c**ir**cus, f**ir**, f**ir**m, c**ir**cle, v**ir**gin, th**ir**ty (**56%**), v**ir**tue, m**ir**th, b**ir**d, th**ir**d, sw**ir**l, g**ir**l, st**ir** (**58%**), f**ir**st	th**ir**ty (44%), aff**ir**m, conf**ir**m, aff**ir**mative	st**ir** (**42%**)

As shown in Table 2, participants realised grapheme <ir>as open-mid front vowel /ɛ/ infifteen items, as open front vowel /a/ in four items, and as a free variant in one. However, their realisations vary in *thirty* and *stir*. While 56% produced the grapheme as /ɛ/ in *thirty*, 44% produced it as /a/.In *stir*, 58%assigned /ɛ/ to the grapheme while 42% went for a fronting diphthong /ia/. Observably, /ia/-realization is common among Yoruba speakers of English, but it is becoming noticeable in spoken English of some non-Yorubas.

4.1.3. Grapheme <ear>

Table 3 shows that educated Nigerian speakers of English (as demonstrated by the participants) assign sounds /ɛ, a, ia/ to grapheme <ear> in lexical items where it corresponds to /ɜ:/ in British RP.

Table 3: Phonemic Realisations of <ear>in the Studied Lexical Items

Phonemic Realisations	**/ɛ/**	**/a/**	**/ia/**
No. of Lexical Items	5	3	1
Lexical Items	earth, earnest, learn (54%), heard (56%), dearth	search, learn (46%), heard (44%)	Pearl

In the seven studied lexical items with <ear>, participants realised the grapheme as /ɛ/ in five, as /a/ in three and as /ia/ in one. However, in *learn*and*heard*, participants deployed varying sounds as its phonemic correspondents. For *learn*, 54% realised the grapheme as /ɛ/ while 46% realised it as /a/, and for *heard*, 56% produced it as /ɛ/ and 44% as /a/.Exoglossic (British and American) imitation could also be claimed to be responsible for these realisations. This is because in these words, the /ɜ:/ form, demonstrated in audio version of *Longman Dictionary of Contemporary English,* sounds something similar to /a/ for the RP accent and as /ɛ/ for the GAaccent, though with some rhotic accent. Thus, the variation in the phonetic realisationsof the grapheme among ENEA speakers could be traced to the accent which influence their spoken English. Analogy (or overgeneralisation) couldalso be recognised as thefactor responsible for the

realisation of <ear> as /ia/ in *pearl*. This is because the majority of Nigerian speakers of English realise <ear> as /ia/ in *pear*; thus, when they come across non-frequently used words in spoken English (such as *pearl*), they extend this form to them.

4.1.4. Graphemes<eur> and <ere>

It can be seen from Table 4 that the participants realised grapheme <eur> as /a/, /ɔ/ and /ʊa/ in six lexical items where it was found to correspond to /ɜ:/ in British RP. They realised the grapheme as /ʊa/ in four lexical items, as /a/ in one (*chauffeur*), and as /ɔ/ in one (*amateur*).

Table 4: Phonemic Realisations of <eur> and <ere>in the Studied Lexical Items

Phonemic Realisations	**/ʊa/**	**/a/**	**/ɔ/**
No. of Lexical Items	5	1	1
Lexical Items	saboteur, provocateur, hauteur, entrepreneur	chauffeur	Amateur
<ere>			
/ia/	were	1	

It must be noted that in British RP, grapheme <eur> also corresponds to /ə/ and /ʊə/ in *amateur*, and as /ə/ in *chauffeur*. This implies there is an incidence of free variation in the pronunciation of the words in British English. It can be assumed that it is the /ə/-version thatinfluences ENEA speakers' realisations, because the majority of ENEA speakers substitute /ə/ for /ɔ/ or /a/ (see Josiah &Babatunde, 2011) respectively in contexts where the schwa sound is produced by native speakers as anything close to open-mid back vowel or open front vowel. Again, exoglossic imitation could also besaid to be responsible for the realization of <eur> as /ʊa/ in *sabot**eur**, provocat**eur**,haut**eur***, and *entrepren**eur**,* because the GA's audio version of the words,as demonstrated in the *Longman Dictionary of Contemporary English,* could possiblybe perceived, without careful attention, as /ʊa/. Furthermore, it can be seen that in the word *were*, all the participants realised grapheme <ere>as /ia/.

