VOICING DISSIMILATION IN WESTERN BADE

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1. Introduction

Bade is a language of the Chadic Family, one of the five branches of the Afroasiatic Phylum, which also includes the Semitic, Cushitic, Berber, and Ancient Egyptian branches (Greenberg 1963). More specifically, Bade is a member of the West Branch of Chadic, the same major branch of the family to which Hausa belongs (see Newman (1977) for the classification of Chadic). Bade is spoken in the northern part of Yobe State, Nigeria, one of the northeastern states of the country. The largest town in the Bade area is Gashua, an important commercial center and the location of the court of the Emir of Bade, one of the paramount traditional rulers of northern Nigeria..

Bade is dialectally fairly diverse. Schuh (1981) defines three major dialect groups: Gashua Bade, a group of dialects spoken in Gashua and surroundings, Southern Bade, spoken to the south and southwest of Gashua, and Western Bade, the largest dialect group, covering all the western part of the Bade-speaking region up to where it meets Hausa. This paper focuses on a variety of Bade from the Western dialect area.

I lived in Gashua, Nigeria and worked on Bade from 1973-75. During this period, I collected data from many speakers from all the dialect areas, but I worked most extensively with MG, a man of about 25 years of age from the town of Amshi, in the Western dialect area. MG and I were able to compile a fairly complete description of all the productive morphological patterns of his dialect. Moreover, he and I visited villages throughout the Western dialect area, where we recorded several hours of narrative, most

of which we transcribed. These recordings revealed numerous morphological and phonological dialect differences, including the voicing dissimilation process described in this paper, but since this process was not part of MG's dialect, I did not systematically document it. In 1982-83, I taught for a year at Ahmadu Bello University in Zaria, Nigeria. While in Zaria, I made the acquaintance of AHF, a student in his early 20's and a native of Madamuwa, a town at the far western edge of the Bade area, where voicing dissimilation is an active process. I collected most of the data on which this paper focuses from AHF while I was at Ahmadu Bello.

2. Phonological Sketch

Following are consonant and vowel charts laying out the Bade sound system:

	Bilabial/ Labiodental	Aveolar	Alveopalatal/ Palatal	Velar	Labialized velar	Laryngeal	Labialized laryngeal
Plain stop/ affricate	**p b**	**t d**	**t͡ʃ d͡ʒ**	**k g**	**kʷ gʷ**		
Glottalized stop	**ɓ**	**ɗ**	**ɗʲ**				
Fricative	**f v**	**s z**				**h ɦ**	**hʷ**
Nasal	**m**	**n**	**ɲ**	**(ŋ)**			
Lateral fricative		**ɬ ɮ**					
Lateral approximate		**l**					
Tap/trill		**r**					
Glide			**j**		**w**		

	Front	Central	Back
High	**i iː**	**ə = [ɨ]**	**u uː**
Mid	**eː**		**oː**
Low		**a aː**	

Comments on consonants: In cells with two symbols, the one on the left is voiceless, the one on the right is voiced. There are sets of labialized velars and laryngeals separate from their non-labialized counterparts, as shown by pairs such as **sàktú** 'be stingy' vs. **sàkʷtú** 'prod', **gáyū** 'he mounted' vs. **gʷàyáːn** 'acacia tree (sp.)', **hànú** 'spend the day' vs. **/hʷànú/ → [hʷùnú]** 'skin (an animal)'.[1] The glide [**w**] is in the labialized velar column because all the sounds in this column share the features [+DORSAL, +round]. The velar nasal [**ŋ**] appears in an intervocalic environment contrastive with other sounds only as a variant of the morpheme meaning "of" as in **ɗàt͡ʃəŋ àmàtən** 'hair-of women' when the "possessor" begins in a vowel or nasal. Elsewhere this morpheme appears as [**k**] or [**g**], as in **ɗàt͡ʃək tàmàkʷún** 'hair-of sheep', but there is no regular /**k**, **g**/ **→ ŋ** phonological rule that would predict the [**ŋ**] variant of the morpheme.

Comments on vowels: The symbol "**ə**" represents the phonetic vowel [**ɨ**]. I use the symbol "**ə**" because all published works on languages of northern Nigeria and all standard orthographies in this region use this symbol. Hence, the "barred-i" just "looks wrong". An important feature of the vowel system is that short high vowels are in contrast only at the end of a word, as in **kərú** 'steal (perfective)' vs. **kərì** 'steal (subjunctive)'. In the middle of a word, the short high vowels [**i**, **u**, **ə**] are in complementary distribution, with [**i**] occurring only next to /**j**/ (**zìjú** 'wage war'), [**u**] occurring next to a [+round] consonant (**zùwú** 'wipe'), and [ə] elsewhere (**zəɗú** 'dig up').

