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THE CHAD LANGUAGES  
IN THE  
HAMITOSEMITIC-NIGRITIC  
BORDER AREA

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# The Underlying Form of the Verb in Proto-Chadic

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## 1. Introduction

### 1.1 The problem

Newman 1975 postulates the existence in Proto-Chadic of verbal classes in both monosyllabic and polysyllabic verbs. In the monosyllabic verbs he claims the existence of three classes with the endings a, ə and i/u and in polysyllabic verbs ('polyverbs') of the classes a and ə. In addition the verb classes are determined by tone, Hi-Hi, Lo-Lo and Lo-Hi. The final vowel in Newman's reconstruction was a 'lexically intrinsic vowel' (Newman 1975: 81): 'All verbs contained a final vowel as an integral, lexically determined component. This vowel was as much a part of the specification of that lexeme as the consonants and the internal vowels'.

In lieu of the evidence for this hypothesis he provides examples of the occurrence of the final vowels as postulated in the hypothesis in eight languages, four from the Plateau-Sahel branch (now West Chadic in Newman 1977) and four from Biu-Mandara. The verbal forms are not described as to their place in the paradigms in particular languages so that one is not really sure that all the forms are comparable. For if it were the case that a vowel ending in one of the languages constituted a morpheme there is no way to determine it from Newman's paper. In translations provided all examples are translated by the English infinitive but surely they are not infinitives at least not in all of the languages. Moreover, we do not know what are the proportions of the examples conforming with the hypothesis and those that do not, and more important the illustrations do not show the fact that the number of verbs belonging to the 'a' class is very small when compared with the 'ə' class.

Newman's hypothesis has been accepted by some scholars, e.g. Schuh 1977 and 1978. It has also been a subject of certain discussion. Thus Schuh 1977 has proposed, instead of the vowel ə [as high vowel class] postulated for Proto-Chadic, -u in West Chadic. Frajzyngier (to appear a.) has postulated that there is no evidence for u in West Chadic and instead has proposed -i as the final vowel for high vowel verbs. There is also a possibility that it should be the high vowel in other Chadic languages instead of Newman's ə.

Nobody, however, has actually tested Newman's main claim, viz. that the final vowel of a verb is an integral part of it, as much the property of the verb as its other vowels and its consonants.

The purpose of this paper is to do just this. Anticipating the analyses to follow I would like to propose that the traditional analyses of Chadic languages in which the final vowel was not considered as an integral part of the verb were actually right. They were not up to our present standards, which require an explicit justification for every claim, but then I do not think that it would be right to blame them for this. One should rather be amazed at how correct were those largely intuitive statements in separating the final vowel from the rest of the verb. The present paper will present

the evidence that the final high vowel is not an integral part of the verb and that therefore it must have constituted a grammatical formative. It would follow from this that the final low vowel could also be considered a grammatical formative but the evidence for this will not be of such a nature as to completely exclude other possibilities, including the lexical hypothesis. The evidence alluded to above will concern only the polysyllabic verbs. For monosyllabic verbs there is a strong possibility that the final vowel was a part of the underlying representation.

## 1.2 The choice of data

There is a difficulty involved in the choice of data for this paper. Ideally this discussion should be based on the same data as in Newman 1975 but unfortunately this cannot be done. Some of the data used by Newman are simply unavailable to me, such as the data for Kotoko taken from fieldnotes. The same goes to a certain degree for Bolanci, for Newman has used his own fieldnotes apart from Lukas 1970–1972.

But even when the same data were available, they were not always useful to me. Thus for West Chadic languages data from Kanakuru and Bolanci contained the evidence needed for the traditional separation of the verb final vowel, while data in Tera, Ga'anda and Margi did not, or at least I could not find such evidence. Instead I have supported the traditional hypothesis with data from Mubi and Migama, two of the East Chadic Languages, and Bachama and Musgu, two Biu Mandara languages. The total number of languages discussed in the present paper will be six, to include: West Chadic: Pero, Kanakuru; Biu-Mandara: Musgu, Bachama; East Chadic: Mubi and Migama. For Pero I rely on my own fieldnotes, for other languages on the data published and already somewhat discussed in the literature.

The value of this evidence should not however be dismissed just because the number of languages is small. First of all, it is only one language less than in the Newman paper. Second, it represents three branches of Chadic rather than two as was the case in Newman 1975. Now if the similarities are found in languages from three branches out of the postulated four, one should consider these similarities to be retentions from the Proto-Language rather than common innovations. So even if the number of languages analysed is relatively small in comparison with the total number of Chadic languages, their distribution within the Chadic family is more significant than their number. Moreover, the nature of these similarities will be such as to preclude innovations as the reason for similarity.

## 2. *Formulation of hypothesis*

The formulation that will follow has never been stated before in such terms nor is it a compilation of some inexplicit assumptions to be found in various analyses of Chadic languages. It has emerged as a result of the analyses of verbal systems in several Chadic languages. Some of the statements in the hypothesis however have been formulated before by other people and these will be duly noted. The hypothesis consists of the following points.

1. There was a basic division in Chadic between the one-consonant and poly-consonant verbs. This point is similar to Newman's division between monosyllabic and polysyllabic verbs. It will be shown, however, that it is the number of consonants rather than the number of syllables that determines the form of the verb.

2. The underlying form of the verb, i.e. the form necessary to derive all other forms of the verb consisted of all the consonants of the verb and the first vowel. This will be proved for the poly-consonantal verbs and suggested only for mono-consonantal verbs.

3. The vowel endings to be found in the contemporary languages constitute grammatical formatives, in many languages non-productive, and thus the function of the formatives cannot be determined on the basis of the synchronic analyses in these languages.

This last point is the non-explicit assumption in many Chadic grammars.

The evidence for the above points will begin with the evidence for point 3, followed with the evidence for point 2 and the conclusion from the two will provide sufficient justification for 1.

