CHANGES IN OBSTRUENT VOICING IN BADE/NGIZIM

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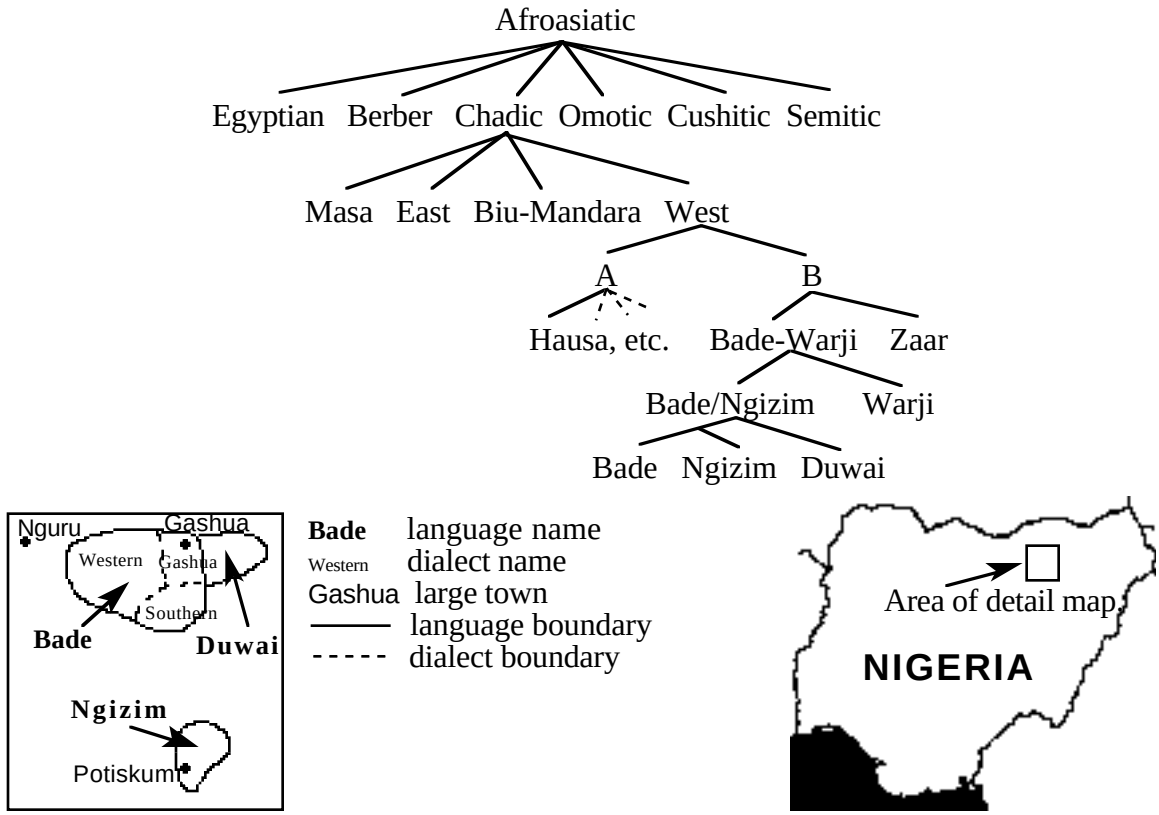
1. The Bade/Ngizim Group of Chadic

Bade/Ngizim comprises three distinct but closely related languages spoken in northeastern Nigeria. These languages belong to the Chadic family, which is, itself, a member of the Afroasiatic phylum. Within Chadic, there are four branches: Masa, East Chadic, Biu-Mandara, and West Chadic—see Ruhlen (1991), who elaborates on the classification of Newman (1977) . Bade/Ngizim, called "Bade Proper" in Ruhlen (1991),[1] is in the West Branch of Chadic, and more specifically in Group B of that Branch. The tree shows the genetic linguistic position of Bade/Ngizim. The maps show the geographic location.



[1]Ruhlen (1991:321) lists Bade and Ngizim under his "Bade Proper", with the third language, Duwai, listed as non-classified member of the Bade-Warji subgroup. Duwai is very close to Bade and Ngizim and clearly belongs within the same subgroup as those languages.

As the genetic tree shows, the three major languages of the Bade/Ngizim group are Bade, Ngizim, and Duwai. Of the three, Bade is the largest and also the most dialectally diverse. Ngizim and Duwai do not show much internal differentiation. Schuh (1981) discusses Bade dialects and what is known of the histories of these peoples.

