

The Tonal Structures of Nkoroo and Defaka Nominal Constructions¹

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1. Introduction

A comparison of the tone structures of nominal constructions in Defaka and Nkoroo, two most closely related Ijoid languages, reveals that one of the remaining distinguishing features is the tonal system.

Of the two, Defaka is the more endangered language, with probably less than 100 speakers left. All Defaka speakers are bilingual in Defaka and Nkoroo, but Nkoroo speakers (in most cases) do not speak Defaka. This would suggest a convergence of the tonal systems of the two languages over time, favoring Nkoroo.

However, the evidence presented here shows that while Nkoroo has moved in the direction of an accentual system, Defaka remains a true tone system, with some structural borrowing from Nkoroo.

2. Key claims

❶ Viewed from a processorial perspective, the output tone patterns of Nkoroo nominal compounds and proclitic+host structures reveal a cocktail of processes, including postulation of a floating tone, tone spreading, and tonal metathesis. However the result of each process is the same (fixed output pattern) regardless of input tone structure.

❷ The output tone pattern of the same structures in Defaka reveals that Defaka borrowed and broadened some fixed patterns in nominal compounds, but the output tone patterns of nominal phrases are contextually derived.

❸ The overall pattern shows that Defaka speakers are able to keep the tone system distinct from that of Nkoroo, contrary to an expectation of convergence.

Both Defaka and Nkoroo are two-tone plus downstep languages.

Noun + Noun Compounds

HH as Noun 1

(1)	HH + HH	(floating L?)		
	bú	ápàrá	→	bú ápàrà
	body	skin		skin (of body)
	ápá	ɲmgbá	→	ápá ɲmgbà
	shoulder	bone		shoulder blade
	fóní	bébé	→	fóní bébé
	bird	mouth		beak

The compound takes the tone pattern HL. Fall occurs after the first syllable of the second noun. Tone of Noun 1 remains unchanged.

(2)	HH + LL	(H spread?)		
	kíní	òkpò	→	kíní òkpò

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person	back		human back
ndó	mìndì	→	ndó m̀ndì
breast	water		milk
bíó	tòngù	→	bíó t̀ngù
leg	edge		heel

The compound takes the tone pattern HL.

(3)	HH + HL	(No change)	
	bíó	fúró	→ bíó f̀ró
	leg	belly	thigh
	bíó	kírì	→ bíó k̀rì
	leg	land / ground	foot

The compound takes the tone pattern HL.

(4)	HH + H ¹ H (same as HH)		
	bú	dí¹mé	→ bú dí¹mè
	body	hair	hair (of body)
	namá	dí¹mé	→ namá dí¹mè
	animal	hair	fur

The compound takes the tone pattern HL.

(5)	HHH + LH		
	ánaná	t̀kú	→ ánaná t̀kù
	sheep	child	lamb
	óbórí	t̀kú	→ óbórí t̀kù
	goat	child	kid

Now what is going on in (5)? Tone spreading? Tonal metathesis? Or just a pattern? The compound takes the tone pattern HL.

HL as Noun 1

If the fall already occurs on the first noun, there cannot be a second fall on the second noun. So, there are no HLHL compounds.

(6)	HL + HH		
	barà	ngbá	→ barà ngbà
	arm/hand	bone	arm bone
	barà	nmémé	→ barà nmèmè
	arm/hand	nail / claw	finger nail
	dímè	ngbólí	→ dímè ngbòlì
	palm	seed	palm nut
	dímè	ápá	→ dímè ápà
	palm	shoulder	palm frond

After an HL Noun 1, HH nouns turn to LL. The compound still takes the tone pattern HL.

(7) HL + LL (no change)

ḅàrà	k̀ng̀g̀	→	ḅàrà k̀ng̀g̀
arm/hand	neck		lower arm
ḅàrà	àlèkì	→	ḅàrà lèyì
arm	upper		upper arm

The compound still takes the tone pattern HL.