The general line of the evidence will be the following. If it were true that the final vowel of the verb constitutes an integral part of it, as other vowels and the consonants do, then there should be no constraints on the form of this vowel and there should be no difference in the behaviour of this vowel and the behaviour of other vowels in the verb. And as other vowels in the verb the final vowel should have no bearing on the form of other segments in the verb. It will be shown that this is not the case, for the final vowel does indeed behave in a manner different from other vowels. It is for instance often lowered as the result of application of phonological rules dependent on the preceding vowels or the shape of preceding syllables. It also often causes raising or lowering of the preceding vowels, a fact not known to occur with non-final vowels in Chadic languages.

If the Newman hypothesis were true, there should be no difference between verbs and nouns in the language in respect to the final vowel, i.e. it should be equally unpredictable in both classes of morphemes. Therefore for some languages under consideration below I will examine the behaviour of final vowels in verbs and nouns. In particular I will examine the constraints on the form of the final vowel (if any) and existence of phonological rules affecting the verbal stem involving the final vowel.

I will first deal with the mono-consonantal and bi-consonantal verbs in order to discuss the final vowel. I will then deal with tri-consonantal verbs in order to discuss the second vowel in these verbs. The order of presentation within each group will follow Newman's classification of 1977.

### *3. Mono- and bi-consonantal verbs.*

West Chadic.

Bole-Tangale group. Kanakuru.

Polysyllabic verbs in Kanakuru in the 'perfective' form end in either -i or -e. Newman 1975 considers the two endings to be reflexes of the -ə class and the -a class

respectively, but in Frajzyngier 1976 it has been shown that the two are phonologically conditioned variants of the same underlying vowel /i/. This vowel is lowered to [e] when the first syllable of the verb is heavy or when the verb is trisyllabic. The rule operates even when the first syllable of the verb is light but its derivational history indicates that it is heavy. The evidence for the rule is to be found in Frajzyngier 1976, therefore the following are only some examples to illustrate its operation.

First syllable heavy:	béelè 'choose'	júurè 'efface previous flavor'
	màané 'return'	gándè 'put down'
	lâmbé 'court or seek a woman'	
	kîrké 'contradict'	
Trisyllabic:	titiré 'draw or cut lines on'	
	shùmburé 'to quiet'	jùpulé 'tumble down'
First syllable light:	àní 'sharpen'	múrí 'die' (but plural, through gemination, mútè)
	púi 'go out' (pl. pùpé)	
	pâní 'to transplant'	

Monosyllabic verbs in Kanakuru end in -i or -e, e.g. gàì 'to prevent', túì 'to eat', yíe 'to do', dèe 'finish', lùe 'put aside', kói 'to catch', náì 'call' etc. All of the verbs are quoted in the perfective form. An interesting fact about these verbs is that some of them derive synchronically or diachronically from a two-consonantal form with the second consonant deleted. The evidence for this is provided by the plural form when the second consonant is actually pronounced because of the gemination which is a part of the plural verb formation, e.g. búì 'give', pl. búpè. The second consonant is obviously p which becomes w in intervocalic position and then is deleted. Since it has been shown that the final /i/ in biconsonantal stems is not a part of the underlying structure there is no reason to assume that -i at the end of the mono-consonantal verbs is anything different and therefore I will take the -i ending in these verbs to represent the same grammatical formative as in poly-consonantal verbs. The underlying vowels of the mono-consonantal verbs would be therefore the penultimate vowels such as -a-, -u-, -i-, -e- and -o-, almost all the vowels postulated for Kanakuru by Newman. Thus the mono-consonantal verbs in Kanakuru represent not two but five classes if a classification is to be based on the final vowel. Since all the vowels are represented in the mono-consonantal verbs, the classification according to the final vowels serves no purpose since it does not reveal anything interesting about the verbal system. And obviously in no way can it support the reconstruction of the Proto-Chadic verbal system as containing two or three classes of verbs.

In the nominal system of Kanakuru the constraints on the height of the final vowel do not exist. Thus one finds a high vowel at the end of the first syllabic heavy nouns, e.g. dánkì 'bed', dénnì 'porcupine', dimbì 'skin, body', góm̄bì 'type of melon', kóori 'black cobra snake', and finally one finds a high vowel at the end of trisyllabic nouns, e.g. bil̄bìlì 'a swallow', túubìní 'right side'.

As can be seen, the behaviour of the final vowels in verbs and nouns is quite different. If one considers the final vowel of the noun to be an integral part of it, and there is no suggestion so far that it is not so, then obviously one cannot consider the final

vowel of the verb to be an integral part of the verb, for it is dependent on some other factors in the structure of the verb. If it cannot be considered a part of the underlying structure then it must be considered to be a formative. The only question that remains is what is or was the function of this formative. The answer to this question lies in the distribution of the forms ending in *i/e* as opposed to the distribution of the forms ending in different vowels. It appears that the only different vowel ending in Kanakuru is *-a*, the marker of the imperative form. There are also other suffixes in Kanakuru, such as verbal extensions, and they also should be taken into consideration in deciding about the function of *-i*. But it is rather obvious that *-i* was a marker of a major division in Kanakuru verbs, for the forms ending in this vowel occur in several tenses. In particular it is found in: 'perfective', 'subjunctive' (optative), both affirmative and negative.<sup>1</sup> In the imperative form instead of a front vowel we have a back vowel. Thus the imperative forms in Kanakuru have the *-u* ending. There is no *-a* ending in bi-consonantal verbs in Kanakuru, and therefore there is no need or ground to investigate its possible function in this language.

#### Pero.

Monosyllabic verbs in perfective form end in [i], [e] and at least one verb ends in [a]. In the imperative form these verbs end as follows:

Perfective (stem before suffix <i>-ko</i> )			Imperative
<i>-i</i>	<i>ei</i> 'eat'	<i>-u</i>	<i>cú</i>
<i>-e</i>	<i>éé</i> 'drink'	<i>-o</i>	<i>có</i>
	<i>lé</i> 'give birth'	<i>-a</i>	<i>lá</i>
<i>-a</i>	<i>éáa</i> 'descend'	<i>-a</i>	<i>cáa</i>

There is evidence which will not be repeated here that the imperative form of the verb is not an underlying form but a derived one. Occurrence of the vowel *-a* in the derived form rules out the possibility of it being an underlying vowel and therefore a reflex of an alleged Proto-Chadic *-a* class. There is still a possibility that some of the verbs with the *-e* ending in perfective do represent the *-a* verbs, obviously one would think about those that have *-a* in imperative as being the prime candidates for this role, but even if it were so, we would end with at least three (if one does not count the exception *éáa*) and not two verb classes.

