

CONSONANT-TONE INTERFERENCE IN CHADIC
AND ITS IMPLICATIONS FOR A THEORY OF TONOGENESIS
IN AFROASIATIC

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1. INTRODUCTION : AIMS AND HYPOTHESES

The Chadic languages are spoken in the wider Lake Chad Basin west, east and south of Lake Chad. They constitute one of the southernmost families of Afroasiatic, together with the Cushitic and, if one is willing to accept a fairly recent hypothesis, the Omotic languages. Interestingly, in terms of linguistic typology, only these southernmost families of Afroasiatic exhibit tonal phenomena. Neither Semitic nor Berber have ever been suggested to be "tone languages", at least to my knowledge, and there is little hope to learn something in this respect from the Egyptologists.

This paper was originally prepared to be discussed at the 16th West African Languages Congress in Yaounde, April 1984. For reasons beyond the control of organizers and participants, the Congress could not be held. The present paper is a considerably enlarged and modified version of the one read at the 22nd Deutscher Orientalistentag in Tübingen, March 1983, which was published in *Afrika und Übersee* 66 (1983) under the title "Tonogenese in tschadischen Sprachen".

As for the Chadic and the Cushitic languages (and for Omotic, as little as we know about those languages), their "tonal" characteristics appear to be far from uniform. Rather, as for instance in the case of the languages of the so-called Sam group (Somali and others, cf. HEINE 1978), the suprasegmental phenomena in question have also been classified as "accentual" rather than tonal, or even as borderline cases between accent and tone. (For a recent analysis of Somali as a "tonal accent language" see HYMAN 1981 and further references therein, among them August KLINGENHEBEN's approach to the question "Ist das Somali eine Tonsprache?" of 1949.)

As for the Chadic languages in particular, which contain the bulk of the Afroasiatic languages still spoken today, they have hitherto been treated implicitly or explicitly as tone languages without any further indication as to specific type. It is perhaps interesting to note that, earlier in this century, a fine linguist such as August KLINGENHEBEN from the University of Hamburg, who was very experienced in the field of West African languages, has never quite gotten round to accepting Hausa as a "tone language" in the same sense as, for instance, Ewe or Vai, i.e. languages of the "Sudanic" type, to use a term virulent in KLINGENHEBEN's days. Far away from denying Hausa the status of a tone language, we would still today hesitate to file it away together with, for instance, Yoruba under the same typological heading.

Viewed in an inter-branch perspective, the question must arise as to which historical development we ought to envisage to account for the neat distribution of the feature "tonality" within Afroasiatic :

(a) If we assume that tonality was a feature of the common ancestor Proto-Afroasiatic (PAA), then we ought to be able to propose a theory which would not only describe the properties of the PAA tone system but would also explain why and how the northernmost families, i.e. Semitic and Berber

(we might never find out about Egyptian), have lost their tonality feature ; under such a theory, we would simply assume that the southern families, i.e. Chadic, Cushitic, and possibly Omotic as a separate family, have retained their tonal characteristics from PAA days and we should then be able to reconstruct the PAA system from the evidence provided by the latter.

(b) If we assume that tonality was not a common typological feature of PAA, we ought to be able to propose another theory which would have to explain why the southern families show characteristics of tone languages, i.e. whether or not this typological feature was acquired by southern AA-languages from the same source jointly or independently through diffusion (language contact) or by convergent development independent of each other and of contact with non-AA tone languages.

Since the Afroasiatic scope would be too wide for a short conference paper, I shall restrict myself to the question of "How did Chadic languages acquire tone - if they did not inherit it from (pre-)Proto-Chadic ?". This highly interesting question has hardly ever been seriously probed. I shall, therefore, not discuss theory (a) above which assumes that PAA was a tone language. I shall discuss theory (b) under which we assume that PAA was non-tonal, and that southern AA languages, including Chadic, have somehow acquired "tonality" in the course of their history.

If we pursue this theory further, we face the following alternative :

(a) Chadic languages have acquired their tonality through external influence, i.e. by interference from other, non-AA languages (diffusion, language contact).

(a.1) If this had happened in fairly early times, i.e. before Chadic split into various branches, the tonal systems of all modern Chadic languages ought to be traceable to this common source. We would then simply be forced to accept the hypothesis that Proto-Chadic became tonal when

larger numbers of speakers of non-AA tone languages began to shift to the use of pre-Proto-Chadic dialects, thereby transferring prosodic features of their original languages to the new language ("substratum hypothesis" ; this would have been, basically, the idea of the followers of the "Hamite theory" earlier in this century).

(a.2) If, however, such language contacts occurred in later times when Chadic had already split into its various branches, subgroups belonging to different branches but with a significant areal distribution ought to share typologically similar tone systems. This would again point to a common "substratum" albeit more limited in distribution and more recent in relative chronology, i.e. we might wish to accept the hypothesis that in a particular section of the geographical distribution of Chadic languages these came into "contact" with non-AA tone languages of a particular type, with heavy bilingualism resulting on the side of the original non-Chadic speakers who eventually outnumbered the original Chadic speakers and thus established their original prosodic system as part of the horizontal transmission of these Chadic languages. A look at the map further below which shows the areal distribution of a particular type of prosodic system within Chadic would lend support to this hypothesis.