Tones: Bade is a tone language. Tone plays no role in the phenomena on which this paper focuses, but for completeness, I have marked tone as follows: ` = low tone, ´ = high

[1] I have no examples of words with a labialized voiced laryngeal [**ɦʷ**]. This may be due to the fact that the voiced laryngeal itself is an uncommon sound, and I simply did not run across any words with the labialized counterpart.

tone, ˉ = downstepped high (a tone slightly lower than a previous high but not as low as low tone).

3. Voicing Dissimilation

3.1. The distribution of voiced and voiceless obstruents in Bade

This paper will demonstrate that for some varieties of Bade within the Western Bade dialect area, there is an active phonological dissimilation process by which *a voiced obstruent becomes voiceless if the next syllable begins in a voiced obstruent*. For example, the 2nd masculine singular subject clitic, which is underlyingly /**gə-**/ becomes [**kə-**] when the initial consonant of the verb is a voiced obstruent, as in example (1):

(1) **gə́-làgú** ‘you stopped’ **gə̀-kə́rū** ‘you stole’ **kə́-gàfó** ‘you caught’

Examination of the Bade lexicon reveals that only a relatively small number of words have the sequence #[-sonorant, +voice] V(C) [-sonorant, +voice]… . Thus, words such as **dàbíːn** ‘hoe’ and **gùŋgùnú** ‘grumble’, with voiced obstruents in consecutive syllables, are relatively few in number, whereas other obstruent combinations are common, e.g. **tàbú** ‘push aside’ and **kàːŋgə́jāːn** ‘chameleon’ with voiceless obstruent followed by voiced, **dəpsú** ‘height’ and **gàtkásà** ‘seven’ with voiced obstruent followed by voiceless, and **tàpó** ‘be possible’ and **kàkə̀rú** ‘carry’ with consecutive voiceless obstruents.

A large proportion of words with consecutive voiced obstruents fall into special categories, including those in (2):

(2)

Borrowed words		**Full root reduplicants**		**Ideophones**	
dəbú	‘1000’ < Kanuri	**zàrzàrá**	‘striped, in stripes’	**dəngʷə́rə́f**	‘that’s it!’ (folktale ending)
zàːgú	‘go around’ < Hausa	**bòːbón**	‘millet balls’	**gʷàrɮájjà**	‘bulging’

There are, however, also words that do not fit into any special category and which, without further information, must simply be considered “exceptions”, a notable one being the name of the language and people itself, **bádēn**!

The restriction against [+voice]…[+voice] sequences applies only to “regular” obstruents. There are no restrictions affecting the distribution of sonorant consonants (nasals, liquids, and glides), and more notably, there are no restrictions affecting the distribution of the glottalized sounds [**ɓ**, **ɗ**, **ɗʲ**], even though they are “voiced”. Thus, the glottalized sounds can freely appear before or after “regular” voiced obstruents, e.g. **ɓágāːn** ‘colostrum’, **gàɗéː** ‘one’. This is in line with the fact that glottalized obstruents pattern with sonorants in other ways in Bade as well, e.g. any grouping of “regular” obstruents is acceptable in Bade, but neither obstruent+sonorant nor obstruent+glottalized groups are permitted. Compare **dèpsú** ‘hide’ with **zàːpènú** ‘doze off’ (***zàːpnú**) and **ràpèɗú** ‘boil’ (***ràpɗú**), where the starred forms would be impossible words in Bade.

The reason why the Bade lexicon disfavors consecutive syllables beginning in voiced obstruents is that Bade now has, or has had a rule that dissimilated a [+voice, -sonorant] consonant to [-voice] when followed by a syllable beginning in a [+voice, -sonorant] consonant. There are at least two types of evidence for such a dissimilation rule. First, in words where the first CV is reduplicated and the C is a voiced obstruent, the onset of the reduplicated syllable is voiceless, as in (3a). Second, words in related languages with consecutive voiced obstruents have [-voice]…[+voice] in Bade, as in (3b

(3)	a.	CV reduplicants:	**fàːvərú**	‘go out repeatedly’	< **vərú** ‘go out’
			təɗəmən	‘blood’	cf. Bole **dòm**
	b.	Comparative:	**sáːvàŋín**	‘guinea fowl’	cf. Hausa **zàːbóː**
			kádùwáːn	‘duiker’	cf. Hausa **gàdáː**

