A Phonological Study of Consonants and Vowels Phonemic Merger in Hausa

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ABSTRACT: *This paper examined a phonological study of consonants and vowels phonemic merger in Hausa. The main objective of this research is to examine how phonological and morphological rules trigger phonemic merger of certain consonants and vowels phonemes in particular phonetic environments of a word as phonetic and phonemic entity, on the assumption that, phonological and morphological rules relate an underlying structure to its phonetic representation. The study employed generative phonological framework in the analysis of the data so that we can establish the set of rules that describe the changes of the underlying structure when they occur in speech. Also, for the data collection an ethnographic communication method is adopted. The findings of the research discovered three phonological processes that motivate consonants and vowels phonemic merger in Hausa. The identified phonological processes are: palatalization, rhotacization and deletion motivating phonemic merger. In addition, it is noted that phonemic merger is a rule-governed process because, we have clearly seen how a series of cumulative Hausa phonological and morphological rules operate on the underlying forms, and transform them into surface forms in realizing a phonemic merger in Hausa.*

KEYWORDS: Hausa, Consonant, Vowel, Phonemic, Merger.

INTRODUCTION

Every language has varieties of speech that show some degree of correlation with the social and geographical structure of the society. It is also obvious that every natural language has an independent phonological system reflecting the different types of sounds that it happens to have. If a language is spoken by thousands or millions of people, variation of usage manifests in terms of phonetics, phonology, syntax, morphology, semantics etc. In the present work, some lexical items from standard Hausa and some regional dialects under study will be examined with the aim of finding out phonemes that undergo changes in certain environments toward the realization of phonemic merger in Hausa. Phonologically, a lexical item is represented as a linear sequence of segments, each segment is specified with respect to distinctive phonological information. In this

work, we shall examine how phonological and morphological processes relate underlying forms with their phonetic representations; however, some phonological changes are automatic ones while some are non-automatic. This research is purely on analysis of consonants and vowels phonemic merger in Hausa. Phonological processes are a systematic alternations or changes that sounds undergo depending on their positions in words or across word boundaries. Yul-Ifode (2014) asserted that "phonological processes are those changes which segments undergo that result in the various phonetic realizations of underling phonological segments". Phonological processes refers to a situation where segments of neighboring morphemes that becomes juxtaposed undergo change when they are combine to form words or other than those in which two morphemes come together (Schane, 1973). These processes are governed by phonological rules which generalization about the different ways a sound can be pronounced in different environments. (Hayes, 2009). Goldsmith (1995) explored phonological rules as "the devices employed by the phonological theory to account for the relationship between representations at different levels". Additionally, phonological rules could be described as a mapping between underlying level and surface level of phonological representation. According to Sani (1989), phoneme is an abstract unit of distinctive/contrastive sound in a language. As for merger, Matthews (2007) stated that "merger is a change by which two units that were once distinct become one and the same, especially in phonology". However, there are forty seven (47) phonemes in Hausa, comprising thirty four (34) consonant and thirteen (13) vowels. These Hausa consonants are succinctly described by Sani (2005) "as a speech sounds which are produced with the obstruction of airstream. The obstruction could be partial or total". More so, in the articulation of consonants sounds three things are always put into consideration, thus, place of articulation, manner of articulation and state of the glottis.

LITERATURE REVIEW

Phonology as a core area of Linguistics, has a keen interest by many scholars which triggered a lot of scholarly researches in Hausa language. These researches were contributions made by some of the Hausa scholars in relation to automatic and non-automatic phonological changes in Hausa. The most famous among them are the works of Zaria (1982), Abubakar (1983), Bagari (1983/85), Bello (1985), Sani (2001) and Baba (1993/1998). Zaria (1982) emphasized on sound correspondences, distinguishing one dialect from another; Abubakar (1983) discussed dialectal variations from phonological perspective; Bagari (1983/1985) examined pvcs that end in long vowel /o:/ in syllable final position of Hausa common nouns; Bello (1985) investigates merger in relation to English loanwords in Hausa and cited examples on how the sounds of certain English loanwords merged with Hausa sounds; Sani (2001) studied the behavior of back consonants /k/ // and /g/ in relation to vowel alternation; Baba(1993/1998) examines pluractional verb forms where he touched on two variants of prefixal reduplication when forming pluractional in Hausa.