Prior to the 20th century, the primary outside linguistic and cultural influence was from the Kanuri to the east. This influence is evident in the many Kanuri loanwords in all three languages and the fact that Kanuri, rather than Bade, is the traditional language of court of the Emir of Bade. Over the past century, Hausa language and culture from the west have become dominant, the result being that most recent loanwords in Bade/Ngizim languages are from Hausa. Despite these outside cultural and linguistic influences, Bade and Ngizim remain robust, and are still the first languages for several thousand people. Duwai appears to be losing ground, and will probably give way to Hausa within a generation or two.

This paper will concentrate on sound changes that have affected obstruent consonants in Bade and Ngizim. Data from Duwai, and sometimes from more distantly related languages will elucidate the changes which have taken place in Bade and Ngizim. Data on Bade/Ngizim come from field work on these languages which I did in 1969-70 and 1973-75.

2. Obstruent Devoicing in Bade and Voicing in Ngizim

In this section, we concentrate on word initial obstruents. For many words, cognate items in the three languages of the Bade/Ngizim group have identical intial obstruents. In such cases, there is no reason to reconstruct a proto-Bade/Ngizim initial obstruent different from the one which the languages share. Bade citations are from the Western dialect unless followed by (G) for the Gashua dialect; Duwai items in parentheses are either not cognate with Bade and Ngizim or have undergone changes which obscure their relation to the Bade and Ngizim words; in the "other Chadic" column, "H" = Hausa, "B" = Bole, both languages of the West Chadic-A branch of the Chadic family.[2]

[2]Special symbols are as follows: *ɓ*, *ɗ* are implosive bilabial and alveolar stops respectively; *ə* represents a high, central unrounded vowel [ɨ]. Acute accent (´) shows high tone, grave accent (`) shows low tone,

Table 1. Identical obstruent correspondents in Bade, Ngizim, and other Chadic

	Recon. Obst.	**Bade**	**Ngizim**	**Duwai**	**other Chadic**
'black'	*p	pəlká	pələk	pələk	
'morning'		pəɗəkú	pəɗək	pəɗək	
'horn'	*f	fùwáan	fùwàk	fôk	
'four'		fəɗú	fəɗú	fəɗù	H: huɗu
'cook	*b	bənú	bənú	bənó	
'roast'		bàkú	bàkú	(əpkó)	H: bábbàkée
'go out'	*v	vərú	vərú	vəró	
'five'		vàɗì	vàaɗ	vàaɗ	B: bàɗì
'moon'	*t	tólāan	tərá	(kìyà)	B: tèré
'find'		tàsú	tàsáu	tàašùwó	
'lay out'	*s	sənú	sənú	sənàačùwó	
'pound'		sàpɗú	sàpɗú	(əstó)	H: súrfàa
'wood'	*d	dəmáan	dəm	ìidəm	
'give water'		dəɓú	dəɓú	dəɓùwó	
'stick'	*z	záwán	záwâ	(ùgwdài)	B: záawá
'smoke'		zàkwáan	zàawúk	zău	
'stomach'	*k	kùnáan	kùnú	kùnú	
'eat (meat)'		kìiɗú	kìiɗú	kìiɗó	
'chin'	*g	gùmčín	gùmčí	gùmčí	H: géemùu 'beard'
'rooster'		gáskámáan	gàskám	gùvəgúm	

In contrast to the words in Table 1, where Bade and Ngizim have the same initial obstruents, there are words where initial obstruents of the two languages differ from each other. In such cases, Bade invariably has a voiceless obstruent and Ngizim has the voiced counterpart. I present data in three tables:

Table 2: Bade: voiceless; Ngizim: voiced; Duwai or other Chadic: voiced

	Ba/Ng/Ch Corr.	**Bade**	**Ngizim**	**Duwai**	**other Chadic**
'ashes'	p/b/b	pəbətən	bəbət	bəbút	B: bùtó
'hare'	f/v/v	fíidà (G)	víidà	vìidà	
'blood'	t/d/d	təɗəmən	dəɗəm	dəɗəm	B: dòm
'guinea fowl'	s/z/z	sáavànyín	záabànú	(səvənó)	H: zàabóo

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macron (¯) shows downstepped high tone, circumflex accent (^) shows falling tone, a doubled vowel shows a long vowel. Bole citations are from personal field notes. Hausa data can be verified in Abraham (1962) .