This is the situation often found in Chadic languages that the number of vowel endings in monosyllabic verbs exceeds the number of endings in polysyllabic verbs. The explanation of this fact is more natural if one accepts the notion that the verbal endings in polysyllabic verbs represent grammatical formatives.

In monosyllabic verbs, if only the consonant were to be considered underlying, it would result in the maximum number of verbs to be equal to the number of consonantal phonemes in the language. Addition of a vowel as an underlying segment increases the number of possibilities for monosyllabic verbs by the same number as there are vowels. For the two- and three-consonantal verbs the number of possibilities is much greater and there is no danger of too many homophones, even without the

final vowel. Although not all the possibilities for the underlying consonant are actually utilized in Chadic languages, we do come across the monosyllabic verbs with an identical underlying consonant. The most frequent example here being the pair for the verbs 'to eat' and 'to drink' which in many languages differ only in their vowel and not in the consonant.

In Pero in addition to the above two there is also verb *cáa* 'to descend'. Another such pair is: *lu* 'to put' and *lá* 'to give birth'. All the verbs are quoted in imperative.

I would expect that in all Chadic languages all the possibilities for the final vowel will be utilized in monosyllabic verbs, provided the tense/aspect paradigm allows it.

Since the basic dichotomy in the aspectual paradigm of Pero is between the front vowels for the 'perfective' form and the back vowels for the 'imperative' form we would not expect any other vowels in the perfective apart from *i* and *e*. Therefore, all the vowels allowed by the constraints on the grammatical form of the verb occur at the end of monosyllabic verbs in Pero. Unlike the vowel of monosyllabic verbs their consonants cannot be predicted from any other information, they are completely arbitrary, constrained only by the distributional properties of consonants (see Frajzyngier 1978). While in monosyllabic verbs the perfective form has to be non-back and the imperative form has to be back, there is still a problem of predicting which verb ending in mid-vowel in perfective will have the *-a* ending in imperative and which will have the *-o* ending. This fact indicates that the perfective forms of the verb derive from three different classes which had the differences between them neutralized by some changes. I postulate that there was a suffix *-i* added to the monosyllabic verbs to form the perfective form. The reconstructed verb forms and the results of addition of a suffix are as follows:

1. *Ci* + *i* → *Ci*
2. *Ce* + *i* → *Ce*
3. *Ca* + *i* → *Ce*

Rules 1 and 3 are independently supported by synchronic rules in Pero. Rule 2, however, is not, for the product of *e* + *i* is consistently [ey]. But this rule is historically possible through the reduction of final *-i*.

An alternative analysis of the facts in Pero in a diachronic perspective is to postulate as the underlying forms the vowels of the imperative form, i.e. /*u*, *o* and *a*/ and postulate the same suffix *-i*.

- Cu* + *i* → *Ci*
- Co* + *i* → *Ce*
- Ca* + *i* → *Ce*

Although they look better than the previous version, for in the underlying form they display more differentiation than in the derived form, synchronically they are not adequate, for the product of *u* + *i* is not *-i* but rather [uwi] and the product of *o* + *i* is sometimes [e] and sometime [oe]. But even if one chooses this derivation rather than the first one, there are still three classes of verbs. In both solutions we have to postulate a suffix in the perfective form which can be best reconstructed as *-i*. There

is also no reason why one could not combine the two series of derivation, i.e. instead of three possible endings postulate five, in which all vowels were postulated. There is however no evidence whatsoever to support such an analysis.

Whichever series of derivation one chooses, there is an important difference between nouns and verbs in Pero. While in nouns all vowels occur in word final position, in verbs only three vowels are possible. These vowels, however, may well be the lexical ones for mono-consonantal verbs.

### Polysyllabic verbs

A detailed analysis of vowel alternations in polysyllabic verbs can be found in Frajzyngier 1980. The following is only an illustrated summary of rules that operate in the verbal system and are pertinent to our discussion.

In the perfective form of polysyllabic verbs in Pero the final vowel is an epenthetic one depending on both the following and, in certain specified conditions, the preceding vowel. Therefore, for these verbs the perfective form is not particularly revealing.

The imperative form of the verb can end in either -a or one of the round vowels, -u or -o. The round vowels are variants of the same underlying /u/ and the height of the vowel depends on the structure of the verb in a way similar to Kanakuru. /u/ becomes [o] when:

1. The first syllable of the verb is heavy, e.g. kúmmò 'put on ground' cíppò 'cut' céerò 'talk' cúurò 'fry': cf. páwù 'pray' dígù 'build' etc.
2. When the verb has three syllables, e.g. démbúlò 'lick', and the following plural verbs derived from the singular verbs: bábbúnò 'search' bíttúró 'hold many things' cúnù 'skin' cúccunò 'skin many' (animals).
3. When the first syllable of the verb contains a mid vowel, e.g. tóbò 'to tie up' lófò 'beat with a stick' mérò 'turn'.

There is also a number of disyllabic verbs which have -a as the final vowel. All of them have a high vowel in the first syllable which moreover is never heavy, e.g. kúmà 'listen' cinà 'sleep' pínà 'wash' (intr.) píyà 'beat (drum)'.

Although the perfective form of these verbs does not contain a vowel at the end, other than epenthetic, by analogy with the monosyllabic verbs one can reconstruct the vowels of perfective as /i/, /e/ and possibly /a/ since at least one monosyllabic verb in perfective ends in this vowel.

The above constraints on the height of the non-low vowel in Pero do not operate in the nominal system of the language. Thus we have a high vowel when the first syllable of the noun is heavy, e.g. kpándì 'food' kindì 'poor' kírgù 'sky' gúurù 'sickle'.