METHODOLOGY

This research is designed to be qualitative and descriptive in nature. According to Yule (2006) "qualitative research is a type of research that describes a phenomenon in words instead of number or measure". In qualitative-based research, data are often collected through interviews, observations, and focus groups, within the analysis indentifying patterns across cases to provide a descriptive of this pattern (Milerday & Micheller 2004:17).

Area of Study

As explored earlier that, this research investigated Hausa consonants and vowels phonemic merger from phonological perspective in particular phonetic environments. The area of study for this research comprised some of the Eastern (Kano, Daura, Katsina, and Bauchi) and Western (Zazzau, Ikara, Sokoto,) geographical zones of Hausa land.

Informants

The best data gathering technique in conducting a research of this nature is for the researcher to meet his informants from whom he would get the relevant data. In this regard, a substantial number of Hausa speakers from the area of the study mentioned above were met and interacted and their normal and natural speech habits were carefully examined in the course of obtaining the data needed for realization of the phonemic merger in Hausa. Besides, the two research assistants were selected and involved in the selection of the informants to be interviewed. The informants were from different categories based on age (ranging from 16-86), sex (males and females) as well as educational background (Islamic and Western education) were considered.

Data Collection Procedures

An interview, observations, focus groups and native speaker's intuition will be procedures for the data collection of this research. Additionally, this research will partially rely on a handful of essential books, especially dictionaries of English-Hausa and other various relevant materials written by some of the eminent scholars mentioned in the literature section. In the course of data collection, interview in this type of research that concerns speech is inevitable. Hence, the researchers will interview different Hausa speakers at the site of the research mentioned above with the aim of examining phonological processes and phonemic merger in Hausa vowel and consonant phonemes.

Method of Data Analysis

The analysis of the data for this research will be based on the generative phonological theory. Therefore, generative phonology deals with the task of establishing the set of distinctive features and the properties of phonological rules of world languages. According to Schane (1973) "distinctive features are minimal elements" while Stampe (1973) asserts it as "the ad hoc abbreviations of features bundles that can take one of the values: +(plus) or - (minus)".

Nevertheless, Our choice to adopt this theory, is reasonably based on its ability to address critically the analysis of phonological processes and merger in Hausa.

Data Presentation and Analysis

This section presented the interpretation and analysis of the data extracted from handful of essential books, especially dictionaries of English-Hausa and other various relevant materials written by some of the eminent scholars mentioned in the literature section. The data discover three phonological processes that motivate consonant and vowel phonemic merger in Hausa. The identified phonological processes are: palatalization, rhotacization and deletion motivating phonemic merger.

Palatalization Motivating Phonemic Merger

Sani (1989) defined palatalization as "to add a palatal articulation (raise the front of the tongue towards the hard palate) to a non-palatal consonant under certain conditions."

The condition governing palatalization is where a vowel /i/ or /e/ immediately follows certain consonants under particular circumstances. Palatalization, as a phonological process has become productively active in the study of Hausa phonology. (cf. Abubakar, 1983, Sani, 1989 and Baba,1993).

This productive phonological process applies within and outside morpheme boundary, when it apples morpheme-internally, it is phonologically motivated and it is automatic. Conversely, when it applies across morpheme-boundary, it is morphophonologically motivated and it results in non-automatic phonological changes. In a nutshell, there are two types of palatalization, automatic and non-automatic. Automatic palatalization does not trigger phonemic merger in Hausa; it is non-automatic palatalization that motivates phonemic merger.

This category of palatalization involves pvcs /k/ /q/ and /g/.The three pvcs palatalized to /kj/,/qj/ and /gj/ in Hausa when they are immediately followed by the vowel /el. In this context, phonemic merger is morphophonologically motivated across boundary where any of the three pvcs precedes the vowel/e/ alone. Consider the following examples:
(1)

		Gloss
/wa:ke:/	(U.R.)	bean
wa:k^{j}e:	palatalization	
wa:k^{j}e:n	suffixation of referential/-n	
wa:k^{j}en	vowel reduction	
wa:k^{j}en	centralization	
wa:k^{j}ēn	velrization of /n/	
wa:k^{j}ēn	tone assignment	
[wa:k^{j}en]	(S.R.)	

(Merger of/k/with the phoneme/kj/).