‘honey; bee’		čə́vùwán	žábùwà	žə̀gvó	
‘goose’		sə̂gván	zə́bgà	zə̀gvà	
‘navel’		sábàwú	zábáu	zàabáu	
‘earth’	k/g/g	ká́gài (G)	gàgái	gìyí	
‘duiker’		kádùwáan	gádùwà	(ɓə̀gà)	H: gàdáa
‘tall’		kûzvə́r (G)	gûzvə́r	gùzvə́r	
‘short’		kûgvə́n	gâgwvə́n	gùbə̀gùm	

Table 3. Bade: voiceless; Ngizim: voiced; Duwai or other Chadic: voiceless

	Ba/Ng/Ch Corr.	**Bade**	**Ngizim**	**Duwai**	**other Chadic**
‘spray’	p/b/p	pàzwú	bàzìyú	?(fàaró)	H: féesàa
‘woven tray’	t/d/t	tə́bān	də́bâ	(dáftō)	H: tàafíi ‘palm’
‘clear field’	s/z/s	sàvìyú	zàbìyú	sàapə̀ró	H: sássàbée
‘seed’		sádāan	zádák	sə̀dák	
‘chicken’	k/g/k	káazə̀ɗàkón	gâazá	kíiž̀iyá	H: kàazáa
‘pumpkin’		kàabíyōn	gàaɓíyàwú[3]	(əskàt)	H: kàbéewàa

Table 4. Bade: voiceless; Ngizim: voiced; no available evidence from other Chadic

	Ba/Ng Corr.	**Bade**	**Ngizim**
‘bran’	p/b	pə́jāan	bə̂jí
‘money’	t/d	tâgdáan	dâgwdá
‘slaughter’	s/z	sìidú	zìidú
‘lake’	k/g	kûmbáan	gúmbàk
‘heart’		kázāan	gázáfà
‘break (rope)’		kàdú	gàdú

To summarize, Table 1 shows that Bade and Ngizim do have voiced and voiceless obstruents in contrast and that in many cognate items, the two languages have the same consonant. On the other hand, Tables 2-4 show that there are cognate items where Bade has a voiceless obstruent corresponding to its voiced counterpart in Ngizim.

What accounts for the latter correspondences? The answer lies in the nature of the consonant beginning the second syllable of a word. In the words in Tables 2-4, *the second syllable always begins in a voiced obstruent*. In the words in Table 1, the second syllable begins in a consonant other than a voiced obstruent. That consonant may be a *nasal*, as in

[3]The *ɓ* in the Ngizim word probably is the result of a recent, non-regular change. All comparative evidence points to reconstructing a medial **b* in this word.

the word for ‘cook’, a *liquid*, as in the word for ‘moon’, a *glide*, as in the word for ‘horn’, a *voiceless obstruent*, as in the word for ‘burn’, or an *implosive* as in the word for ‘four’. In order to account for the data in Tables 2-4, we must propose two sound changes, one affecting Bade, one affecting Ngizim:

BADE VOICING DISSIMILATION: *[-sonorant, -implosive] > [-voice] / σ … ___ σ … [-sonorant, -implosive, +voice]

A syllable initial non-implosive obstruent changes to its voiceless counterpart when the next syllable begins in a non-implosive voiced obstruent, e.g.

proto-Bade/Ngizim *<u>*b*</u>*əbət-* > Bade *<u>*p*</u>*əbət-* ‘ashes’ (see Table 2)

NGIZIM VOICING ASSIMILATION: *[-sonorant, -implosive] > [+voice] / σ … ___ σ … [-sonorant, -implosive, +voice]

A syllable initial non-implosive obstruent changes to its voiced counterpart when the next syllable begins in a non-implosive voiced obstruent, e.g.

proto-Bade/Ngizim *<u>*p*</u>*aziyu* > Ngizim *<u>*b*</u>*àzìyú* ‘spray’ (see Table 3)

The changes as formulated have “[-implosive]” as part of the specification of both the affected sound and the conditioning environment in order to exclude the sounds *ɓ* and *ɗ*. From a phonetic point of view, inclusion of the [-implosive] feature may not be necessary. Although implosives have glottal vibration, this seems to be a somewhat different articulatory feature from the voicing of regular obstruent sounds. Implosives do not condition either the Bade nor Ngizim change, as words like ‘four’, ‘give water’, and others in Table 1 show, nor do implosives undergo either of the sound changes, e.g. the initial sound in Bade and Ngizim *ɗə̀bdú* ‘sell’ is a “voiced” implosive in both languages.