(8) HL + LH (L spread? Where is the final H?)

wàrì	t̀k̀k̀	→	wàrì t̀k̀k̀
house	child		domestic servant

Compare this form to the one in (5), where **t̀k̀k̀** “child” takes the tone pattern HL after a Noun 1, ending in H tone.

LL as Noun 1

(9) LL + HH

k̀k̀ẁ	ng̀gb̀l̀	→	k̀k̀ẁng̀gb̀l̀
scrotum	seed		testicle
òkp̀	ng̀gb̀	→	òkp̀ ng̀gb̀
back	bone		spine/backbone
m̀nd̀	ìk̀k̀	→	m̀nd̀ ìk̀k̀
water	tortoise		turtle

(10) LL + HL

d̀d̀	k̀r̀	→	d̀d̀ k̀r̀
farm	ground/land		village

(11) LL + LL

m̀nd̀	àb̀ǹ	→	m̀nd̀ àb̀ǹ
water	pit		well
̀nd̀z̀	àb̀ǹ	→	̀nd̀z̀ àb̀ǹ
fish	pit		fish pond

(12) LLL + LH

ǹmb̀l̀	t̀k̀k̀	→	ǹmb̀l̀t̀k̀k̀
cow	child		calf
ḅ̀d̀k̀	t̀k̀k̀	→	ḅ̀d̀k̀ t̀k̀k̀
chicken	child		chick

Generalizations:

- (a) The compound has a HL pattern, unless Noun 1 begins with an L tone.
- (b) The tone of Noun 1 does not change
- (c) Noun 2 takes HL pattern except when the Noun 1 ends in an L. In this case, the compound takes the form LL.

3. Analysis

(13) In a rule based framework:

Floating L	ǃú	ápara	→	ǃú	ápàrà
H spread	ǃíní	òkpò	→	ǃíní	ókpò
L spread progressive	ǃàrà	ǃmǃbá	→	ǃàrà	ǃmǃbà
	mìndì	íkákí	→	mìndì	ìkàkì
	ǃòòkò	tòkú	→	ǃòòkò	tòkù
Metathesis	ánána	tòkú	→	ánána	tòkù

Problem: Treating it this way loses sight of the fact that all the processes seek to arrive at one single pattern, HL for compounds, whose exception occurs only when Noun 1 ends in L.

Proposal: The pattern HL defines compounds. When N1 is L initial, the compound is L-toned. Such constraints, referring to morphemes, must be recognized in the constraints system.

4. Nominal Compounds in Defaka

After nouns ending in H tone, there is no tonal change, except that HL becomes LL.

(14) HH + HH:	No tonal change in compounds.		
	ǃíǃǃí	íǃbé	ǃíǃǃí íǃbé
	knife	box	box of knives
	ǃúmbé	lúá	ǃúmbé lúá
	kolanut	basket	kolanut basket
HH + LL:	No tonal change in compounds		
	ókpó	ǃpàná ǃà:	ókpó ǃpàná ǃà:
	fish basket	cover	fish smoking basket cover
	lúá	ǃpàná ǃà:	lúá ǃpàná ǃà:
	basket	cover	basket cover
HH + HL:	Change of HL to LL.		
	ápá	mǃbwà	ápá mǃbwà
	shoulder	bone	shoulder blade
	nóm	mǃbwà	nóm mǃbwà
	person	bone	skeleton

This tone change in compounds is probably a borrowing from Nkoroo. The HL tone change to LL cannot be right to left tone spreading because it takes place after nouns ending in H tone, as the preceding examples show. (It also occurs after nouns ending in L tone, as shown below.) It only occurs in compounds but not in phrases.

(15) Phrasal example (no HL → LL):

nóm	pàrà	→	nóm	pàrà
person	leg		human	leg

After nouns ending in L tone (HL becomes LL) (One step tone spreading?)