(2)		Gloss
/wa:qe:/	(U.R.)	religious poem
wa:qʲe:	palatalization	
wa:qʷe:n	suffixation of refential /-n	
wa:qʲ en	vowel reduction	
wa:qʷen	centralization	
wa:qʷen	nasalization	
wa:qʷen	velarization of /n/	
wa:qʷen	tone assignment	
[wa:qʷen]	(S.R.)	

(Merger of/q/with the phoneme/qj/).

(3)		Gloss
/hange:/	(U.R.)	foresight
hangʲe	palatalization	
hangʲen	suffixation of referential /-n	
hangʲen	vowel reduction	
hangʲen	centralization	
hangʲen	nasalization	
hangʲen	velarization of /n/	
hàngʲen	tone assignment	
[hàngʲen]	(S.R)	

(Merger of/g/with the phoneme/gj/)

However, it is noteworthy that these non-automatic morphophonological changes apply only where pvcs/k/,/q/and/g/precede the vowel /e/ not /i/. Below is a rule to account for this phonemic change:

$$
\begin{bmatrix} - & \text{Syllabic} \\ + & \text{high} \\ + & \text{back} \\ - & \end{bmatrix} \longrightarrow [+ \text{pal}] \ / \ \underline{\quad} \begin{bmatrix} + \text{syllabic} \\ + \text{son} \\ + \text{tense} \end{bmatrix} \underline{\quad} \ \begin{array}{l} \# <n> \\ \text{MGSE} \\ \\ - \text{High} \end{array}
$$
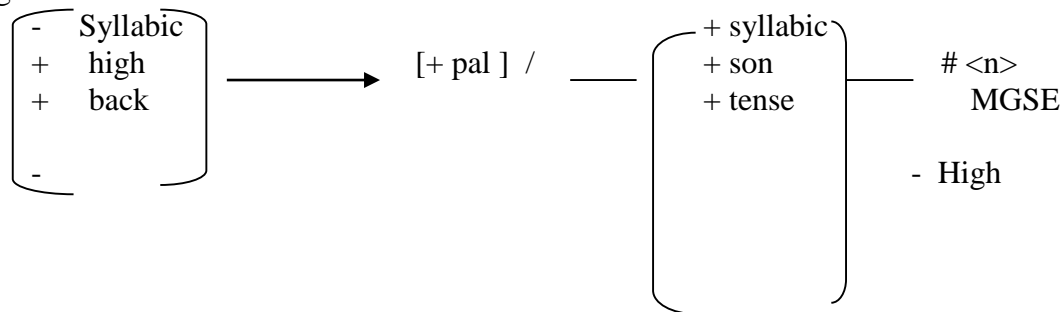
Non-Automatic Palatalization Motivating Phonemic Merger

Non-automatic palatalization applies across morpheme boundary and it is morphophonologically conditioned. It has been observed that palatalization in Hausa is very productive based on researches conducted by some eminent scholars, (cf. Abubakar, 1983,Sani,1989 and Baba, 1993) even though the environment the palatalizationtakes place is phonetically natural (automatic). In this context, we shall examine how palatalization in morphological contexts operate on non-sonorant coronals /s/,/t/,/d/ and /z/ as well as labio-velar approximant /w/ to find how phonemic merger is motivated in non-automatic condition. Here,we shall examine how palatalization operates in plural formation, verb formation, verbo-nominals (gerunds) and ethnonyms.

Plural Formation Motivating Phonemic Merger

Plurals in Hausa are formed in many ways like reduplication, prefixation, infixationa and suffixation. When forming plurals of certain singular forms that end with non-sonorant coronals /s/, /t/, /d/ and /z/ as well as labio-velar approximant/w/, they undergo palatalization operation and change to/sh/,c/,/j/and/y/ before the vowel/i/or/e/by duplicating the final consonant of the singular form by adding a plural suffix /-i/ or /e/to the stem of the singular form and trigger phonemic merger from morphological point of view. Consider the following examples:

    i. [s] merged with [ʃ] before/i/or /e/

In Hausa, some lexical items of singular forms that end with the phoneme [s] before the vowel /i / or /e/ become plural where [s] merged with [ʃ] as exemplified below:

(4) U.R (singular)+ inflexional suffix	S.R.	Gloss
qu:sa:+o:si:/	[qu:sa: ʃi:]	nail
/ta:sa:+o:si:/	[ta:so:ʃ1:]	a small metal bowl
/qasa:+a:se:/	[qasà:fe:]	country
/bisa:+a:se:/	[bisà:ʃe:]	animal

ii. [t] merged with [tʃ] before/i/

When forming plural of certain words that end with /t/, the phoneme merges with /gʃ / before /i/ across morpheme boundary. Consider the following example:

(5)	(U.R.) (singular)+inflectional suffix	(S.R)	Gloss
	/bu:ta:+o:ti:/	[bu:to:tʃ i:]	Kettle
	/tu:ta:+o:ti:/	[tu:to:tʃ i:]	flag
	/qo:ta:+o:ti:/	/qʷo:ta:+o:ti:/	handle (of hoe, axe, etc)

iii. [d] merged with [d3] before/i/or/e/

(6)	(U.R.) (singular) + inflectional suffix	(S.R.)	Gloss
	/gada:+a:dʒe:/	[gado:dʒi:]	bridge
	/kada:+o:dʒi:/	[kado:dʒi:]	crocodile
	/gado:+a:dʒe:/	[gadà:dʒe:]	bed

iv. [z] merged with [d3]

(7)	(U.R.) (singular) + inflectional suffix	(S.R.)	Gloss
	/ka:za:+i:/	[kà:dʒi:]	Chicken
	/maza:+ze:/	[mazà:dʒe:]	males
	/gwarzo:+ ʒe:/	[gwatà:dʒe:]	brave man

v. [d3] merged with [z]

(8)	(U.R.) (singular)+inflectional suffix	(S.R.)	Gloss
	/alhad3i+ai/	[zàlhàzai:]	pilgrim/a person who perfomed hajj
	/midʒi:+a:/	[mãza:]	Husband
	/qirdʒ +a:/	/qʲrà :za:/	chest
	matʃiidʒi:+ai/	[màtʃi: zai]	snake

See the following rule to account for palatalization to account for merger with the exception of labio-velar approximant /w/:

$$\begin{bmatrix} - & \text{Syllabic} \\ + & \text{high} \\ + & \text{back} \\ & - \end{bmatrix} \longrightarrow [+ \text{pal.}] \ / \ \underline{\quad} \begin{bmatrix} + \text{syllabic} \\ + \text{pal} \\ + \text{plural} \\ \\ \\ \text{Gloss} \end{bmatrix} + \text{merger}$$
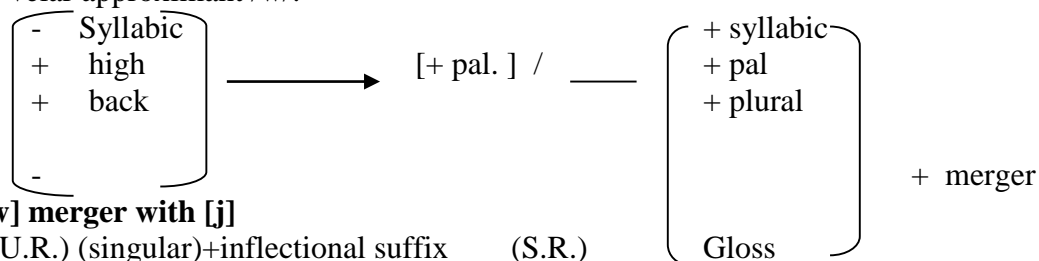
vi. [w] merger with [j]

(9)	(U.R.) (singular)+inflectional suffix	(S.R.)	Gloss
	/tʃfija:wa:+i:/	[tʃijà:ji:]	grass
	/varawo:+i:/	[vàrà:ji:]	thief
	/kàbe:wa:+i:/	[kàbé:ji]	pumpkin
	/wa:wa:+we:/	[wa:wà:je]	fool

| /gi:wa:+we:/ | [gji:wà:je] | elephant |
| /qawa:+we:/ | [qawà:je] | feminine friend |

Below is a rule to account for palatalization of labio-velar approximant in motivating merger:

$$
\begin{bmatrix} + \text{Sonorant} \\ - \quad \text{low} \\ - \quad \text{merger} \end{bmatrix} \longrightarrow [+ \text{pal.}] \ / \ \underline{\quad\quad} \begin{bmatrix} - \text{lab} \\ + \text{pal} \\ + \text{plural} \\ + \text{merger} \end{bmatrix}
$$