(b) Chadic languages did not acquire tonality through contact with non-AA tone languages, but developed tonality independently, albeit triggered off by the same underlying universal properties of the human language which has led to tonogenesis elsewhere, and not only in Africa.

Of course, a third possibility would be that some Chadic languages underwent development (a), others underwent (b), and others again underwent both (a) and (b) in the course of their history. This third possibility shall not be discussed any further in this paper.

The simplest theory is the one sketched out under (a) above, which I shall henceforth refer to as the "interference

model". This theory is probably the one which has attracted the most followers : it is, as has been pointed out already, related to the notorious "Hamite theory" and is probably as wrong. Nevertheless, it is propagated by one of the most influential Chadicists of our times, i.e. Herrmann JUNGRAITHMAYR (1979, 1980). JUNGRAITHMAYR, in his writings, has never been interested in the more general question of how and why Chadic languages became tonal ; he is entirely preoccupied with only one minute aspect of the question, i.e. why tonal marking ("abton") seems to suddenly occur in the Chadic verbal aspect system at the expense of the more Semitic-like "ablaut" system (which is implicitly assumed to be non-tonal). The "interference model" and the statements on the theoretical issues behind it by its adherents are characterized by extreme vagueness of conceptualization and verbalization, cf. for instance, the following quotation from JUNGRAITHMAYR (1980 : 79) which, because of that, is almost untranslatable and is therefore given here in the German original (expressions of vagueness underlined by me) :

"Möglicherweise gibt es auch innerhalb des Nigritischen die Abfolge der Stufen III und IV, wie sie oben für das Tschadische festgestellt worden sind : Der Typus der Stufe-III-Sprachen fände sich in einem solchen Fall vor allem in den Adamawa-Ubangi-Sprachen, der der Stufen IV in den Sar (a)-Sprachen bewahrt. Da aber eine gleichartige Entwicklung in benachbarten Sprachgruppen nicht voneinander gänzlich unabhängig aufgetreten sein dürfte, liegt die Annahme nahe, dass zumindest die Tendenz der Entwicklung von einer Stufe III zu einer Stufe IV - zusammen mit dem Faktum des 'Abtons' - von den nigritischen auf die Tschad-Sprachen übergegangen ist."

In his 1979 article on the subject, being the publication of a paper which was heavily criticized when it was originally presented to the 14th West African Languages Congress in Ife, Nigeria, in 1976, the theoretical issues involved are reduced to the following meagre statement :

"It is, however, probable that these languages in the course of their history and manifold contacts came under the influence of non-Chadic languages whose aspect system may have been similar to that presently found in the Chadic 'abton' languages." (p. 137)

Even more refined versions of the "interference model" would provoke one major objection. If the prosodic features

involved, i.e. a particular type of consonant-tone interference (see below), could clearly be established as genetic property of languages of a particular non-AA language group likely to have been in "contact" with certain Chadic languages in the past, one might be forced to accept that model. If, however, such features can be shown to be universal properties of the human language and, therefore, cannot be diagnostic for a particular genetic group of the world's languages, the theory becomes unacceptable as a model for explaining the occurrence of these features across genetic language boundaries.

The only other persons, besides JUNGRAITHMAYR and much earlier, who have so far addressed their attention to the problems involved, albeit along a different line of argument geared towards universal features of tone, were HYMAN and SCHUH (HYMAN 1973, HYMAN / SCHUH 1974). They, too, did not quite believe in the "interference model" which appears to have been implicitly accepted by generations of Africanists :

"It is entirely possible that the Chadic languages owe their tonal nature to long contact with Niger-Congo languages. However, the examples of tonal processes we shall cite have evolved independently in most cases in Chadic languages having no present contact with Niger-Congo languages, and vice versa. These individual examples cannot therefore be directly attributed to contact phenomena. More crucially, the great similarity of detail of these phenomena in Niger-Congo and Chadic languages quite certainly rules out chance convergence." (HYMAN / SCHUH 1974 : 83)

Note that HYMAN and SCHUH made this statement on a very thin data basis as far as Chadic languages were concerned : only three Chadic languages had been surveyed (all of them West Chadic), one of them, Ngizim, is quoted with examples, and LUKAS' treatment of Bole consonant-tone interference is referenced in the bibliographical section, together with NEWMAN's then unpublished Kanakuru grammar.

What I wish to establish in this paper is the plausibility of alternative (b) above, i.e. the likelihood of independent development of tonality in Chadic on the basis of

universal properties of the human language. Whether such development was reinforced by longer periods of bilingualism involving true tone languages, or whether certain typological developments must be attributed to such contact situations, is of only secondary importance here. Far from denying possible interference from Niger-Congo languages, it should become clear that assumptions about language contact are not necessary to explain the emergence of tone in Chadic.

The specific vantage point from which to discuss a plausible theory of independent tonogenesis in Chadic is that of a particular type of consonant-tone interference, well known to Bantuists since the 1920s in connection with the notion of "depressor consonants". Concerning tonal depressors and the issue of tonogenesis it may be useful to quote an authority :

"The different effects on tone by voiceless and voiced oral obstruents are manifested today even in nontonal languages... Diachronically this effect has given rise to the introduction or multiplication of tones..." (HOMBERT 1975, quoted in OHALA 1978 : 26).