(16)	LL	HL		
	èbè	pàrà	→	èbè pàrà
	pig	leg		pig leg
	èberè	pàrà	→	èberè pàrà
	dog	leg		dog leg
	òbò	mbwà	→	òbò mbwà
	back	bone		spine
	tìnà	tóbò	→	tìnà tóbò
	fish	head		fish head
	yìè	tóbò	→	yìè tóbò
	bird	head		bird head
	tìnà	nìò	→	tìnà nìò
	fish	tail		fish tail
	èbè	nìò	→	èbè nìò
	pig	tail		pig tail
	àgarà	nìò	→	àgarà nìò
	lizard	tail		lizard tail

(17) HL + HL: HL becomes LL everywhere after noun ending in L.

ídò	?ià	bìò	→	ídò	?ià	bìò
farm	road/space/passage			farm	road	
ídòù	?ià	bìò	→	ídòù	?ià	bìò
village road				village road		
ándù	?uà		→	ándù	?uà	
boat	end			boat	stern	

(Note: **road** is a compound **?ià** **bìò** passage/road/passage)

The tonal change here is cyclic. The second in (**?ià** **bìò**) HL HL “road” changes to LL in the compound, and the first HL now changes to LL after **ídò** “farm”, or **ídò ?ù** “village”.

But is this L tone spreading? L tone does not “spread” if the second noun is HH.

(18) LL + HH: No tone change. Final L tone of N1 does not spread to N2.

ìgò	ápá	→	ìgò	ápá
eagle	wing/arm			
tìnà	ídzá	→	tìnà	ídzá
fish	pot			
yìè	ápá	→	yìè	ápá
bird	wing/arm			

(19) HL + H :No change

ándù	bé:	→	ándù	bé:
boat	mouth		mouth of boat	

The fact that there is no tone spreading in the examples in (18 – 19) can be blamed on one of two things.

- (a) that the tone spread is restricted to HL nouns, or
- (b) that there is really no tone spreading in Defaka compounds.

The first possibility cannot be correct because it is highly unusual for tones to select certain High tones to spread to. For example spreading will take place if the first H is followed by a L (i.e. HL), but will not take place if the first H is followed by another H (i.e. HH).

We adopt the second possibility that there is no tone spreading at all in Defaka compounds. This possibility is supported by the fact that the tone change is not conditioned by the environment. The tone change (HL→ LL) takes place regardless of the preceding tone (H or L), like in Nkoroo.

(20) More compounds: tonal change not dependent on preceding context: **mbwà** ‘bone’

After L

bà:mà mbwà (or **bà: mbwà**) rib

After H

kwó 'má mbwà (or **kwó 'má mbwà**) breast bone

Summary:

Defaka tone change has two characteristics: (a) tone change is not dependent on preceding context: it occurs after both L and H tones. (b) The tone change is restricted to compounds, and does not take place in phrases, as shown below.

5. Nkoroo Noun Phrases

Short pronouns

Subject short pronouns plus nouns have the same tone structure as compounds. This suggests that the pronouns cliticise with the nouns.

A noun changes to L tone after the L tone clitic, and becomes HL after an H tone clitic, regardless of its underlying tone.

- (20) HH noun: **tébé** head
 ì tèbè my head
 í tébè your head
 wá tébè our head
- (21) HL noun: **tòrù** eye
 ì tòrù my eye
 í tòrù your eye
 wá tòrù our eye
- (22) LL noun: **kólò** walking stick
 ì kólò my walking stick
 í kólò your walking stick
 wá kólò our walking stick
- (23) LLH noun: **òmòmò** fly
 yè òmòmò my fly
 yé òmòmò your fly
 wá òmòmò our fly

It is always possible to claim that the L of the first person spreads to the noun, and the H of the second and third persons spread to the noun. Note that the isolation tone pattern of this noun is LLH. But in all cases, it takes only two tone patterns: it is HLL or LLL. The question is, where is the final H of the isolation form in all cases? To account for this with rules, we MUST assume a “floating” final L and tone spreading from the clitics. Doing this, the overall picture gets lost. The generalization is that the clitic+noun host tone pattern is HL, else LL if the clitic is L.