[
-
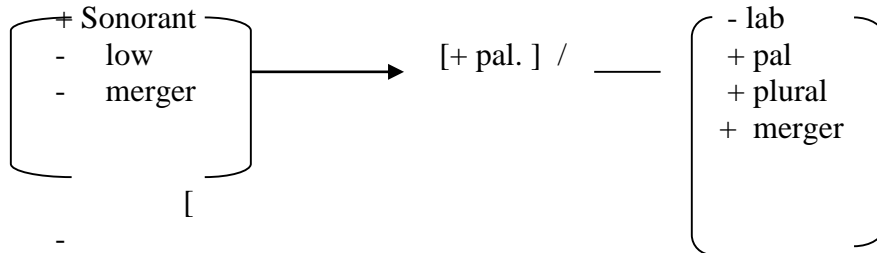
Verb Transformation Motivating Phonemic Merger

Under this sub-heading, we will examine certain verbs that end with non-sonorant coronals which are referred to as mutable or changing, and apply inflectional processes to see how they undergo changes and trigger merger in Hausa. In this context, it is the onset of the final syllable of primary grade verb which is a non-sonarant alveolar appearing before front vowel /i/ or/e/that become palatalized when the verb changed to another form and realize merger of the two distinct phonemes. Consider the following examples:

(i) [s] merged with [ʃ]

(10) (U.R.)+inflectional suffix	(S.R.)	Gloss
/Φasa+-e:/	[Φafè:]	break completely
/kasa+-e:/	[kafe:]	display
/La:sa: + - e/	[la:fe:]	lick
/tausa:+-e:/	[taufè:]	press down gently

(ii) [d] merged with [dʒ]

(11) (U.R.) +inflectional suffix	(S.R)	Gloss
/ga:da:+-i/	[gà:dʒi?]	to inherit
/ga:da:+-e/	[gà:dʒe:]	inherit completely
/gwada:+-i/	[gwà:dʒi?]	to measure
/gwada:+-e/	[gwadʒè:]	to measure completely

(iii) [z] merged with [dʒ]

(12) (U.R.)+inflectional suffix	(S.R)	Gloss
/gaza:+-i/	[gàdʒi?]	to inherit
/va[za:+-i/	[và[dʒi?]	to grind completely
/gwur[za:+-e/	[gʷu[dʒé:]	to smash

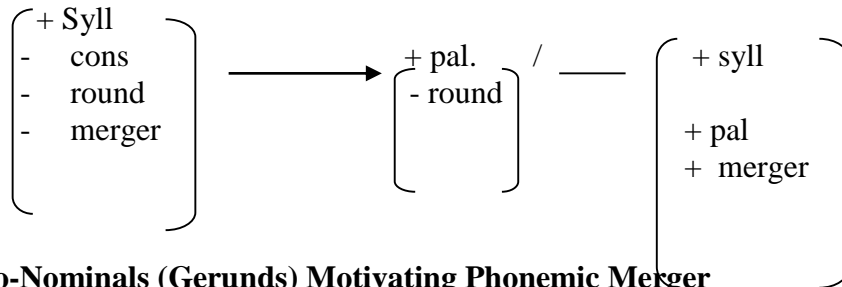| (13) (U.R.)(singular) + inflectional suffix (S.R.) | | Gloss |
/ɗa:ta:+-e:/	[Φiffe:]	exhale
/sa:ta: + - e:/	[sa:tʃé?]	theft
/sa:ta: + - i:/	[sà:tʃi?]	theft
/[anta:+ - i/	[àntʃi?]	borrow something

| /[anta:+ - e/ | [[antʃé?] | borrow something |
| /ɸita:+- e:/ | [Φitʃe:] | went out |

(ii)   [w] merged with [j]

Labio-velar approximant /w/ in this context (mutable verb) merges with [j] when the singular form undergoes complete reduplication and suffixation of-e. The stem final vowel of the singular form is deleted. See examples below:

(14)	Singular U.R	Plural U.R.		S.R.
	/[awa:/	[[awa+-e##rawa+-e]		[tàje?[àje?]
	/hawa:/	[hawa+-e## hawa+-e]		[hàje?hàje?]