"The development of contrastive tones on vowels due to the loss of a voicing distinction on obstruents in prevocalic position is probably the most well documented type of tonogenesis. When such development occurs, a relatively low pitch register develops on vowels following the previously voiced series, and a relatively higher pitch is found after the previously voiceless or aspirated series. This process can lead to a multiplication by two of the number of tones. If the language is atonal, it will have two tones after this development ; an already existing two-tone system can be transformed into a four-tone system, and so on." (HOMBERT 1978 : 78).

The Chadic evidence for such type of tonogenesis will appear to fit and, at the same time, not to fit these widely accepted ideas on the emergence of tone. On the one hand, the voicing distinction of syllable-initial obstruents plays the all-decisive role in assigning pitch realizations to following vowels. On the other hand, the voicing distinction is still phonologically operative in these languages, and there is no indication whatsoever that the contrast between voiced and voiceless obstruents, for instance, is being given up. We do, however, observe historical changes concerning the

feature "voiced/voiceless" (in some instances involving the feature "glottalized" as well) within individual Chadic languages or language groups (cf., for instance, NEWMAN 1977 : 15ff. for the West Chadic Angas group and Central Chadic Tera and Bura groups ; WOLFF 1984, 1985a, 1985d for Central Chadic Musgu, Zime-Mesme of the Masa group, and East Chadic Kwang).

Furthermore, and this makes the Chadic case even more interesting, some languages appear to have two coexisting systems which are both built on pitch level distinctions, i.e. non-distinctive "pitch patterns" on the one hand, and fully contrastive "tone patterns" on the other, neatly distributed over different areas of grammar and lexicon. In historical terms : in certain areas of grammar or lexicon pre-existing pitch distinctions have been phonologized so that we are justified to speak of "tone". At the same time, in the same language, other areas of grammar or lexicon have not phonologized the pre-existing pitch distinctions so that no grammatical or lexical oppositions are made use of. I shall exemplify such "dualistic" pitch/tone system by using data from Lamang, a Central Chadic language of the western subbranch (for details of description cf. WOLFF 1983a) : only two verb bases, but all nouns are characterized by basic, yet non-distinctive pitch structures which are predictable from the distribution of syllable-initial consonant types. Two types of non-syllabic segments are distinguished according to their effects on the pitch realization of the following vowel : non-depressor (sonorants, glottalized and voiceless obstruents) and depressor (voiced obstruents). Syllables which begin with a depressor consonant are realized with a lower pitch than syllables which begin with a non-depressor. The depressor effect is most clearly seen in word-initial syllables :

non-depressor

depressor

H : tlá "cow"

L : ghwà "mountain"

H-H : tsxúrá "to sit"

L-L : gùrvà "to dance"

On the other hand, lexically distinctive tone occurs with the word class of the expressives (ideophones, etc.) and with the so-called grammatical morphemes of the language (bound morphemes, prepositions, determiners incl. numerals), e.g.

H :	búǎ	expr.	"pus coming out of a swelling"
L :	bùǎ	expr.	"people being thrown out of their settlement"
H-L :	ǎs̀	verb ext.	separative/partitive
L-H :	̀sǎ	verb ext.	increase/addition (from below)
H :	ǎ	prep.	in, into
L :	̀ǎ	prep.	by, by means of

In addition, tone has a heavy functional load in the verbal aspect/tense system (grammatical tone), e.g.

L-L :	k̀̀li	continuous	"I take"
H-H :	k̀́li	durat. cont.	"I keep taking"
H-H-H :	k̀́k̀́li	perfect. I	"I have taken"
L-L-H :	k̀̀k̀̀li	perfect. II	"I have begun to take"

On top of all this, Lamang uses both tonal accent with nouns and morphophonemic stress with a limited set of construction types.

At one time in their linguistic history, therefore, other Chadic languages might as well have known the cooccurrence of non-distinctive pitch patterns and distinctive tones. In such a constellation, it is quite likely that "tone" (most likely starting off from the prominence of a particularly high pitched syllable) - as opposed to non-distinctive pitch - resulted from a previous accent system. That and how a tonal accent system developed into a tone system independent of language contact in a Chadic language has recently been established for Podoko, a western Central Chadic language closely related to Lamang (WOLFF 1985c). I have argued there that Proto-Podoko had a system with grammatically conditioned prosodic specification at least for nouns - very much like the system recently postulated by HYMAN (1981) for