In most of the Western Bade dialect area, dissimilation of voiced obstruents is not now a phonological RULE. For example, in the Amshi variety of Western Bade, when a prefix with an underlying voiced obstruent is added to a root beginning a voiced obstruent, the prefix retains voicing in phonetic structure. Compare the Amshi forms in (1') with those in (1):

(1') **gə́-làgú** 'you stopped' **gə̀-kə́rū** 'you stole' **gə́-gàfó** 'you caught'

For such varieties of Western Bade, the lexical restriction against a word beginning in a voiced obstruent when the next syllable begins in a voiced obstruent is best viewed as a static restriction formalized in (4), which simply says, "Disfavor (?*) words that begin in a voiced obstruent when the next syllable begins in a voiced obstruent."

(4) Lexicalized Voicing Dissimilation: $?^*[_{word} \begin{bmatrix} -\text{sonorant} \\ +\text{voice} \\ -\text{constr\_gl} \end{bmatrix} V(C) \begin{bmatrix} -\text{sonorant} \\ +\text{voice} \\ -\text{constr\_gl} \end{bmatrix} \ldots$

As the next section will show, however, in parts of the Western Bade dialect area, this is not a static restriction, but rather, it is an active phonological rule.

3.2. The rule of voicing dissimilation in "Far Western" Bade

At the western edge of the Western Bade area, speakers in a number of villages, have voicing dissimilation as an active rule. I do not know the exact geographical extent of this rule, but recorded narratives collected from the villages of Tagali, Sugum, and Adiya reveal that it is present there, and it is present in the speech of Madamuwa, perhaps the westernmost Bade speaking town, represented in the data below.

Bade has a number of inflectional and derivational prefixes of the form CV where C is underlyingly a voiced obstruent. In Bade as spoken in Madamuwa and other villages mentioned above, when these are prefixes are added to roots whose initial consonant is a

voiced obstruent, the prefix consonant dissimilates to its voiceless counterpart. The voiced counterpart must be underlying since is occurs in any environment EXCEPT before a voiced obstruent. The tables in (5-8) illustrate most of the relevant prefixes.

(5) Second person masculine perfective subject prefix /**gə**/

Non-dissimilated		Dissimilated	
gə-kʷtú (< **əkʷtú**)	'you took'	**kə-bdú** (< **əbdú**)	'you asked'
gə-kə́rū	'you stole'	**ká-vərú**	'you went out'
gə́-ɗəbdú	'you sold'	**ká-dəkʷú**	'you heard'
gə́-làgú	'you stopped'	**ká-gàfó**	'you caught'
gə́-náːjú	'you ground'	**ká-bàːsú**	'you spoke'

(6) Third person subjunctive prefix /**da(a)**/[2]

Non-dissimilated		Dissimilated	
dà-kʷtə́t͡ʃì	'that he take'	**tâ-bdə́t͡ʃì**	'that he ask'
dà-kə́rə́t͡ʃì	'that he steal'	**tá-vərə́t͡ʃì**	'that he go out'
dà-ɗəbdə̄t͡ʃì	'that he sell'	**táː-dəkʷə́t͡ʃì**	'that he hear'
dáː-làgə́t͡ʃì	'that he stop'	**tá-báːsə́t͡ʃì**	'that he speak'
dà-náːjə́t͡ʃì	'that he grind'		

(7) Stative prefix /**də**/: indicates being in the state implied by the action of the verb

Non-dissimilated		Dissimilated	
də́-kʷtà	'stolen'	**tə́-bdà**	'asked'
də-sə́ɗà	'washed'	**tə́-vàdí**	'lying down'
də-t͡ʃəpkàpù	'squatted'	**tə́-bàkà**	'burned'
də-ɗə́bdà	'sold'	**tə́-gʷəɓá**	'wet'
də́-rɗíjà (< **ərɗìjú**)	'melted'	**tə́-ɣàmí**	'done'
də́-mtà (< **m̩tú**)	'dead'	**tə́-zgətà** (< **əzgətú**)	'pierced'
də́-làgí	'standing'	**tə́-rgʷəɗà** (< **ərgʷəɗú**)	'cooked'

(8) Participle prefix /**ga**/: makes a participial adjective from a verb root

Non-dissimilated		Dissimilated	
gà-táːɬà	'shattered'	**ká-zənàɗá**	'withered'
gà-həɗà	'dried'	**ká-gʷàɓá**	'moistened'
gà-rɗàyà	'melted'	**ká-zgàtá**	'pierced'
gà-náhʷá	'filled'	**ká-gbàmtá** (< **əgbàmtú**)	'swollen'

[2] For most verbs, the prefix has a short vowel /**da**/. For a small number of verbs, the prefix exceptionally has a long vowel /**daː**/. Subjunctive verbs in this dialect also have a suffix that agrees with the subject. Here the suffix is /**t͡ʃì**/ for 3rd masculine singular agreement.