Consider a rule where labio-velar approximant /w/ motivates merger in the formation of plural:

$$
\begin{bmatrix} + \text{Syll} \\ - \ \text{cons} \\ - \ \text{round} \\ - \ \text{merger} \end{bmatrix} \longrightarrow \begin{bmatrix} + \text{pal.} \\ - \text{round} \end{bmatrix} \ / \ \underline{\quad} \ \begin{bmatrix} + \text{syll} \\ \\ + \text{pal} \\ + \ \text{merger} \end{bmatrix}
$$

Verbo-Nominals (Gerunds) Motivating Phonemic Merger

Some nouns and adjectives are derived from certain verbs in Hausa. Here, we shall see how the onset of the final syllable which is a non-sonorant alveolar consonant becomes palato-alveolar. Consider the following examples:

[s] merged with [ʃ]

(15)	Verb + Noun Formative	(S.R.)	Gloss
	/Φa:sa:+-i:/	[Φa:ʃi:]	change of heart
	/gasa:+-i/	[gaʃi:]	smoking of meat etc
	/ɽa:sa: +-i/	[ɽaʃi:]	loss, death
	/kasa:+-i/	[kaʃi:]	arrange in heaps
	/ka:sa: + - i/	[ka: ʃi:]	be unable
	/dasa: + - e/	[dàʃe:]	transplant
	/Φasa: + - e:/	[Φàʃe]	break, shatter

ii.   [d] merged with [dʒ]

(16)	Verb + Noun Formative	(SR)	Gloss
	/gwada: + - i:/	[gwadʒi]	testing, trial etc
	/jarda: + - i/	[jardʒi:]	consent, agreement
	/hu:da – i/	[hu:dʒi:]	piercing

iii. **[z] merged with [dʒ]**

(17)   Verb + Noun Formative   (SR)   Gloss
/vaɽza: + - i:/   [vaɽd**ʒ**i:]   grinding
/muɽza: + - i:/   [mùrd**ʒi:**]   a strand of thread
/tʃanza + – i:/   [tʃand**ʒi:**]   change

iv. **[t] merged with [tʃ]**

(18)   Verb + Noun Formative   (SR)   Gloss
/vaza: + - i:/   [vaɽd**ʒ**i:]   grinding
/muɽza: + - i:/   [mùrd**ʒi:**]   a strand of thread
/tʃanza + – i:/   [tʃand**ʒi:**]   change

Ethnonyms Motivating Phonemic Merger

Ethnonyms refer to a class of words derived from nouns by prefixing band suffixing gender morpheme to indicate ethnicity, nationality or race of a person.
In this context, we shall see how non-sonorant coronals /s/ and /t/ merged with palate-alveolars /ʃ/ and /tʃ/ before front vowed /i/ or /e/ in Hausa.
Consider the following examples:

 i. **[s] merged with [ʃ] or [tʃ]**

(19)   Prefix + Noun Stem + Suffix   (SR)   Gloss
/ba + hausa + - e:/   [bàhauʃé:]   Hausa man
/ba + hausa + - iya:/   [bàhauʃija:]   Hausa woman
/ba + jamus + - e:/   [bàd**ʒ**a:mùʃé:] German
/ba + Φaɽansa + - e:/   [bàΦarã̃ʃe:]   French (male)
/ba + Φaɽansa + - iya:/   [bàΦarã̃ʃija:] French (female)
/ba + sakkwato + - e:/   [bàsakkwatʃe:]   Sakkwato man

In view of the examples cited on how palatalization of non-sonorant alveolars /t, /s/, /d/ and /z/ when followed by front vowels /i/ or /e/ motivate merger; we formulate the rule below:

$$
\begin{bmatrix} + \text{cons} \\ - \quad \text{son} \\ + \quad \text{cor} \\ - \quad \text{merger} \end{bmatrix} \longrightarrow \begin{bmatrix} + \text{pal.} \\ + \text{del. rel} \end{bmatrix} / \underline{\quad} \begin{bmatrix} + \text{syll.} \\ \\ + \text{pal} \\ + \quad \text{merger} \end{bmatrix}
$$
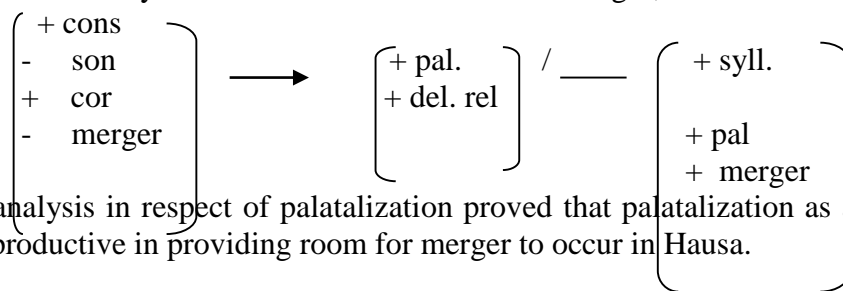
This analysis in respect of palatalization proved that palatalization as a phonological process is very productive in providing room for merger to occur in Hausa.