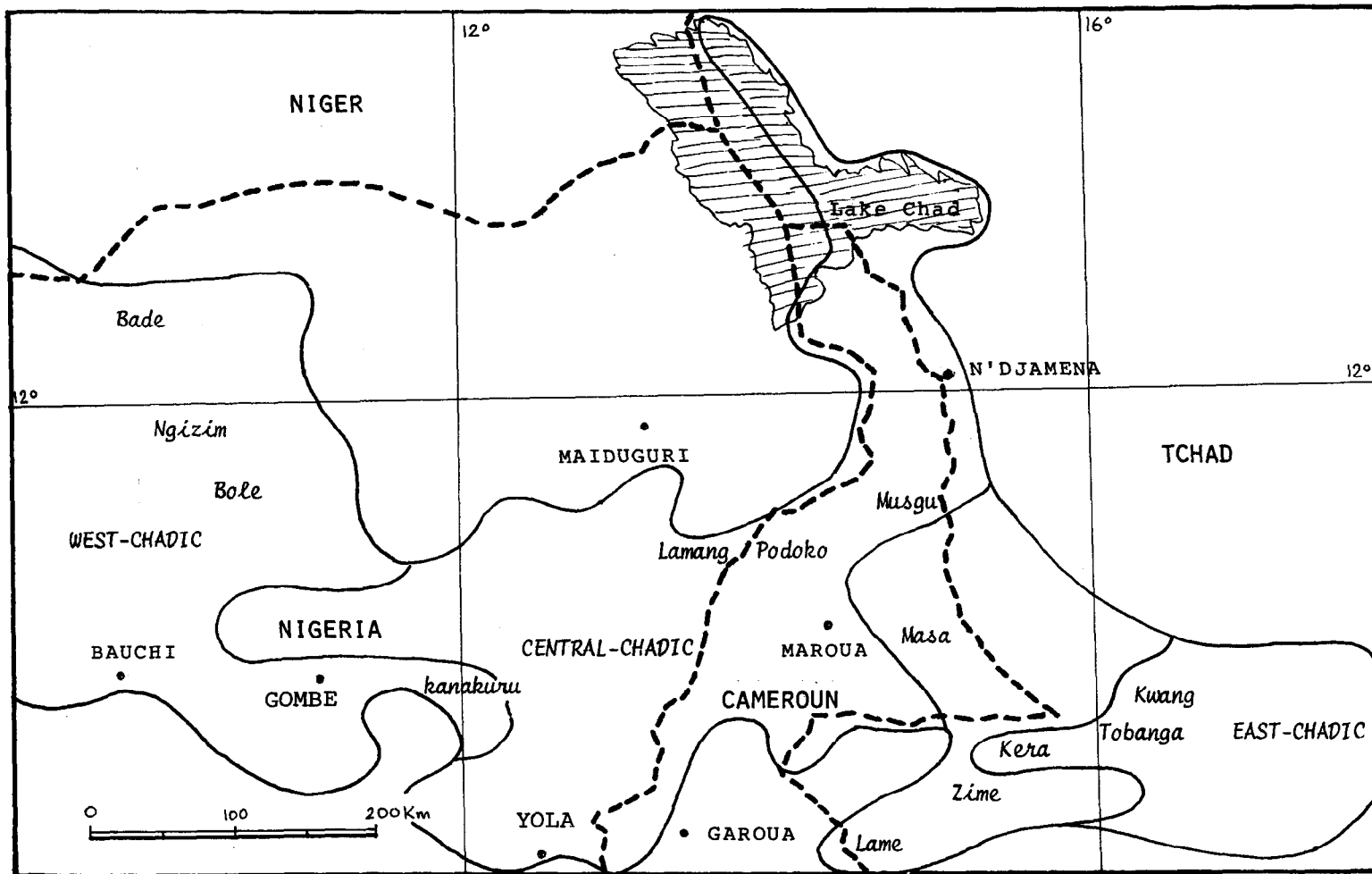
Cushitic Somali, quite distantly related to the Chadic languages under review. In such a system, tonal accent accompanies the marking of categories in the inflectional and/or derivational morphology. To quote an example from Podoko : the fact that a noun of present-day Podoko's tone class 3 like *kəda* "dog" has the following underlying suprasegmental representation

$$\begin{array}{c} / k \text{ ə } d \text{ a } / \\ | \\ / \quad \quad H \text{ } \underset{\circ}{L} \quad / \end{array}$$

is explained by deriving it from a Proto-Podoko "modified" stem which carried a suffix beginning with a depressor consonant and therefore carrying a low pitch. Such modified noun stems obligatorily carried penultimate tonal accent. This tonal accent placement resulted in the association of a H tone with the penultimate syllable of the modified stem, the suffix retained its low pitch conditioned by its initial segment :

$$\begin{array}{c} * / k \text{ ə } d \text{ a } - C V / \\ | \quad | \quad | \\ / \quad -l \quad +H \quad +l / \end{array}$$