We have also a high vowel ending when the first vowel of the noun is mid, e.g. dóoji 'tomorrow' fóori 'sun' wóri 'female name' kópbi 'hole' etc.

There are no constraints concerning the occurrence of -a in the word final position, e.g. when the first vowel of the noun is mid. kémà 'fat', when the noun is trisyllabic: kínnimà 'idol', when the first syllable of the noun is heavy, e.g.: gáppà 'rice'.

It is obvious that there is a difference between the word final vowel in nouns and verbs. Since there appear to be no constraints on the word final vowel in nouns one has to assume it to be a part of the underlying, i.e. lexical representation for this class of morphemes. The word final vowel in verbs is entirely different and has to be considered a formative, and the interesting question is what kind of a formative is it? The obvious answer that it is a suffix is not a satisfactory one because other suffixes in the language behave in a different way from verbal endings. Thus the consecutive suffix to a verb in sentence final position -i raises the preceding vowels if they are not already high and of course does not undergo any changes itself. The same goes for the definite suffix to nouns. Not wanting to postulate yet another category of formatives in the language, I propose that we deal here with suffixes that once used to be productive in the language but are no longer so. In this way we can explain the verbal classes in Pero as containing the old affixes, which in the synchronic analysis cannot be considered suffixes any longer. A conclusion for the reconstruction of Proto-Chadic has however to be different. If the class endings are reconstructed as affixes for an earlier stage of Pero, obviously they must have been affixes also in Proto-Chadic, if reconstructable for this stage of development. An interesting conclusion regarding the relative chronology of phonological rules is that the raising rule must have emerged in the language after the affixes became fused with the verbs and were no more perceived as such by its speakers. This last conclusion should by no means be taken as applying to the whole field of Chadic, for we find raising rules in many languages and they have to be considered as characteristic for the whole family, if not reconstructable for the proto-language, then at least be an areal characteristic.

There are two questions still that have to be answered for Pero and indeed for the whole family of Chadic. The first question is why do we have two affixes, high and non-high, and second, what are or were the functions of these affixes? If the answer to the second question would show historically different functions for -u and -a (in imperative), we would have an answer to the first question as well. Unfortunately, synchronically there does not appear to be any difference between the verbs, ending in -a and those ending in -u, save perhaps for the fact that the verbs ending in -a are intransitive except for the verb *píyà* 'to beat a drum'. Verbs ending in -u are both transitive and intransitive. The only contrast that one can actually study is the one between the forms ending in -i or -e and those ending in -u, -o and -a. Since the polysyllabic verbs occur without the final ending when derivational suffixes are added, it is the monosyllabic verbs that are the most revealing for this purpose. The front vowel ending is used in the perfective and the imperfective ventive form. The back vowel ending is used in imperative, future and the remaining tenses. While the common characteristics of the tenses built on the 'front vowel stem' are difficult to determine, one can find a common characteristic of the 'back vowel stems'. All of the tenses built on the latter indicate that the action has not started yet, it has yet to happen.

The conclusion that the 'perfective' stem indicates a real action, something that actually happened or happens now, while the non-perfective stem indicates an action that has not started yet, should be considered very tentative for the time being, its confirmation depending upon the completion of the analysis of the syntax of Pero. No acceptable explanation can be offered now for the existence of two markers of the non-perfective form of the verb. Because of this it is likely that the verbs that

have now the marker -a possess a certain semantic characteristic that required this marker sometime in the history of the language, but their number is too small to detect this characteristic.

It appears that whatever the function of the two affixes were, they did not have to be in opposition within the same paradigm, such as perfective – non-perfective etc. Rather it appears that the low vowel suffix was required by conditions not related to the high vowel suffix.

#### Biu-Mandara.

Two languages from this branch of Chadic will be discussed: Musgu and Bachama

In Musgu the difference between an underlying final vowel and a grammatical formative is well marked. Suffixes to the verb trigger a number of changes in the preceding vowels. One of them, attested in a number of Chadic language (see Frajzyngier 1981), is a raising rule, which could be formulated as follows:

a non-long vowel is raised when followed by a consonant and a suffix consisting of a high vowel, i.e.

$$\begin{array}{l} V \quad \rightarrow \quad [+ \text{ high}] \\ [- \text{ long}] \end{array} \quad / \quad C \text{ \_\_\_\_\_\_ } C + V \quad \begin{array}{l} \\ [+ \text{ high}] \end{array}$$

e.g. (all examples from Meyer-Bahlburg 1972):

hos-	+	i	→	husi
throw down		Pl.		
kol-	+	i	→	kuli
praise				
sod-	+	i	→	sudi
whip				

There appears also to exist a fronting rule by which a back vowel becomes front when followed by a high front vowel suffix, e.g.:

bund-	+	i	→	bindi
become				
mul-	+	i	→	mili
take				

There are, however, not enough examples to formulate exactly the conditions for this rule, which as one can see does not apply to forms to which the raising rule has applied.

The above rules do not obtain when the underlying vowels are involved. The appropriate examples of non-application of the rule cannot be drawn from the set of verbs since, as will be shown later, no verb has more than one underlying vowel. What

remains, therefore, is the set of nouns. Here we encounter another difficulty, viz. there is no ready-made list of nouns, and material has to be extracted from the existing sources, and also that a great portion of nouns in Musgu end in a consonant. Nevertheless one can find the following examples of the mid-high sequence which is not allowed when the high vowel belongs to a different morpheme:

motitini	'gull'
fenkiya	'cup'
kókùl-áy	'Aasgeier'
sligeni	'camel' <sup>2</sup>

Even more interesting is the absence of a fronting rule when the second vowel in a sequence is an underlying high front vowel, e.g.:

hùrdí	'scorpion'
áwsi	'rat' (cf. fákà pl. fiki 'stand') <sup>3</sup>

Note that the phonological changes as a result of the addition of a suffix are by no means a property of verbs only. Similar changes take place when a suffix is added to nouns, e.g.

dalam	+	i	→	delemi
house		dimin.		room
kalan	+	i	→	kilini
well, stream				small stream

Although in both cases a raising rule has operated, the products of this rule are different and there are not enough examples to determine the conditions for the operation of the rule or rules.