6. Defaka Noun Phrases

Short Pronouns

In phrases, a final L spreads to a following H tone, as seen in the following examples, but only in HL nouns. Unlike in Nkoroo, the output tone pattern is not fixed. (Compare 23 above with 24c).

- (24a) Pronominals
 ìrì káró my needle (káró needle)
 írì káró your needle
 wá⁴rì káró our needle
- (24b) ì tòbò my head (tòbò head)
 í tòbò your head (tòbò head)
 wá tòbò our heads (tòbò head)

- (24c) ìrì òmòmó my fly (òmòmó fly)
 í'rí òmòmó your fly
 wá'rí òmòmó our fly

7. Numerals in Nkoroo

Generalizations

The numeral “one” behaves like it is compounding with the noun. The tone pattern is the same HL that compounds have. The other numerals (“two”, “three”, four) do not have the same effect that preceding clitics have on following hosts. Therefore we must assume that there is no tone spreading in phrases.

The numerals 5-9 comes a clitic-like element, a Low-tone [a]. The L tone of the [a] spreads to the initial syllable of the noun.

Compare all the forms meaning “one X”. Compare the forms meaning “eight X” Compare both of these with the forms preceded by L tone (“two X”) and the forms preceded by H tone (“three X”).

- (25) HH noun: tébé head
 bóri tébè one head
 màà tébé two heads
 tára tébé three heads
 sóónó à tèbè **five heads**
 níini à tèbè **eight heads**
- (26) HL noun: tórù eye
 bóri tórù one eye
 màà tórù two eyes
 tára tórù three eyes
 níini à tórù eight eyes
- (27) LL noun: kólò walking stick
 bóri kólò one walking stick
 màà kólò two walking sticks
 tára kólò three walking sticks
 níini à kólò eight walking sticks
- (28) LLH noun: òmòmó fly
 bóró: mòmò one fly
 màà òmòmó two flies
 tára òmòmó three flies
 níini à òmòmò eight flies

8. Numerals in Defaka

(29) Numerals (No participation)

$\widehat{g\acute{b}er\acute{i}}$	$\widehat{d\acute{z}i\grave{y}\grave{a}}$	one house	(HL noun)
$m\grave{a}:m\grave{a}$	$\widehat{d\acute{z}i\grave{y}\grave{a}}$	two houses	
$t\acute{a}:t\acute{a}$	$\widehat{d\acute{z}i\grave{y}\grave{a}}$	three houses	
$m\grave{a}\eta\grave{g}\grave{a}$	$\widehat{d\acute{z}i\grave{y}\grave{a}}$	six houses	

(30) $\widehat{g\acute{b}er\acute{i}}$ $t\grave{i}\grave{n}\grave{a}$ one fish (LL noun)

$m\grave{a}:m\grave{a}$	$t\grave{i}\grave{n}\grave{a}$	two fishes
$t\acute{a}:t\acute{a}$	$t\grave{i}\grave{n}\grave{a}$	three fishes
$m\grave{a}\eta\grave{g}\grave{a}$	$t\grave{i}\grave{n}\grave{a}$	six fishes

(31) $\widehat{g\acute{b}er\acute{i}}$ $s\grave{o}\grave{n}\grave{o}$ one ant (HH noun)

$m\grave{a}:m\grave{a}$	$s\grave{o}\grave{n}\grave{o}$	two ants
$t\acute{a}:t\acute{a}$	$s\grave{o}\grave{n}\grave{o}$	three ants
$m\grave{a}\eta\grave{g}\grave{a}$	$s\grave{o}\grave{n}\grave{o}$	six ants

(32) $\widehat{g\acute{b}er\acute{i}}$ $\grave{a}g\grave{a}\grave{r}\grave{a}$ lizard (LHL noun)