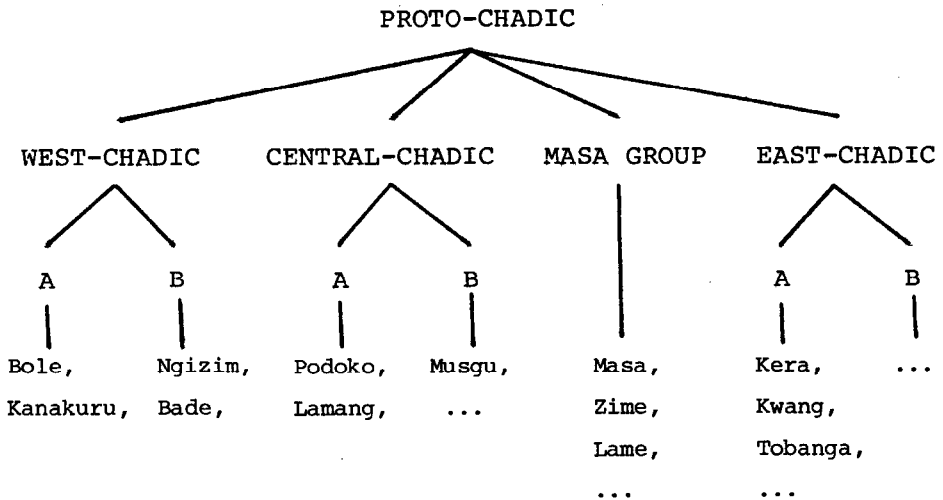
(The non-distinctive basic pitch levels "low" and "non-low" are indicated by using small letters, the tonal accent is indicated by +H.) The segmental part of the suffix was later dropped, grammatical marking became reduced to solely prosodic features, i.e. the unmodified stem would have had the entirely predictable pitch contour non-low followed by low (*/h-l/), while the modified stem, after the loss of the modifying suffix, had the contour non-low followed by high (*/h-H/) with a "floating" low pitch/tone following the actual H tone. Thus, the present day noun for "dog" represents not the simple but the modified Proto-Podoko noun stem which was trisyllabic rather than disyllabic, therefore a pattern of three tones has to be associated with the present-day disyllabic reflex : H-H(-L).



2. THE LINGUISTIC EVIDENCE

For the conspicuous geographical distribution of the at least 13 Chadic languages in which consonant-tone interference has been observed cf. the following map.

For the genetic affiliation of the 13 languages to be discussed, based on a comparative analysis of segmental phonology and lexicon (NEWMAN 1977), cf. the following diagramme in which the branches and sub-branches are arranged from left to right in roughly west-east order :



In the following sections of the paper, I shall present some illustrative data to show that and how the particular consonant-tone interferences operate in these 13 languages. In the sequence of presentation I shall begin with the Masa Group and Central Chadic in the core area of the geographic distribution of the features under review before illustrating evidence from the more peripheral groups from East- and West-Chadic.

2.1. From the Masa Group, Masa itself has been shown to distinguish three types of syllable-initial consonants : depressors (voiced obstruents), non-depressors (all other

consonants with the exception of nasal plosives), and "neutral" consonants which occur with both Low and non-Low tones on the following vowel (nasal plosives) (cf. CAÏTUCOLI 1978). The following verbal nouns show the predictable tones on their stem syllables :

depressor	L	bà-ná	"perdre"
	L	zik-ɲà	"monter"
non-depressor	M	pi-ná	"planter"
	M	cuk-ɲà	"semer"
	M	lut-na	"écraser"
neutral	L	nik-ɲà	"tomber"
	M	nus-nà	"nager"

2.2. SACHNINE's little Lamae vocabulary (1978) suggests a similar situation in this Masa Group language as well, although the membership of the "neutral class" may be quite different, cf. for instance examples with initial /h/ in addition to nasal plosives and prenasalized obstruents :

/h/	L	hùtù	"grind"
	H	húm	"ear"
/m/	M	mata	"corpse" to be compared with
	H	mátá	"die"
/n/	L	nè	"give"
	H	náw	"cow" (loan from Fulfulde ?)
/nd/	L	ndè	"fall"
	H	ndérwa	"scorpion"

(Note in this context that in East Chadic Kera /h/ is the only neutral consonant.)

From the wordlist it will appear that word-initial voiced obstruents are regularly followed by Low tone, voiceless and glottalized obstruents are followed by High tone, although the details of Lamae phonology remain yet to be worked out, especially as regards the underlying nature of the frequent Mid tones.

2.3. The three types of consonants show up clearly in the Zime-Mesme cluster of languages (JUNGRAITHMAYR 1978 ; WOLFF 1985a, 1985b). Cf. the tones of the Mesme verbs in the continuous construction :

depressor	L	núm gò ngòm	"he is learning"
non-depressor	H	núm gò túm	"he is beating"
neutral	L	núm gò hèn	"he is filling"
	H	núm gò hén	"he is shaking".

2.4. The only East Chadic language that I know of for which consonant-tone interference has been explicitly described is Kera (EBERT 1979). Voiced obstruents function as depressors, the only "neutral" consonant is /h/, all others function as non-depressors. Cf. the tones on the first syllables of the "base" forms of the following verbs :

depressor	L	gùsí	"buy"
	L	bèlè	"love"
non-depressor	H	pété	"pluck (feathers)"
	H	mánté	"call"
neutral	L	hèfé	"cut"
	H	háté	"learn"

Cf. also the voiced/voiceless distinction of the simple as opposed to the plural verb bases which is paralleled by a Low/High distinction :

simple base (L)	plural stem (H-H)	
dàr-	tar- > téré	"anlegen"
gàr-	kar- > kéré	"pflanzen"
jàm-	cam- > cémé	"schneiden"

etc.