Although the preceding data from Musgu are very fragmentary and may be analysed in a different way in a description of Musgu phonology, it is clear that addition of a grammatical morpheme may cause phonological changes in the preceding segments. The presence of an underlying vowel, however, does not cause such changes. Therefore the data from Musgu support our hypothesis for Chadic that if a segment causes any changes in the preceding segments it is not a part of the underlying representation but rather a grammatical formative, in our case a suffix.

Regarding the function of the suffixes -i and -a in Musgu, one has to conclude for the time being that it has nothing to do with the identically represented formatives in other Chadic languages: -a in Musgu is a marker of sing., while -i is the marker of plural, both of them depending on the number of subjects of the sentence. These functions are not the ones that one finds in Kanakuru, Tera, Gaanda or other languages discussed in Newman 1975 or in the present paper.

## **Bachama.**

The data from Bachama are brought for two reasons. First they indicate that in this language as in many other Chadic languages the differentiation in the vowel endings of mono-consonantal verbs is much greater than in poly-consonantal verbs. Second, they indicate that there is no reason to establish two verbal classes on the basis of vowel endings. Rather, for monosyllabic verbs one has to postulate more than two, while for poly-consonantal there is no ground for any division among verbs on the basis of this criterion.

The importance of the first reason rests on the following argument. If there were to exist classes of verbs based on the final vowel, their number should be similar in both mono-consonantal and poly-consonantal verbs. If there are drastic differences, then we are not dealing with classes based on two or three final vowels. Mono-consonantal verbs in the past tense can end in: -a, e.g. *pà* 'meet', *nzà* 'sit down'; -o, e.g. *mbó* 'finish', *kò* 'hunt'; -i, e.g. *ni* 'look for', *pi* 'breathe'; and finally, -e, e.g. *ne* 'build', *be-* 'hide'. An interesting fact about the mono-consonantal verbs to be found in Carnochan 1970 is the absence of the -u, - and -e endings. It is not possible to judge from the data in the source examined whether this absence is accidental or not, and therefore I will not venture any attempt at explanation of the fact. Polysyllabic verbs end in -o or -e, the latter back and rounded vowel occurs only in three examples, viz. *dawe* 'cut down', *hiuwe* 'pray' and *viruwe* 'turn around'. There are also two examples of verbs ending in -a, viz. *mada* 'get up' and *mbilicita* 'swarm around'. Except for these last examples, the polyconsonantal verbs represent a grammatical formative, possibly even the past tense marker added most probably to the stem ending in a consonant, while the vowel ending in the monoconsonantal verbs, even if it represents a grammatical formative, is a result of some changes that occurred when this formative was added to the verb final vowel. These changes could also be responsible for the lack of the verb final -u, - and -e in both mono- and poly-consonantal verbs.

The data from Bachama support the general conclusion of the present paper that for monoconsonantal verbs one has to postulate the final vowel as the integral part of the verb while for polyconsonantal verbs it is enough to postulate the consonant structure plus the first vowel as the only underlying segments, the final vowel being supplied from grammatical information.

## **East Chadic.**

### **Migama.**

The following analysis is based on data in Jungraithmayr 1975. For an alternative analysis see Wolff 1977, which despite its claim (p.164) does not support Newman's hypothesis of two vowel classes.

As in other languages, the main line of evidence would be to show that the final vowel of the verb causes certain phonological changes in the preceding segments, or that it itself is somehow dependent on the preceding segments. Although not everything that follows is directly relevant to the discussion of verbal classes, it is, however, necessary for the better understanding of the argument.

Since every verb in the perfective form in Migama ends in the vowel -e, I will take this vowel to be a marker of the perfective aspect or at least to be one of the markers of the perfective aspect. It cannot be considered an integral part of the verb as its other segments for the simple reason that no other segments are uniformly identical for all the verbs in the language as quoted in Jungraithmayr 1975.

We will take the form of the verb minus the perfective -e to constitute the root of the verb or, in other words, to constitute its underlying representation containing all that is necessary and only the necessary information to derive both the perfective and the imperfective form of the verb. The plural form of the verb is also derived from the underlying representation through the gemination of the second consonant.

The imperfective stem is derived through the suffix -aa and either an infix -kk- or reduplication of the second consonant. Which of the additional markers is actually used depends on the structure of the root and does not affect the problem under discussion. Addition of the suffix -aa has, however, an effect on the preceding vowels, viz. it lowers the preceding vowels by one degree, e.g.:

bir-        +    a     →    beṛaa  
give                    imperf.

tin-        +    a     →    tenaa  
bury

More examples will be given in the discussion of three-consonantal verbs. The imperfective ending -a cannot be considered as an integral part of the verb for two reasons: first, it occurs with all verbs in this form and therefore it cannot be a part of the representation of every verb. Second, unlike the underlying segments it affects other segments in the word, in this case vowels, by lowering them. We have seen, then, that neither -e, the marker of perfective, nor -aa, the marker of imperfective, is a reflex of the postulated final vowels of Proto-Chadic. It does not appear that -a in Migama is cognate with the -a appearing in other languages as the marker of different functions. It is, however, interesting that in Pero some verbs have the -a ending in the non-perfective form.

#### Mubi.

The following presentation of Mubi has as its purpose the addition of more data to show that the final vowel, when representing a grammatical morpheme, either affects the preceding segments or is affected by the preceding segments.

The presentation is based on data in Jungraithmayr 1978 and on analyses in Newman 1977 and Frajzyngier 1981. For bi-consonantal verbs in Mubi it is postulated that the underlying form consists of the two consonants and the first vowel of the perfective stem. There is no vowel ending in the perfective.

The analysis of the infinitive is presented in order to show the operation of the raising and lowering rules and also to show that the final vowel is affected by the preceding segments.

The underlying form of the infinitive marker is the suffix /i/ added to bi-consonantal roots with non-low vowels. When this suffix is added to other roots, i.e. tri-consonantal roots or bi-consonantal roots with low vowel, it is lowered to [e]. We have therefore conditions similar to the ones described in Frajzyngier 1976 for Kanakuru and Pero.