Dialects such as that of Amshi have all these prefixes, but they do not alternate. We have seen the 2nd masculine singular pronoun in (1'). Other Amshi forms parallel to those above are **dà-kə́rì** 'that he steal' and **dá-bdì** 'that he ask' for the third person subjunctive prefixe, **də́-làgí** 'standing' and **də́-rgʷə̀ɗà** 'cooked' for the stative prefix, and **gà-náhʷá** 'filled' and **gá-gbàmtá** 'swollen' for the participial prefix.

It is worth noting that there are no prefixes in Western Bade with underlying VOICELESS obstruents, i.e. all obstruent initial prefixes alternate as in (5-8) or have invariant voiced obstruents, depending on speech variety.[3] This seems not to be an accidental gap in the shape of Western Bade prefixes. While, at present, we cannot be sure of what the original consonants of all these prefixes were, we do have evidence for two of them. For the 2nd masculine singular subject prefix, the original form was ***kV**. Even in the Gashua dialect of Bade, it is **kV**, e.g. Gashua Bade **kə́ kə́lū** 'you stole', and in virtually all more distantly related languages, it is **kV**, e.g. Hausa **káː ʃáː** 'you drank (it)', Bole **ká sáː-wòː-yí** 'you drank (it)'. On the other hand, the 3rd person subjunctive prefix must have originally been ***dV**, as it is in Miya, e.g. **də̀ bəsaw** 'that he wash'.

My hypothesis is that at an early period of Western Bade, prefixes with original voiced obstruents alternated because of the dissimilation rule, whereas prefixes with original voiceless obstruents did not alternate. Speakers got used to making the alternation and extended it to prefixes where it "should not" have applied, with the result that all prefixes beginning in obstruents alternated, with the voiced version being interpretated as the underlying (= "elsewhere") form. At a later period, dissimilation for many speakers became inactive as a RULE, showing up just a condition on the shape of

[3] The only other productive prefix in Bade is a /**ma**/ agentive/instrument, e.g. **mábàráːn** 'hunter' (< **bàrú** 'hunt'). Sonorant consonants do not show any alternation.

words in the lexicon, as formulated in (4). Without an active rule, alternation of morphemes no longer made any phonological sense, so speakers like those of Amshi made the underlying form, with a voiced obstruent, identical to the surface form in all cases.

In (3), we saw that CV reduplicants generally show the effects of voicing dissimilation. In the area where dissimilation is an active rule, producing forms such as those in the right hand column below (all data in (9) from Madamuwa):

(9)

No dissimilation		Dissimilated	
sàːsədʻú < **sədʻú**	'wash repeatedly'	**fàːvərú** < **vərú**	'go out repeatedly'
nàːŋhʷú < **ŋ̀hʷú**	'fill repeatedly'	**kʷaːgʷəɓú** < **gʷəɓú**	'repeatedly moisten'
màmtú < **m̩̀tú**	'many die'	**pàbdú** < **əbdú**	'ask repeatedly'

Two further features relevant to dissimilation emerge from Madamuwa reduplication. First, one consonant verb roots do NOT undergo dissimilation. For example, **tó** 'eat', with a voiceless obstruent, has the expected reduplicated form, **tətó** 'eat many', but **dó** 'shoot' and **vó** 'remove', with voiced obstruents reduplicate as **vəvó** 'shoot many' and **dədó** 'repeatedly remove' respectively, not ***fəvó** and ***tədó**. Recall from (2) that one category of words where dissimilation has generally not applied are those with "root reduplication". Let us think of CV reduplication, exemplified in (9), as a type of PREFIXATION, different from root reduplication, which, in effect, doubles the whole word. In the case of one-consonant verbs, CV reduplication is, in effect, also ROOT reduplication, i.e. doubling the word. We might thus represent a reduplicant like 'go out repeatedly' as /**vaː-vəru**/, where the hyphen represents a boundary separating a prefix and

a root, whereas we might represent 'shoot many' as /**və#vo**/, where "#" represents a boundary between roots.[4]

A second feature of reduplication relevant to dissimilation emerges from reduplicants like **kàràrmú** 'chop repeatedly' < **kàrmú** and **ərgʷàgʷɗú** 'cook many portions' < **ərgʷəɗú**. In verbs with three consonants, the redupliced part (underlined in the examples) is based on the SECOND consonant. Note that in the word 'cook many portions', the first **gʷ** does NOT dissimilate to [**kʷ**] even though the next consonant is a voiced obstruent. In fact, dissimilation seems not to have affected word internal sequences in general.