2.5. With only very few verbs, East Chadic Tobanga has retained traces of consonant-tone interference within the grammatical subsystem of verb pluralization ; cf. the following exhaustive list (CAPRILE 1978) :

non-plural	plural
dörë (4-4)	törë (2-2)
"enlever (un objet)" / "enlever (plusieurs objets)"	
dögë (4-4)	tögë (2-3)
"lancer (un couteau)" / "lancer (plusieurs couteaux)"	
jībë (2-4)	cībë (2-2)
"lancer (une sagaie)" / "lancer (plusieurs sagaies)"	

The integers 1-4 are being used to indicate highest to lowest pitch level. These very few examples nevertheless clearly indicate that changes from voiced to voiceless initial obstruent are clearly accompanied by increase in pitch on at least one syllable of the word (cf. Kera above and Kwang below).

2.6. East Chadic Kwang with its two dialects Mobu and Ngam which have recently been described (LENSSEN 1984), knows plural verb stems which are formed along the same lines as verbal plurals in Kera and Tobanga, i.e. formations that look like synchronic devoicing of the first consonant of the verbal base. The identification of the underlying tones of Kwang verbs is a highly complex matter, certainly LENSSEN's surface structure descriptions do not give the true story (the details of a reanalysis of LENSSEN'S account shall be presented elsewhere, cf. WOLFF 1985d). Suffice it to show here that the shifting from voiced to voiceless obstruent in initial position is accompanied by a shift from Low to Mid tone on the first syllable of the verb stem, for instance in the Ngam dialect. (Note that the plural verb stems in this dialect appear to be lexicalized ; historical analysis, however, allows them to be analyzed as original sg./pl. pairs.)

old simple stem : L-M	old plural stem : (M-)H
gèsi "compter"	kesí "enterrer"
bàti "frapper"	patí "cueillir"
bèdi "incuber"	pedí "tresser"

bè:	"enlever"	pé:	"creuser"
gλdi	"se retourner"	kədí	"se promener"

2.7. Eastern Central Chadic is represented by Musgu. TOURNEUX (1978) noticed some kind of "rapport entre consonnes et tons" in this language, yet without, as it will appear, fully realizing the implications of this discovery for an overall analysis of Musgu. (For a reanalysis of Musgu in terms of consonant-tone interference cf. WOLFF 1984.) There are again three types of consonants to be distinguished : depressors (voiced obstruents), non-depressors (voiceless obstruents), and neutral consonants (sonorants). Cf. the following verbal nouns which clearly show the effect of the word-initial consonant on tone :

depressor	L	zìrí	"aligner"
	L	vìni	"prendre"
non-depressor	H	sírí	"écraser"
	H	fíní	"rester"
neutral	L	yìmì	"attraper"
	H	yímí	"être beau"

The last pair of examples shows how tonal contrast development starts off from the neutral class by phonologizing and lexicalizing prosodic alternations of segmental homophones.

2.8. The prosodic system of western Central Chadic Lamang has already been sketched out and illustrated in section 1 of this paper. All nouns and two verb bases clearly show consonant-tone interference of the type described, there are no neutral consonants (for details cf. WOLFF 1983a).

2.9. As for western Central Chadic Podoko, its disyllabic nouns have been subjected to a thorough analysis by ANDERSON and SWACKHAMER (1981) and have been recently reanalyzed by WOLFF and SWACKHAMER (1985). Most peculiar, Podoko shows downstepping of a Low tone in the environment of a High tone plus syllable-initial depressor - clearly instances of

consonant-tone interference. There are also other reflexes of this interference in certain correspondences between segmental structure and tone class membership (capital "C" = depressor, "c" = non-depressor) :

tone class 2	(a) $\begin{array}{c} \overset{*}{C}vcv \\ \wedge \\ HL \end{array}$	(b) $\begin{array}{c} \overset{*}{C}vCv \\ \wedge \\ HL \end{array}$	(a) /vəðə/ "night"
			(b) /vaga/ "place"
tone class 3	(a) $\begin{array}{c} \overset{*}{c}vcv \\ \\ HL \\ \circ \end{array}$	(b) $\begin{array}{c} cv\overset{*}{C}v \\ \\ HL \\ \circ \end{array}$	(a) /ɗafə/ "fufu"
			(b) /kəda/ "dog"
tone class 4	(a) $\begin{array}{c} cvc\overset{*}{v} \\ \\ H \end{array}$	(b) $\begin{array}{c} cvC\overset{*}{v} \\ \\ H \end{array}$	(a) /kata/ "sifter"
			(b) / ^Y tsaga/ "cooking pot"
tone class 5	$\begin{array}{c} \overset{*}{C}\overset{*}{c}v \\ \quad \\ L \quad H \end{array}$		/buti/ "a sauce"

The H tone in the underlying representations of Podoko disyllabic nouns reflects a morphologically conditioned tonal accent of Proto-Podoko (WOLFF 1985c).