Addition of these vowels to the root has a further effect in that the underlying vowels are raised when a high vowel suffix is added and lowered when the non-high suffix is added. The formalization of these rules can be found in Frajzyngier 1981. Here are some of the examples only. The lowering rules will be illustrated when the tri-consonantal verbs are discussed, so the following examples apply only to bi-consonantal verbs. Note that the vowel which is raised is also lengthened:

Underlying	Suffix	Raising and Lengthening	Gloss
deg	deg-i	diigi	'carry on head'
ged	ged-i	giidi	'descend'
zob	zob-i	zuubi	'be dark'
bag	bag-e	--	'roast'
cam	cam-e	--	'eat'

#### 4. Three-consonantal verbs

In the previous section it has been shown that one cannot postulate the final vowel of the two-consonantal verbs to be a part of their underlying representation. Therefore the bisyllabic verb has actually been reduced and now it is formed by the first three segments, viz. CVC-. If one accepts the notion that the last vowel of the bi-consonantal stem represents a reflex of a grammatical morpheme, then it also represents the same morpheme when occurring in three-consonantal verbs. In the present section I will show that the second vowel of the three-consonantal verbs can be predicted and that the underlying representation for these verbs can contain only the information about the consonantal structure of these verbs and the first vowel.

ill-	'get up'	+	t	+	o	→	illùtò
			Pl.				imper.
ill-		+	t	+	ji	→	illitiji
					Cont.		

This last fact reinforces the conclusion that the second vowel of three-consonantal verbs is inserted rather than being a part of the underlying representation. But it also provides an additional argument against the claim about the final vowels being an integral part of the verb, for this allegedly underlying vowel is added after the other suffixes, in this case the plural and the tense/aspect suffixes.

### **Musgu.**

Meyer-Bahlburg 1972: 111, discussing the structure of the root in Musgu, postulates several types for three-consonantal verbs. One of them is the type that consists of the consonants and the first vowel only, viz. CVCC, e.g.: sɔlb- 'to ask', sumn- 'to sit' etc. The other type is postulated with a second vowel, viz. CVCVC-. If the hypothesis presented in this paper is correct the second vowel in these verbs should be completely predictable. This however is not the case, at least not for all the verbs. For some verbs the second vowel is identical with the first, e.g.: miliŋ- (P) 'erstarren (be numbed)', sɔdɔl- 'to crawl', subur- 'be watchful', gɔdɔm 'to graze cattle'. There are, however, two verbs that do not conform with the rule, viz. budeh (P) 'to fall' and cikɔd 'to sift'. Whether the differences in the last two vowels are phonologically conditioned or not would have to be answered by a description of Musgu phonology.<sup>4</sup>

### **Migama.**

In Migama the second vowel of three-syllabic verbs is also epenthetic and it is always identical with the preceding vowel for all its features. The epenthesis takes place in the imperfective forms, which, as has been described previously, have a suffix -a and an infix -kk- or gemination of the second consonant. Recall also that the underlying vowel of the verb is lowered because of the suffix -a. The following is the proposed derivation of the two-consonantal and three-consonantal imperfective forms for Migama verbs contained in Jungraithmayr 1975, all of which require an epenthesis:

The evidence in the present section will be of a slightly different nature from that in the previous sections. I will present the derivation of the three-consonantal verbs in several Chadic languages in which it will be shown that the second vowel can be predicted. I do realise that this kind of evidence is not completely satisfactory and that the hypothesis may be proved to be wrong if a language is found in which the second vowel of the three-consonantal verb cannot be predicted. I did not come across data indicating that the second vowel cannot be predicted and until such data are shown I will consider the hypothesis as valid and proven.

Data for the present section are derived from the following languages: Pero (West Chadic), Musgu (Biu-Mandara), Mubi and Migama (East Chadic).

### **Pero.**

A full description of the vowel alternations in the verbal system of Pero can be found in Frajzyngier 1980. It is shown there that the second vowel of the three-consonantal verbs is always epenthetic, inserted whenever the morpheme structure conditions or syllable structure conditions require it. It is always high and the value of the feature round depends on several factors. The chief among them is the last vowel which when present determines the value of the feature round. Thus if the following vowel is round the epenthetic vowel will also be round, e.g.:



high vowel. It is non-round except when the first vowel is round and high or the consonant following it is round. When either of the last two conditions is met the infix is round also. The following formula is proposed to account for the alternations of the perfective marker /i/:

$$i \rightarrow \begin{array}{c} u/C \\ C \end{array} \quad \begin{array}{c} U \\ V \end{array} \quad \begin{array}{c} C \text{---} C \\ C \text{---} W \end{array}$$

Formulation in terms of features is more revealing since it shows both the cause and the effect of the change, and it shows that the rule is natural.

$$\begin{array}{c} V \longrightarrow \\ [+ \text{ high}] \end{array} \quad \begin{array}{c} [+ \text{ round}] \\ / \\ \text{CVC} \text{---} \text{C} \\ [+ \text{ round}] \end{array} \quad \begin{array}{c} C \quad V \quad C \quad C \\ \left[ \begin{array}{c} + \text{ high} \\ + \text{ round} \end{array} \right] \\ \text{CVC} \text{---} \text{C} \\ [+ \text{ round}] \end{array}$$

The following are examples of derivation of perfective forms of some of the three-consonantal verbs.

Root	Infix	Suffix	Gloss
kútm	kú tùm	kú tùmé	'wrap up'
túrgw	túrgùw	túrgùwé	'raise'
'ápr	'ápir	'ápiré	'to choose'
'ípr	'ípîr	'ípîré	'untie'
hookl	hookil		'shout'

No exceptions to the rule of forming perfective have been found in Jungraithmayr 1975.

Thus it has been shown that there is in Migama an infix -i- which in addition to the suffix -e is a marker of the perfective form. None of the vocalic endings have been found in Migama to constitute an integral part of the verb. Although -i- as the marker of perfective has been found to occur only with three-syllabic verbs, it is worth noting that in some other languages discussed so far it also marked perfective albeit as a suffix and not an infix.