4.1.5. Graphemes<or>, <ur> and <our>

As shown in Table 5, all the participants realised grapheme <or> as open-mid back vowel /ɔ/ in the nine words where it corresponds to /ɜ:/ in British RP, and it can be claimed that analogy (or overgeneralisation) is responsible for the realisation. This is because grapheme <or> corresponds to /ɔ:/ in British RP in any post-nonlabial-velar contexts (except in *attorney*), but ENEA speakers (as demonstrated by the participants) extend the feature, though the neutralised version (/ɔ/) to post-labial-velar contexts.

Table 5: Phonemic Realisations of <or>, <ur> and <our>in the Studied Lexical Items

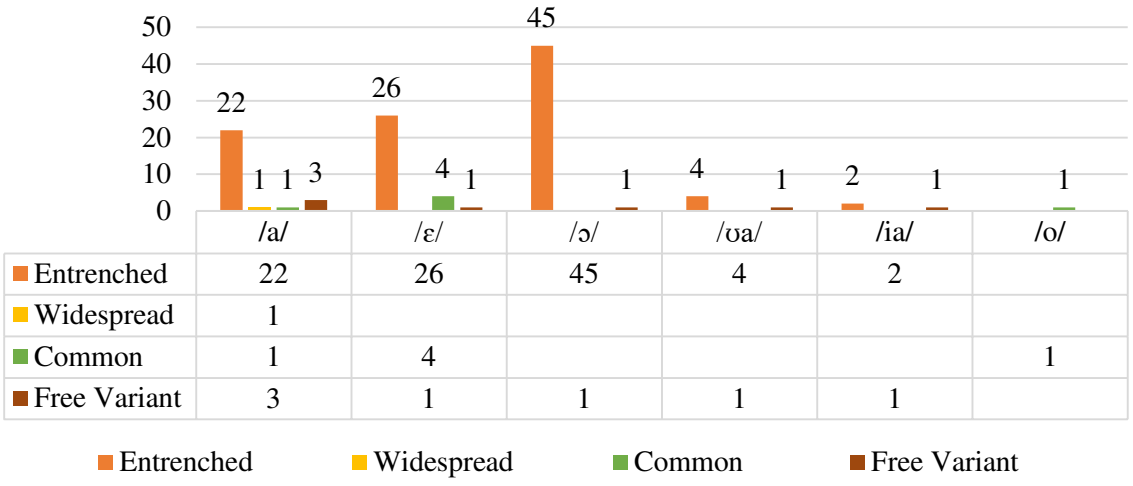
Phonemic Realisations	**<or> as /ɔ/**	**<ur> as /ɔ/**
No. of Lexical Items	9	29
Lexical Items	worship, attorney, worth, world, work, worm, worst, worse, word	purchase, furnace, usurp, curfew, murder, surgeon, survey, further, burn, absurd, churn, disburse, blur, etc.
	<our> as /ɔ/	<our> as /o/
No. of Lexical Items	**7**	1
	j**our**ney, c**our**teous, c**our**tesy, j**our**nal (**43%**), sc**our**ge, adj**our**n, soj**our**n	journal (57%)

For grapheme <ur>, all participants also realised it as /ɔ/ in the studied twenty-nine lexical items. It is a common practice in ENEA to substitute /ɜ:/ with /ɔ/ in items where the sound is orthographically represented with grapheme <ur>. Also, participants realised grapheme <our> as /ɔ/ in the seven lexical items where it corresponds to /ɜ:/. However, their realisations of the grapheme vary in their articulation of *journal*. While 57% realised the grapheme as close-mid back vowel /o/, 43% realised it as /ɔ/. Again, it could be claimed that analogy is also responsible for the realisation of <our> as /ɔ/ because the speakers assume that since the grapheme corresponds to /ɔ:/ in *four* (a frequently used number), the same sound should be extended to other words that contain the grapheme, hence the reason [flɔ:] has continued to emerge in educated Nigerians' pronunciation of "flour". Worthy of mention again is that in the participants' articulation of *journal*, /o/-realisation appears to be predominant. Thus, regressive assimilation,a sort of vowel harmony, may not be far from being responsible for this realisation, because since the majority of ENEA speakers realise the schwa sound in second syllable of*journal* as /a/ and /a/ is a non-advanced tongue root [-ATR], it could make speakers to easily assign /o/ (another [-ATR] sound) to <our> instead of /ɔ/, an ATR sound.