2.10. West Chadic Ngizim distinguishes again three types of consonants according to their effect on suprasegmental structure :

"... voiceless obstruents block the spreading of L and voiced obstruents block the spreading of H. On the other hand, sonorants exert no blocking effect, but rather allow any tone to spread through them." (HYMAN 1973 : 165)

For instance, a Ngizim H tone is lowered to L when it is preceded by a L tone and is followed by another H tone and the syllable begins with either a voiced obstruent or a sonorant (i.e. a phonetically voiced consonant), i.e. LHH > LLH :

/mùgbá + báí/ > mùgbà báí "it's not a monitor"
 /màarém + tén/ > màarè̀m tén "big nose"
 but /šìitá + báí/ > šìitá báí "it's not pepper"

A H tone spreads into a following L tone syllable only if the intervening consonant is a sonorant or a voiceless obstruent, i.e. not a depressor :

/ná bàkè tlùwái/ > ná bàkè tlú!wái "I roasted the meat"

(! indicates downstepping of the syllable to its right.)

In the subjunctive verb stem, the tone of CV verbs patterns with the type of the initial consonant : H tone if it is a voiceless obstruent, L tone otherwise, e.g.

H tone		L tone	
cí	"eat"	mì	"take"
shí	"drink"		

2.11. The examples last quoted from Ngizim resemble the situation in Bade. In this language, the so-called subjunctive stem of the verb which is, possibly, historically the unmarked unit within its verb system, supports the depressor theory :

"... verbs beginning in voiced obstruents are low, others high."
(SCHUH 1977 : 155)

2.12. In West Chadic Bole LUKAS (1969) had already found it necessary to distinguish between "tone permeable" and "tone impermeable" consonants. The class of voiced (non-nasalized) obstruents block the spreading of a preceding H tone onto the syllable which begins with one of these consonants. The tone impermeable consonants correspond to the depressor consonants in other languages, the tone permeable consonants correspond to the non-depressors (in Bole they include sonorants, glottalized obstruents, voiceless obstruents, nasalized obstruents). Cf. the blocking of the spreading of the H tone of the first syllable into the second syllable in the following examples, once the second syllable begins with a voiced obstruent :

kábàltúwòoyí	<	bàltú	"you have enclosed"
kákú máawòoyí	<	kùmáa	"you have heard"

consonant-tone interference. There are also other reflexes of this interference in certain correspondences between segmental structure and tone class membership (capital "C" = depressor, "c" = non-depressor) :

tone class 2	(a) $\overset{*}{C}vcv$ \bigwedge HL	(b) $C\overset{*}{v}Cv$ \bigwedge HL	(a) /vəɗə/ "night" (b) /vaga/ "place"
tone class 3	(a) $c\overset{*}{v}cv$ HL _o	(b) $cv\overset{*}{C}v$ HL _o	(a) /ɗafə/ "fufu" (b) /kəda/ "dog"
tone class 4	(a) $cvc\overset{*}{v}$ H	(b) $cv\overset{*}{C}v$ H	(a) /kata/ "sifter" (b) / ^y tsaga/ "cooking pot"
tone class 5	$\overset{*}{C}\overset{*}{v}cv$ L H		/buti/ "a sauce"

The H tone in the underlying representations of Podoko disyllabic nouns reflects a morphologically conditioned tonal accent of Proto-Podoko (WOLFF 1985c).

2.10. West Chadic Ngizim distinguishes again three types of consonants according to their effect on suprasegmental structure :

"... voiceless obstruents block the spreading of L and voiced obstruents block the spreading of H. On the other hand, sonorants exert no blocking effect, but rather allow any tone to spread through them." (HYMAN 1973 : 165)

For instance, a Ngizim H tone is lowered to L when it is preceded by a L tone and is followed by another H tone and the syllable begins with either a voiced obstruent or a sonorant (i.e. a phonetically voiced consonant), i.e.

LHH > LLH :

/mùgbá + báí/ > mùgbà báí "it's not a monitor"
/màarém + tén/ > màarè̀m tén "big nose"
but /šìitá + báí/ > šìitá báí "it's not pepper"

A H tone spreads into a following L tone syllable only if the intervening consonant is a sonorant or a voiceless obstruent, i.e. not a depressor :

/ná bàkè tlùwái/ > ná bàkè tlú!wái "I roasted the meat"

(! indicates downstepping of the syllable to its right.)

In the subjunctive verb stem, the tone of CV verbs patterns with the type of the initial consonant : H tone if it is a voiceless obstruent, L tone otherwise, e.g.

H tone		L tone	
cí	"eat"	mì	"take"
shí	"drink"		

2.11. The examples last quoted from Ngizim resemble the situation in Bade. In this language, the so-called subjunctive stem of the verb which is, possibly, historically the unmarked unit within its verb system, supports the depressor theory :

"... verbs beginning in voiced obstruents are low, others high."
(SCHUH 1977 : 155)

2.12. In West Chadic Bole LUKAS (1969) had already found it necessary to distinguish between "tone permeable" and "tone impermeable" consonants. The class of voiced (non-nasalized) obstruents block the spreading of a preceding H tone onto the syllable which begins with one of these consonants. The tone impermeable consonants correspond to the depressor consonants in other languages, the tone permeable consonants correspond to the non-depressors (in Bole they include sonorants, glottalized obstruents, voiceless obstruents, nasalized obstruents). Cf. the blocking of the spreading of the H tone of the first syllable into the second syllable in the following examples, once the second syllable begins with a voiced obstruent :

kábàltúwòoyí	<	bàltú	"you have enclosed"
kákú máawòoyí	<	kùmáa	"you have heard"

'ń zòngé < zòngé "to the hyena"
'ń túrùm < tùrùm "to the lion"

2.13. West Chadic Kanakuru has predictable tones in its verb system :

"For many verbs the underlying tone is almost entirely predictable on the basis of the segmentals used. If a verb begins with a voiced stop, its tone will be Hi...Lo. There are no exceptions. If it begins with a <-vd> stop, either voiceless or glottalized, its tone will be Lo...Hi. There are a few exceptions. Tone for sonorant or vowel initial verbs cannot be assigned by rule." (NEWMAN 1974 : 14).