Rhotacization Motivating Phonemic Merger

Rhotacization, a characteristic feature of many morphologically complex forms in Eastern Hausa is a very productive process although it is not automatic. In this work, we shall examine rhotacization in intensive verb forms (in East Hausa) otherwise pluractional verbs, to see how this process motivates phonemic merger.

In reduplication, a very essential morphological feature in pluractional verbs, syllable-final coronal obstruents change to rolled /r/ in Eastern Hausa.

(Newman, 2000: 413)

However, in some intensive verbs, we shall see where coronal obstruents in syllable-final position merge with rolled /r/. Consider the following examples
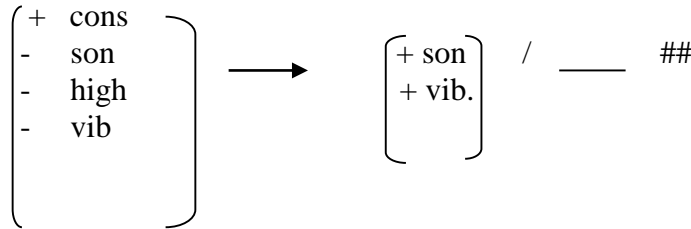
(20)   Gloss

    #kaxa#   (U.R)   beat

    'kaxa   pluractional prefix

    #kax-kxa:#   prefixation

    #kàr-kàxa:#   morphophonological rule applied

    [karkàxa:]   (S.R)   'beat repeatedly'

        (A phoneme /x/ merged with /r/).

(21)   Gloss

    #Φasa:#   (U.R.)   break

    'Φas'   pluractional prefix

    #Φas-Φasa:#   prefixation

    #Φàr-Φàsà:#   morphophonological rule applied

    [Φar-Φàsa:]   (S.R.)   'break repeatedly

        (A phoneme /s/merged with /r/).

(22)   Gloss

    #kasa#   (U.R.)   to pile in heaps

    'kas'   pluractional prefix

    #kas-kasa#   prefixation

    #kar-kásà#   morphophonogical rule applied

    [kar kása]   (S.R.)   'break repeatedly'

        (A phoneme /s/ merged with /r/).

(23)   Gloss

    #maza#   (U.R.)   quickly

    'maz'   pluractional prefix

    #maz-maza#   prefixation

    #mãr-mãzã?#   morphophonogical rule applied

    [mãr-mãza?]   (S.R.)   'very quickly'

        (A phoneme /z/ merged with /r/)

(24)   Gloss
        #baza#   (U.R.)   quickly
        'baz'   pluractional prefix
        #baz-baza#   prefixation
        #bãr-bãzã?#   morphophonogical rule applied
        [bãr-mãza?]   (S.R.)   'spread repeatedly'
                                        (A phoneme /z/ merged with /r/).

(25)   Gloss
        #huxu#   (U.R.)   four
        'hux'   pluractional prefix

        #hux-huxu#   prefixation
        #hur-hùxú?#   morphophonogical rule applied
        [hur-huxu?]   (S.R.)   'four each'

(26)   Gloss
        #Φita:#   (U.R.)   break
        'Φit'   pluractional prefix
        #Φit-Φita#   prefixation
        #Φir-Φitá?:#   morphophonological rule applied

        [ΦirΦita?]   (S.R)   'go out (many or often)'
                                        (A phoneme /t/ merged with /r/).

(27)   Gloss
        #ma: Śa:#   (U.R.)   push, pester
        'mas'   pluractional prefix
        #maŚ-ma: Śa:#   prefixation
        #màr-mã:Śa:#   morphophonological rule applied
        #màr-mã:Śa:#   (S.R.)   'push, pester (repeatedly)'
                                        (A phoneme /t/merged with /r/).