$m\grave{a}:m\grave{a}$	$\grave{a}g\grave{a}\grave{r}\grave{a}$	two lizards
$t\acute{a}:t\acute{a}$	$\grave{a}g\grave{a}\grave{r}\grave{a}$	three lizards
$m\grave{a}\eta\grave{g}\grave{a}$	$\grave{a}g\grave{a}\grave{r}\grave{a}$	six lizards

9. Demonstratives in Nkoroo

Among demonstratives, “this” and “that” behave differently from “some” and “many”. While “this” and “that” appear to share the tonal characteristics of the compound nouns, “some” and “many” leave the underlying tone pattern of the noun unaffected.

Compare the forms meaning “this X” and “that X” with the isolation forms of the nouns.

(Voiceless) consonants block H tone spreading here. Therefore we have used both vowel and consonant initial nouns to illustrate the tonal structures.

(33)	HH noun:	$\acute{a}r\acute{u}$	canoe
	$m\acute{i}$	$\acute{a}r\grave{u}$	this canoe
	$\grave{a}m\grave{i}$	$\grave{a}r\grave{u}$	that canoe
	$d\acute{z}i\acute{a}$	$\acute{a}r\acute{u}$	some canoes
	$s\acute{u}\grave{u}(s\grave{u})$	$\acute{a}r\acute{u}$	many canoes

$t\acute{e}\acute{b}\acute{e}$	head	
$m\acute{i}$	$t\acute{e}\grave{b}\grave{e}$	this head
$\grave{a}m\grave{i}$	$t\acute{e}\grave{b}\grave{e}$	that heads

- | | | |
|------|--------------------|---------------------|
| | dʒíá tébé | some heads |
| | súu(sù) tébé | many heads |
| (34) | HL noun: ówù | sand |
| | mí ówù | this sand |
| | àmì ówù | that sand |
| | dʒíá ówù | some sands |
| | súu(sù) ówù | many sands |
| | tórù eye | |
| | mí tórù | this eye |
| | àmì tórù | that eye |
| | dʒíá tórù | some eyes |
| | súu(sù) tórù | many eyes |
| (55) | LL noun: àkpà | eye |
| | mí àkpà | this eye |
| | àmì àkpà | that eye |
| | dʒíá àkpà | some eyes |
| | súu(sù) àkpà | many eyes |
| | kòlò walking stick | |
| | mí kòlò | this walking stick |
| | àmì kòlò | that walking sticks |
| | dʒíá kòlò | some walking sticks |
| | súu(sù) kòlò | many walking sticks |
| (36) | LLH noun: òmòmó | fly |
| | mí òmòmó | this fly |
| | àmì òmòmó | that fly |
| | dʒíá òmòmó | some flies |
| | súu òmòmó | many flies |

10. Demonstratives in Defaka

(37) Demonstratives (no participation)

àjà	ándù	this canoe
òwàrà	ándù	these canoes
nùmà	ándù	that/those canoe(s)
à	ándù	the canoe

ídʒù ándù many canoes
nana ándù some canoes

11. Conclusions

Nkoroo noun compounds and pro-clitic+noun host combinations share a fixed tone pattern: they take a uniform HL pattern, except the noun is L-toned, and the entire structure is L. This output tone occurs without regard to the input tone of the noun.

Defaka noun compounds retain the underlying tone patterns of the nouns, except when the second noun has underlying HL tone. In this case the HL tone becomes LL, regardless of the tone of the preceding noun. Pro-clitic+noun host combinations spread a L tone one step when the following noun is HL, otherwise output tone is the same as input tone.

The overall pattern shows that Defaka speakers are able to keep the tone system distinct from that of Nkoroo, though there has been some structural borrowing from Nkoroo. Defaka has also resisted the gradual movement in the direction of an accentual system which is now widespread in Ijoid (Williamson 1986).