As described, the situation in Kanakuru appears to be upside-down to what we expect. But the assumption of just one additional rule of tone dissimilation, i.e.

(<H>) <H> <H> \Rightarrow (<-H>) <-H> <H>

will restore a situation which fully corresponds to the expected pattern :

depressor	*dàpè > dápè	"collect"
	*gémì > gémì	"fill"
non-depressor	*túpé > tùpé	"send"
	*shéní > shèní	"remember"
neutral	*lúkúré > lùkùré	"disperse"
	*làpèrè > lápèrè	"hold down"
	*wúpé > wùpé	"sell"
	*wùpè > wípè	"knot"

3. CONCLUSION

Once we start looking at the linguistic map of the Lake Chad Basin we are struck by the areal clustering of the Chadic languages mentioned above which all share this particular type of consonant-tone interference : it is the easternmost West Chadic, the westernmost East Chadic languages and the languages between these two groups, i.e. from the Masa

group and from the two subbranches of Central Chadic. This distribution, whatever conclusions we draw from it, is highly significant.

If the particular feature of consonant-tone interference in our case is not to be attributed to universal properties of the human language, the only plausible explanation would appear to be - under our theory concerning atonal Proto-Afroasiatic and Proto-Chadic ancestorship - a common adstratum, most likely of Niger-Congo provenance. This hypothesis would account for type and areal distribution of the supra-segmental system in the languages enumerated in this paper - it would not, however, account for the fact that a good hundred or more Chadic languages are also tonal, yet of different typological class membership - as it will appear at the time being.

If, however, and this is what I am inclined to think, we are dealing with truly universal and basic linguistic properties, then the languages under review might have simply retained typological features from the earliest times of their linguistic history and the areal distribution of these features would be rather coincidental - if it is not an indication that only in the "core area" of Chadic, independent of branch membership, these prosodic "archaisms" have been retained while they have been lost in all those subbranches and groups which have geographically moved away from this "core area".

The "retention model" as opposed to the "interference model" would also account for the observation that considerable differences exist between these languages which can hardly be accounted for by a "common adstratum hypothesis", as to

- (i) which consonants, other than the depressors, are grouped as non-depressors or neutral consonants ;
- (ii) which classes of lexemes are affected by consonant-tone interference : only verbs in one particular inflectional category, all verbs, only some or all the nouns, both

nouns and verbs, etc.

If we are right in accepting the retention model as the likely historical explanation, this would have immediate repercussions on other central issues in comparative Chadic and comparative Afroasiatic research which, to an extent which I find hard to accept, tend to rely on the identification of so-called archaisms and, to an extent which I find hard to accept, the labelling of whole languages or groups of languages as more or less "archaic" or "innovative" (cf., for instance, JUNGRAITHMAYR 1977 and ZABORSKI 1983, who seem to simply "know" that Central Chadic languages are "rather innovative", while their "evidence" for such evaluation is based almost entirely on aprioristic reasoning and is, therefore, not at all convincing !).

The theory which I wish to tentatively propose assumes that, if or although Proto-Chadic was atonal, different pitch realizations, based on the nature of syllable-initial segments, played already a role in the earliest periods of Chadic linguistic history, most likely in combination with "tonal accent" phenomena. And that it was part of the individual language's history to develop different ways to phonologize and grammaticalize and/or lexicalize the inherited universalistic pitch realizations (quite likely under the influence of tonal accent phenomena ; cf. WOLFF 1985c, 1985d). In short : for Chadic languages to develop tonality, it is not necessary to postulate interference from non-Chadic languages. Rather, several languages in the core area of Chadic language distribution which belong to all four branches presently distinguished, suggest that independent tonogenesis is at least as likely a theory to account for the facts as is any other - if not a likelier one.

As for the wider application of the results of comparative Chadic suprasegmental phonology to Afroasiatic linguistics, Cushitists and Omoticists should feel encouraged to apply the method of internal reconstruction to the suprasegmental structure of their languages. It is quite possible that they will come up with reconstructions of Proto-

Cushitic and/or Proto-OmotiC tonal accent systems which are typologically similar to what we have begun to discover in Proto-Chadic. It would be rewarding to soon read a paper on tonogenesis hypotheses for Cushitic and/or Omotic. From the Semitists one would like to read about a comparative study on accent patterns from the earliest sources to the various dialects of Semitic languages spoken today, to be complemented by a comparative study on accent in Berber. I dare predict that comparative Afroasiatic suprasegmental phonology will provide the solutions to more problems of comparative phonology and morphology than we are able to imagine today.

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