Based on the facts presented in this section of the paper, we can now formulate the voicing dissimilation rule of "Far Western" Bade as follows:

(10) Voicing Dissimilation: $\begin{bmatrix} -\text{sonorant} \\ +\text{voice} \\ -\text{constr\_gl} \end{bmatrix} \rightarrow$ [-voice] / [$_{\text{word}}$ ___V(C)(-) $\begin{bmatrix} -\text{sonorant} \\ +\text{voice} \\ -\text{constr\_gl} \end{bmatrix}$ …

i.e. "a non-glottalized voiced obstruent becomes voiceless if it is the onset of the first syllable of a word and the next syllable begins in a voiced obstruent." An affix boundary (represented by "-") may intervene between the consonants.

4. Voicing Assimilation and the Interaction of Assimilation and Dissimilation

Like many of the world's languages, Bade requires that obstruents agree in voiced with neighboring obstruents. Thus, we have **bàksóː** 'evil' and **tâgdán** 'money', but no ***bakzoː**, ***tagtaːn**, etc. In monomorphemic words such as these, voicing agreement is a static condition on clusters, but words such as those in (11) show that we can formulate

[4] This very differentiation of boundary types was used by Chomsky and Halle (1968) to differentiate, for example, the link between the prefix *un-* and a root, as in *unprofitable*, where assimilation of the *–n-* to the consonant is optional, and the prefix *in-* and a root, as in *impossible*, where assimilation is obligatory. To mark a WORD boundary, they used a doubled pound sign, ##.

voicing agreement as the rule in (12), which assimilates an obstruent to the voicing feature of a FOLLOWING obstruent:

(11) **d͡ʒábd͡ʒàpá** 'very small' < **d͡ʒápà** (underlying /**p**/ assimilates to following /**d͡ʒ**/)
gərbàptú 'leap up' < /**gər-bà-b-tú**/ (underlying /**b**/ assimilates to following /**t**/)

(12) Voicing Assimilation: $\begin{bmatrix} -\text{sonorant} \\ -\text{constr\_gl} \end{bmatrix} \rightarrow [\alpha \text{ voice}] / \_\_\_ \begin{bmatrix} -\text{sonorant} \\ -\text{constr\_gl} \\ \alpha \text{ voice} \end{bmatrix}$

Since Voicing Dissimilation (10) and Voicing Assimilation (12) have opposite affects on obstruents, alternations such as those in (13) can arise:

(13) **kàdú** 'snap in two' (intransitive) **ègdú** 'snap in two, pluck' (transitive)
səgən 'knowledge' **ègó** 'know'

Since the underlined sounds in (13) are all in positions of neutralization, it is impossible to select an unequivocal underlying form. Comparative evidence from other languages might tell us what the original sound was, but Bade speakers do not have the history of Chadic languages stored in their brains. What seems most likely is that "what you see is what you get". That is, Bade speakers may associate such word pairs semantically, but phonologically there is probably not a unique underlying form for each root. Only speakers of Bade can tell us!

5. Conclusion

We have seen that Bade, a Chadic language of northern Nigeria, has a co-occurrence restriction that disfavors voiced obstruents as onsets to consecutive syllables. This restriction arose through a process that dissimilated the first of consecutive voiced obstruents to voicelessness. For most Bade dialects, this is no longer an active process, but for certain varieties in the far western edge of the Bade area, it remains active and plays out in alternations of certain prefixes. For all Bade dialects, there is a rule that

ASSIMILATES an obstruent to the voicing feature of an immediately following obstruent. For some roots, the interplay of DISSIMILATION and ASSIMILATION creates alternates, but because both rules are neutralizing, there is no way, in principle, to select a unique underlying input form.

REFERENCES

Chomsky, Noam and Morris Halle. *The Sound Pattern of English*. New York: Harper and Row.

Greenberg, Joseph H. 1963. *The Languages of Africa*. The Hague: Mouton.

Newman, Paul. 1977. "Chadic classification and reconstruction." *Afroasiatic Linguistics* 5(1):1-42.

Schuh, Russell G. 1981. "Using dialect geography to determine prehistory: a Chadic case study." *Sprache und Geschichte in Afrika* 3:201-250.