Although the Bade and Ngizim sound changes produce opposite effects in the two languages, comparative evidence makes it clear that both changes had to have taken place. In Table 2, the comparative evidence from languages other than Bade and Ngizim shows

that the original initial consonants must have been voiced, and thus that Bade must have devoiced the original sound. To claim that the voiceless sound of Bade was original would require that we claim that Ngizim and the other, more distantly related Chadic languages underwent a voicing change *independently* of each other. Not only is there no evidence to support such a claim, but also this claim would countervene the normal principle of choosing the hypothesis that requires the fewest independent changes.

The opposite situation obtains with respect to obstruent voicing in Ngizim but the same reasoning applies for the data in Table 3, i.e. the comparative evidence from languages other than Bade and Ngizim makes it clear that the original sound was voiceless and that Ngizim has voiced the original sound.

In the case of the data in Table 4, the same relationship holds between the consonants of Bade and Ngizim as in Tables 2-3, i.e. Bade has a voiceless obstruent and Ngizim has a voiced obstruent when the next syllable begins with a voiced obstruent, but at the current state of our knowledge of Chadic languages, no comparative Chadic data are available to tell us whether the intial consonant in any one of these items was originally voiced or voiceless. Nonetheless, on the basis of the comparative data of Tables 2-3, we can be sure that one of the two sound changes has taken place for each of the items in Table 4, and many others for which we lack comparative data to tell us what the original consonant was.

3. Problems

A number of facts obscure the picture of the changes in obstruent voicing which have taken place in Bade and Ngizim, or at least these facts complicate the formulation of the changes. First, is the following change which has taken place in Bade:

BADE RESYLLABIFICATION: *#C_1ɔC_2 … > #ɔC_1C_2 …

where C_1 + C_2 form a permissible consonant sequence

that is, in Bade, when the first syllable of word in proto-Bade/Ngizim had the form *C_1ɔ AND when the first two consonants of the word could form a permissible sequence, the first syllable became ɔC_1. See Schuh (1978) for complete discussion of this change.

Table 5. Examples of BADE RESYLLABIFICATION

	proto-Bade/Ngizim	**Bade**	**Ngizim**	**other Chadic**
(1)				
‘husband’	*məsə-	ə̀msə́n > m̀sə́n	mə̀sə̀k	H: míǰìi < *mizi
‘neck’	*wəra	ə̀wra- > ùuráan	wùrá	H: wúyàa < *wura
‘tail’	*kʷətər	ə̀kʷtə̀rə́n	kùtə́r	H: kútùríi ‘buttocks’
(2)				
‘trash heap’	*bəzək	áɗáa-bzə̀kə́n ‘head[of] tr. heap’	bə̀žə̀k	H: ǰíbǰíi < *zibzii
‘monkey’	*vəǰi	ə̀vjáan	və̀ǰí	B: bìdò
‘monitor’	*gəzan	əgzànə́n	gə̀žàn	H: gúzàa
(3)				
‘crocodile’	*kədəm	əgdə̀mə́n	D: kàdə́m[4]	B: kádàm
‘six’	*sədu	əzdù	zə̀dù	H: šídà

The words in group (1) do not contain any voiced obstruents and more or less retain the original consonant pronunciations in Bade, even after BADE RESYLLABIFICATION. The words in groups (2-3) have voiced obstruents at the beginning of the second syllable and hence provide the environment for BADE VOICING DISSIMILATION and NGIZIM VOICING ASSIMILATION. The comparative evidence shows that the words in group (2) originally had initial voiced obstruents and those in group (3) had initial voiceless obstruents. As expected, all these words in Ngizim now have initial voiced obstruents, those in group (2) having retained the original consonants and those in group (3) having undergone NGIZIM VOICING ASSIMILATION.

The Bade words in groups (2-3), contrary to the expectation from BADE VOICING DISSIMILATION, all have voiced obstruents as the first consonant. The reason is another change, OBSTRUENT VOICING AGREEMENT, which can be formulated as follows:

OBSTRUENT VOICING AGREEMENT:
$$\begin{bmatrix}\text{-sonorant}\\ \text{-implosive}\end{bmatrix} \rightarrow [\alpha\text{voice}] \;/\; \underline{\quad} \begin{bmatrix}\text{-sonorant}\\ \alpha\text{voice}\end{bmatrix}$$

A non-implosive obstruent must agree in voice with an immediately following obstruent.