4.2 Frequency Distribution of Realised Sounds and Degree of Spread in Lexical Items

The total occurrence of each realised sound in the studied lexical items and the degree of spread of such are represented in a chart below.

Figure 1: Frequency Distribution of the Realisations in Lexical Items and their Degree of Spread



	/a/	/ɛ/	/ɔ/	/ʊa/	/ia/	/o/
Entrenched	22	26	45	4	2	
Widespread	1					
Common	1	4				1
Free Variant	3	1	1	1	1	

As can be seen in Figure 1, in ENEA there are six phonemic realisations (/a, ɛ, ɔ, ʊa, ia, o/) of the eight graphemes that correspond to /ɜ:/ in British RP within the one hundred and five studied lexical items. Out of these105words, /a/ was realised in twenty-seven lexical items. This realisation was found entrenched in twenty-two items, as widespread in one, common in one, and as free variant in three. In thirty-one items, the graphemes were realised as /ɛ/, which was found entrenched in twenty-six items, common in four and as free variant in one. The third phonemic realisation is /ɔ/, which was found entrenched in forty-five words and as a free variant in one. Sound /ʊa/ was found in five words, entrenched in four and as a free variant in one, while sound /ia/ was found in three words, entrenched in two and as a free variant in one. Sound /o/ was found common only in one lexical item (*journal*).

The implication of this is that while /a, ɛ, ɔ, ʊa, and ia/ could be regarded as the ENEA's basic equivalents of RP's /ɜ:/, /o/ could be considered its other variant, influenced byvowel harmony, a sort of regressive assimilation. In addition, /ɜ:/ is found diphthongised in some lexical contexts.This finding seems to negate the submissions in earlier studies. For instance, in previous studies (Adegbite, et al, 2014; Adetugbo, 2004; Bobda, 2007), there was no inclusion of diphthongs as NigE variants of RP's /ɜ:/, except in Jowitt's (2019) study, which acknowledged sound /ʊa/. Also, no mention of /o/. However, scholars

recognised open-mid front vowel /ɛ/ and its lengthened version /ɛ:/(Ekong, 1978, Josiah &Babatunde, 2011), open-mid back /ɔ/, open front /a/(Adegbite, *et.al*, 2014; Bobda, 2007; Jowitt, 1991, 2019), and close-mid front vowel /e/ (Odumuh, 1987; Josiah &Babatunde, 2011)as NigE variants of RP's /ɜ:/. The lengthened version of /ɛ/ was not found in our analysed data because in most cases Nigerian speakers of English do not make a distinction between long and short vowels (see Adetugbo, 1979). Also, the /e/ sound was not found in the data analysed in our study, and there are no lexical examples presented in these earlier studies to demonstrate the occurrence of /e/ as NigE variant of RP's /ɜ:/. Thus, the existence of /e/ as an ENEA's variant of /ɜ:/ needs further investigation.

5. Conclusion

This study has graphophonemically examined the status of English open-midcentral long vowel /ɜ:/ in ENEA by identifying the sounds ENEA speakers assign to English graphemes that correspond to /ɜ:/ in RP and representing them phonemically as its ENEA's equivalents. Six equivalents were identified and out of these six, two have not been mentioned in previous studies. It is, therefore, concluded that the omission of these variants could have resulted from the non-graphophonemic approach adopted in these predating studies in their delineation of NigE phonemic system. It is believed that the findings of this study could be useful to those intending to design a pronunciation dictionary of standard Nigerian English.

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