Consider more examples below where rhotacization provides fertile ground for a phonemic merger in Hausa:

(28)   (U.R.)   (S.R.)   Gloss
        #wa:sa#   [warwà:sa?]   sharpen several times
        #wa:Śa:#   [warwà:sa?]   spread or spoil several times
        #haxa#   [harhàxà?]   pile several times

In the light of the examples cited above, we deduced that rhotacization is productive in motivating merger in East Hausa. Consider a rule below that accounts for the change of /t/, /s/, /z/ and /x/ to /r/in East Hausa:

$$
\begin{bmatrix} + & \text{cons} \\ - & \text{son} \\ - & \text{high} \\ - & \text{vib} \\ \end{bmatrix} \longrightarrow \begin{bmatrix} + \text{son} \\ + \text{vib.} \end{bmatrix} \quad / \ \underline{\quad} \quad \#\#
$$

Deletion Motivating Phonemic Merger

Deletion process always involve the weakest segments and it is claimed to be governed by universal and language internal rules.
Syllable structure processes affect the relative distribution of consonants and vowels within the word.

(Schanne, 1993:52)

Deletion occurs in word medial and final positions, but in this context we shall focus on deletion of certain segments within morpheme to scout for the environment where merger is triggered in Hausa. Here, we shall attach gender sensitive element to disyllabic form to realize phonemic merger of two distinct phonemes. Consider the following example:

(29)   Gloss

/qo:ji#n	(U.R.)	the egg
qʷojin:n	labialization	
qʷon	deletion	
qʷen	centralization	
qweň	velarization of /ň/	
[qweň]	(S.R.)	
	(A phoneme /q/ merged with /qw/).	

The word /qojin/ whose underlying form is /qo:ji:n/ is still used in rural Hausa dialects, while qwai is the surface form used in standard Hausa and other urban dialects. Here, we have seen how the phoneme /q/ followed by a round vowel is labialized. Then, other phonological and morphonological rules like deletion, centralization and velarization followed, and finally the earlier allophomic [qʷ] a voiceless velar ejective merged with the phoneme /q/. In effect the /qw/ in /qwen/ was earlier an allophone of /q/ before /o/. This is a phonemic merger. The merger is motivated by deletion in disyllabic form which has a sequence of a glide in word-medial position.

Deletion also motivates merger in trsisyllabic words within a morpheme. The word /ko:ʟno/ in standard Hausa is phonetically realized as [kwaʟno:] in Kano dialects as in example 54:

(30)   Gloss

    /ko: ʟino/   (U.R)   a light blue-green dye used
                                                        exclusively for leather

    kʷo: ʟino: labialization
    kʷo: ʟno: deletion
    kʷe: ʟno: centralization
    kʷeʟnõ: nasalization of /o/
    [kweʟnõ:]   (S.R)
                           (A phoneme /k/ merged with /kw/

It is plain and clear deletion motivates merger in Hausa in Zaria city, there is a district called */qwarbai/*: originally this name is formed by combining two nouns by attaching gender sensitive element to the first segment. The two nouns combined are /qo: Φa:/ 'door' and /ba:ji/ 'slaves' so when the gender sensitive element is attached to */qo: Φa:/*, thus /qo:Φa:#r in a slow speech form and /ba:ji:/ also underwent deletion rule and becomes [baji]. Consider examples below:

(31)   Gloss

    #qoΦ: #r ba: ji:/   (U.R.) a place name in Zaria city
    qʷoΦa: #r ba: ji:/   labialization
    qʷoΦar ba: ji:/   morphophonological rule applied
    qʷoΦar ba: ji:/   lowering
    qʷarbaj   deletion
    [qwârbâj]   (S.R.)
                          (A phoneme /q/merged with /qw/).

CONCLUSION

As seen in our analysis, we have examined distinctive phonological processes in certain lexical items from standard Hausa and six regional dialects, and scouted for a phonemic merger motivated by non-automatic phonological changes like palatalization, rhotacization and deletion. In this research, we have proved that phonemic merger is a rule-governed process because, we have clearly seen how a series of cumulative Hausa phonological and morphological rules operate on the underlying forms, and transform them into surface forms in realizing a phonemic merger in Hausa.

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