It was also shown that for Migama one needs to know only the consonant structure of the verb and the first vowel in order to derive the perfective and the imperfective form of the verb for both two-consonantal and three-consonantal verbs.

#### Mubi.

As in the case of two-consonantal verbs the following analysis is based on data in Jungraithmayr 1978 as analysed in Frajzyngier 1981. As for Migama and other

languages discussed in the present paper the underlying form for the three-consonantal verbs consists of the three consonants and the first vowel as it appears in the perfective form of the verb. In order to show that the second vowel of three-consonantal verbs is predictable, I will show first the proposed derivation of perfective and imperfective forms in which the second vowel is a part of grammatical formative and then the infinitive in which it is inserted by a phonological rule.

Perfective.

For two-consonantal forms the form of the perfective is identical to the form of the root, i.e. the underlying form of the verb.

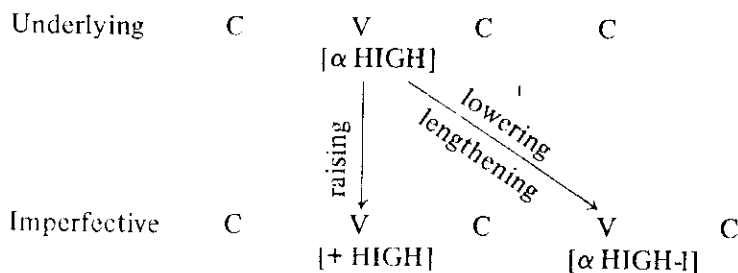
For three-consonantal verbs the marker of the perfective is a high vowel inserted between the second and the third consonant as in Migama, and as in Migama its value of the feature round is determined by the value of this feature in the preceding vowel, e.g.:

Root	Infix	Gloss
derm	derim	'to rest'
filg	filik	'change, alter'
gudl	gudul	(final devoicing applied) 'bend'

As in Migama one can postulate the underlying form of the perfective marker for three-consonantal verbs to be /i/ and a rule that will change /i/ to [u] when preceded by [u].

Imperfective.

The imperfective form for three-consonantal verbs in Mubi is derived in a manner different from the derivation of two-consonantal verbs. The following schema will show the rules involved in the derivation of the imperfective form for three-consonantal verbs only:



The schema indicates that the underlying vowel is raised in the imperfective form and moreover that a vowel derived from the underlying vowel of the verb is inserted between the second and third consonant. The inserted vowel is long and moreover it is by one degree lower than the underlying vowel. Compare the following examples of derivation of the imperfective form for some of the three-consonantal verbs in Jungraithmayr 1978:

Underlying	Raising	Insertion/Lowering/ Lengthening	Gloss
gerg	girg	giraag [giraak]	'share, divide'
derm	dirm	diraam	'rest'
heyd	hiyd	hiyaad [hiyaat]	'sleep'
kurd	—	kurood [kuroot]	'scratch'
gudl	—	gudool	'bend'

No exceptions to the operation of the above rules have been found in the data presented in Jungraithmayr 1978.

#### Infinitive.

The underlying form of the infinitive marker in Mubi is the suffix /i/. It occurs as [i] after bi-consonantal verbs with non-low vowel. After all other verbs it is lowered to [e]. Addition of this suffix has an effect on the preceding vowels in that they are raised when a high suffix is added and lowered when the non-high suffix is added. The second vowel of the three-consonantal verb in the infinitive form is an epenthetic vowel always identical for all of its features with the preceding vowel. The following are some of the examples of derivation of infinitive form for three-consonantal verbs:

Underlying	Suffix	Lowering	V-Insertion	Gloss
gerg	gerg-e	garg-e	garage	'divide, share'
filg	filg-e	felg-e	felege	'change, alter'
luyg	luyg-e	logye	logoye logoy (final V deletion applied after a sonorant)	'shake'
kurd	kurd-e	kord-e	korode	'scratch'

No exceptions to these rules have been found in Jungraithmayr 1978.

## Conclusions for Mubi.

It has been shown that the second vowel of three-consonantal verbs is fully predictable for every grammatical form. For the perfective and imperfective form the second vowel is provided by grammatical information, i.e. it is a part of the marker for the perfective and imperfective forms, and for the infinitive it is an epenthetic vowel inserted when the syllable structure conditions, or better, when the constraints on allowed consonant clusters require it.

## 5. Conclusions.

The paper attempted to provide a reconstruction of the underlying form of verb in Proto-Chadic. The data for this reconstruction have been drawn from the West Chadic branch (Pero, Kanakuru), Biu-Mandara (Bachama, Musgu) and East Chadic (Mubi and Migama). Although the total number of languages is not large in comparison with the total number of known Chadic languages, the occurrence of the same phenomena in the three branches constitutes a strong argument against common innovation as the explanation for the similarity. A common inheritance from the Proto-Chadic seems to be a more likely explanation of the similarity between the three branches of Chadic. It has been postulated and shown that for the six languages investigated the underlying form of the verb consists of its consonants and the first vowel. In order to prove that it is so it was necessary to prove that the final vowel in bi-consonantal and three-consonantal verbs constitutes a reflex of a grammatical formative (not productive in many languages), and also that the second vowel of the three-consonantal verbs is predictable either through phonological rules or grammatical rules for formation of various aspects or tenses.

No detailed study has been done for the monosyllabic or mono-consonantal verbs. It is assumed that full specification of the monosyllabic verb included a final vowel, for we have a few monosyllabic verbs in Chadic languages that differ solely in the height of the vowel. Most probably, however, not all the vowels could occur with monosyllabic verbs for there is a strong indication that the contrast round/non-round was utilized for grammatical purposes, as it is now in many languages for the indication of aspectual or tense forms.