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[4]I cite the Duwai word here. The Ngizim word for ‘crocodile’ is *kárám*, a Kanuri loanword (this may, itself, be an ancient loanword from some Chadic language into Kanuri). Several rivers run through the Bade and Duwai area, but there are no permanent watercourses in the Ngizim area where crocodiles might live.

This is not a sound change, per se, but rather a condition on the pronunciation of consonant sequences (which holds in both Bade and Ngizim—and most other languages of the world). It is hard to say whether BADE RESYLLABIFICATION took place before BADE VOICING DISSIMILATION, preventing the latter sound change from every applying, or whether the change in voicing did take place, followed by resyllabification, which caused the consonants to become revoiced in items such as those in Table 5, groups (2-3). Whichever the case, OBSTRUENT VOICING AGREEMENT accounts for the apparent exceptions to BADE VOICING DISSIMILATION exemplified in Table 5.

A second category of words which obscures Bade and Ngizim obstruent voicing changes consists of loanwords. The first section of this paper mentioned the linguistic influence of the neighboring Kanuri and Hausa languages. Table 6 shows some items borrowed into Bade and Ngizim from these languages:

Table 6. Loanwords which do not conform to Bade and Ngizim (de)voicing processes

	Bade	**Ngizim**	**Source**
'tobacco'	tàabâ (G)	tàabâ	H: táabàa
'medicine'	kàrgùnən	kàrgûn	K: kùrgûn
'gun'	bəndəgín	bəndəgí	K: bəndəgə
'woven cotton strips'	gàbàgáan	gàbàgá	K: gàbàgá

For items like 'tobacco' and 'medicine', the Ngizim forms which NGIZIM VOICING ASSIMILATION would predict would be **daaba* and **gargun* respectively. For items like 'gun' and 'woven cotton strips', the Bade forms which BADE VOICING DISSIMILATION would predict would be **pəndəgin* and **kabagaan* respectively.

In the case of Ngizim, there is no evidence that NGIZIM VOICING ASSIMILATION is any longer an active process. The most obvious explanation for the pronunciation of 'tobacco' and 'medicine' is that they were borrowed after the Ngizim sound change ceased being active. The same comment probably also applies to Bade. Bade does have some morphological features which suggest that BADE VOICING DISSIMILATION has been a productive phonological process, e.g. there are reduplicated verbs such as *fàavərú* '(repeatedly) go

out' derived from v*ə̀rú* 'go out' with the initial reduplicated syllable *fáa-* dissimilated from **vaa-*. However, there are other reduplicated forms, such as *vùuvùutú* 'work bellows' where dissimilation has not taken place. Forms like *fàavə̀rú* may thus have become frozen lexical items at a time when BADE VOICING DISSIMILATION was still productive.

Finally, there are words which, at our current state of knowledge, we must simply list as unexplained exceptions. A notable example is the name the people use for themselves, *bádēn*, which BADE VOICING DISSIMILATION would predict should have become **paden*!

4. Conclusion

Two sound changes, BADE VOICING DISSIMILATION and NGIZIM VOICING ASSIMILATION, have produced opposite voicing properties of word-initial obstruents in two closely related West Chadic languages. The conditioning environment for both changes is the presence of a voiced obstruent beginning the next syllable of the word. In many words, comparative evidence from the closely related Duwai language, as well as more distantly related Chadic languages, shows what the original consonant was, but in other items, where we currently lack relevant cognate items outside Bade/Ngizim, it is not possible to tell which language retains the original consonant and which has changed.

A further change in Bade, BADE RESYLLABIFICATION, has caused the first two consonants of a large class of words to become a consonant sequence, and because of the requirement that obstruents in a sequence share voicing, obstruents in these cases have been removed from the environment for BADE VOICING DISSIMILATION. Besides this regular class of items where dissimilation has not taken place, the presence of loanwords which do not show the predicted voicing patterns has obscured the regularity of the sound changes in both Bade and Ngizim. These words must have entered the languages after the sound changes ceased to be productive processes. Borrowing does not account for all the apparent exceptions to the two sound changes in either language, however, showing that further research is necessary before we understand the full picture of historical change in this language group.

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