The underlying forms of the verbs in Proto-Chadic could therefore be proposed to have the following form:

C(V)      CVC      CVCC

The paper has also posed a question concerning the function of the final vowel in verbs. In traditional analyses of Chadic languages, analyses which were never explicit, no function was proposed for the final vowel which was treated as a grammatical formative. On the basis of data presented it appears that /i/ might have been a grammatical formative indicating a major category, perhaps aspect but may be of some other nature. An exact answer to this question must await detailed study of the functions of what is now being referred to as perfective and imperfective aspects in Chadic.

Another question which has been left unanswered is, what were the reasons for the presence in some but not all of the Chadic languages of two formatives, one /i/ and the other a low vowel /a/ or sometimes /e/.

As a by-product of this paper an alternative analysis for verbal forms of Migama has been presented which derives all the forms from one underlying verbal form. Also, a new analysis of monosyllabic verbs in Kanakuru was proposed.

The paper also provides evidence for the correctness of the largely intuitive traditional analyses in Chadic languages which would separate the final vowel as a formative different from the verbal root.

The conclusion reached in the present paper applies to the verbal system only and by no means should be treated as a proposal to analyze all the lexical items in Chadic in the same manner.

## Notes

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- <sup>1</sup> Schuh 1977 proposes that there is no perfective ending in Kanakuru and that rather, whenever there is a final -i, we are dealing with the subjunctive ending. In respect of this claim, see Frajzyngier (forthcoming).
- <sup>2</sup> Henry Tourneux in a private communication has pointed out that in the dialect he studied the above forms could not occur, that they would have to have high vowel. The conclusion is that both verbal and nominal forms display the same rules concerning the raising of the preceding vowels. In his analysis, cf. Tourneux 1978, and in a forthcoming book on Mulwi, he postulates that all vowels of both nominal and verbal stems are predictable. There is still, however, a difference between the manner in which the first vowel is predictable and the other vowels are. In order to predict the first vowel one has to know the phonological characteristic of the consonants involved. In order to predict the last vowel one has to know the first vowel. Therefore, the hypothesis proposed in the present paper is supported by a different phonological analysis as well.
- <sup>3</sup> The Verb faka is not attested by Henry Tourneux.
- <sup>4</sup> From a discussion with Henry Tourneux it would appear that the vowel of the last two verbs should have the same value for the feature high and also for the feature front.

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## Diskrepanz zwischen Kultur- und Sprachzugehörigkeit der Kulere im nigerianischen „Mittelgürtel“.<sup>1</sup>

Barbara Frank

Dafür, daß Kultur- und Sprachgrenzen oft nicht übereinstimmen, gibt es so viele Beispiele, daß die Frage, ob Ethnologie und Kulturgeschichte etwas zur Geschichte der Ausbreitung von Sprachen beitragen können, fast von vornherein negativ beantwortet zu sein scheint. Am folgenden Beispiel hoffe ich jedoch zu zeigen, daß gerade auch aus der Diskrepanz zwischen Kultur- und Sprachzugehörigkeit Schlüsse auf die Geschichte der räumlichen Verbreitung von Sprachen gezogen werden können.

Der Ethnologe hat als Quellen für historische Rekonstruktionen den Kulturvergleich und mündliche geschichtliche Überlieferungen. Die letzteren müssen mit großer Vorsicht benutzt werden; der Kulturvergleich gibt nur indirekte Hinweise. Der eine kann jedoch als Korrektiv für die anderen dienen, so daß sich aus beiden zusammen unter günstigen Umständen ein deutlicheres Bild der Geschichte ergibt.

Die Kulere (Kaleri), eine Bevölkerung von vielleicht etwa 7000 Menschen, bewohnen 10 Dörfer am südwestlichen Abhang des zentralen Plateaus von Nigeria sowie im anschließenden Tiefland. Ihre nächsten Sprachverwandten sind die nordöstlich benachbarten Ron oder Challa auf dem Hochplateau. Jungraithmayr (1970) faßt die Sprachen beider Ethnien unter dem Namen Ron-Sprachen zusammen. Sie bilden den südwestlichsten Vorposten der tschadischen Sprachen, (wenn man vom Gwandara-Hausa absieht). Die westlichen Nachbarn der Kulere, die Mama, gehören sprachlich zu den Jarawa Bantu nach Williamson (1971:278). Außerdem gibt es im Kulere-Gebiet drei Dörfer, Maboh, Barkul oder Mwah und Horom, die sprachlich zum Plateau 6 gehören (Williamson 1971: 272), jedoch nach ihrem eigenen Verständnis und dem ihrer Nachbarn Kulere sind und ihnen kulturell gleichen.

Der nahen Sprachverwandtschaft zwischen Kulere und Ron entspricht keine solche auf kulturellem Gebiet. Zwar haben sie eine Menge einzelner Züge gemeinsam, aber als jeweils geschlossenes Ganzes gesehen, sind ihre Kulturen sehr verschieden. Das zeigt sich u.a. deutlich in der politischen Struktur. Beide haben eine segmentäre, auf Sippen oder Klanen aufbauende Organisation, aber bei den Kulere überschneidet sich diese mit einem System von Bündeln religiös-politischer Funktion, die den Ron fehlen. Um die Kultur der Kulere in ihre ethnische Umwelt einzuordnen, will ich von einer kurzen Darstellung ihres politischen Systems ausgehen, dem zentrale Bedeutung in ihrer Gesamtkultur zukommt, da es auch intensiv in den religiösen und wirtschaftlichen Bereich hineinwirkt. Es ist für den Kulturvergleich sinnvoller, von solchen zentralen Institutionen auszugehen, als einzelne heterogene Kulturelemente zu verfolgen.

Jedes Dorf der Kulere war vor der Kolonialzeit politisch autonom. Das bedeutete keine Isolation; ein Netz traditionell freundschaftlicher oder auch feindlicher Beziehungen verband die Dörfer – einschließlich der der benachbarten Mama – untereinander. Ein Teil der Dörfer hatte keinen Vorsteher für das ganze Gemeinwesen, sondern zerfiel in Unterabteilungen, die ich Sektionen nenne, und die jeweils einen Vorsteher, den *makaram*, hatten, der stets ein *Primus inter pares* war. So konnte ein