

# The numeral system of Proto-Niger-Congo

A step-by-step reconstruction

Konstantin Pozdniakov

Niger-Congo Comparative Studies 2



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## 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

In this chapter we will try to create a step-by-step reconstruction of numeral systems for each separate family independent of the data from the other NC families. For each family we shall examine the range of basic numerals from ‘1’ to ‘10’ and then the numerals for ‘20’, ‘100’ and ‘1000’. We begin our overview with the largest family, Benue-Congo.

### 4.1 Benue-Congo

There is no Benue-Congo classification that is accepted by all scholars. As noted, the inventory of Benue-Congo groups mainly follows the classification of Kay [Williamson \(1989: 266–269\)](#). We repeat here the scheme of BC given above, in the introduction as Table 4.1.

Table 4.1: Benue-Congo languages

*Western BC	*Eastern BC	Isolated BC
Nupoid	Kainji	Oko
Defoid	Platoid	Akpes
Edoid	Cross	Ikaan
Igboid	Jukunoid	Lufu
Idomoid	<b>Bantoid</b>	

Let us begin our overview with the largest group of Bantoid languages.

### 4.1.1 The Bantoid languages (including Bantu)

The reconstruction of numerals in the Bantoid languages is based on 140 sources for the major branches of this family. What follows is the result of our step-by-step analysis of numeral systems in these languages.

#### 4.1.1.1 ‘One’

We shall collect the main forms for ‘1’ in different branches of the Bantoid languages. The last column of Table 4.2. shows some isolated forms for ‘1’ which seem to be innovations.

At first glance, the terms for ‘1’ in the majority of the Bantoid languages appear to be quite homogeneous, their roots being traceable to either *\*mo?* or *\*moi/mwi* of uncertain etymology. The misleading similarity of the Bantu roots *mòì*, *mòdì*, *mòtì* may be due to the merger of the noun class prefix *\*mò-* with the nominal base.<sup>1</sup> This hypothesis (developed in detail in Vanhoudt 1994) has now found its way into the BLR (cf. BLR3 *sub mòdì* (NC): ‘*plutôt mò-òdì*: voir Vanhoudt 1994’).

Among other common Bantu forms are *mòcà* (zones KN), *mòtì* (ABCEGHKLRs) < *\*mò-òtì*, *móégá* (zones BH) (BLR3: *mòì* + suffix), and *mòì* (ABCDEFGJKLMRS). As will be shown below, the presence of a nasal prefix in the Bantoid numerals is suggested by the distribution of these forms in Benue-Congo. Those BC branches that have nasalless roots within the nominal classes ‘one’ and ‘three’ lack the terms for ‘one’ with a nasal consonant.

This interpretation, however, does not address two major issues, namely 1) whether the forms in question (e.g. *\*-òdì/-oti/-o?i*<sup>2</sup>) consist of one or more roots and 2) whether the open back vowel belongs to the root.

A solution to the former problem may turn out to depend on how the latter is treated.

Within the context of Niger-Congo, it is conceivable that the Proto-Bantu *òdì* may go back to *\*ò-dì*, with *\*ò-* being a marker of the NC noun class 1 (*\*ko-/ ?o-* according to my reconstruction). This hypothesis will receive a more detailed treatment in the next chapter. At this point, we will only note that it is quite problematic to explain the common reflexes of *\*-dì*, *\*tì*, and *\*ʔ-* in Bantu within this hypothesis. Moreover, the etymological relationship between these roots (disregarding *\*dì* and *mɔ(m)* (Tivoid), *ó-mè* (Mbe), *ma* (Mamfe), etc.) would be much less transparent than that in case of *modì ~ moti* or even *-odi ~ -oti*.

<sup>1</sup>I agree with Larry Hyman who reacted to this point: “This would suggest that ‘1’ was a noun; possible, just like ‘10’, but note that ‘2’–‘5’ are not nouns!” (p.c.).

<sup>2</sup>Larry Hyman: “The glottal stop goes back to a velar in Grassfields; it could be either alveolar or velar in Tikar”. (p.c.).

Table 4.2: Bantoid stems for ‘1’

Branch	Language	‘1’	‘1’	‘1’
Northern				
Dakoid	Chamba-Daka			nòòní
*Mambiloid		mwi	cin, jer	
Fam				wuni <sup>a</sup>
Tiba (Fà)			à-kīn-á	
Southern				
*Bantu <sup>b</sup>		mòi/mòdì, mòtí		p/m/b-ókó
*Beboïd		mwi/mu		baka, kpaŋ
*Yemne-Kimbi		mwe		
*Ekoid			ji(ŋ)/rəŋ?	yet? <sup>c</sup> (dík)
*Jarawan		mo?		
*Mamfe		mot/ma		
*Mbam		mwe/mù?		
Mbe	Mbe	ó-mè		
Ndemli	Ndemli	mòhó		
Tikar	Tikar	mbə?		
*Tivoid		mə(m)		
*Esimbi				nə
Wide Grassfields	Befang	mo?		
GF: Mbam-Nkam	Bamileke	mo?		cu
GF: Mbam-Nkam	Ngemba	mə?		
GF: Mbam-Nkam	Nkambe	mo?(sír)		
GF: Mbam-Nkam	Nun	mo?		
GF: Momo		mo?		fɪŋ
GF: Ring		mo?		

<sup>a</sup>The Fam and Tiba (Fà) forms are quoted according to Blench (n.d.) and Boyd (1999) respectively. The online version of Boyd (<https://hal.archives-ouvertes.fr/hal-00323718v3>) differs from the printed one.

<sup>b</sup>An asterisk (\*) in the second column of the tables (here and below) means that in the corresponding line all the forms are reconstructed. However, with the exception of the Proto-Bantu line, which indicates real reconstructions in BLR3 (\*), all other reconstructions are hypothetical (#) and reflect the most typical form/forms attested in a particular branch of Benue-Congo. Forms that may be related are grouped in tables within the columns. The last column of the tables shows isolated forms that are likely to be innovations.

<sup>c</sup>Concerning the form *yet* in Ekoid, I quote a precious remark of John Watters (p.c.): “The actual root for Proto-Ekoid may be -t ~-d. The /aŋ/ in some Ekoid languages may be an accretion. The *yét* morphologically is /yé-t/ with the CV being a class agreement prefix, and -t being the root. So the -t may be closer to the Bantu *moti*. I’m not sure how *ó-mè* in Mbe figures in with the rest of Ekoid, but one possibility is that the -mè root derives from /me-t/. Ekoid needs further work”.

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The secondary PB form \*ókó (zones ABCHF) (BLR3: "Janssens 1994: alternance C1 p/m/b-ókó- protoforme secondaire, cf. 'seul'") is comparable to \*baka (Beboid: Fio mbákâ ~ nbáhá, Nchane (Mungong) m<sup>4</sup>ba<sup>3</sup>ka<sup>4</sup>). It should be noted that the above considerations allow us to explain the initial consonant (and the following back vowel) in these forms as noun class morphemes, too.

The Northern Bantoid *kin/cin* is remarkable and will be addressed later in this chapter.

The Bamileke \*tʃu (Fefe ʃuʔ, Medumba antʃuʔ, Nda'nda' ɲtʃɔʔ, etc.) is possibly related to the Bantu \*tv (BCDEGLP) 'alone, empty, vain'.

##### 4.1.1.2 'Two' and 'Three'

Without exception, the reconstructed root for 'two' in all Bantoid branches has an initial labial consonant, either voiced (b-) or voiceless (p-/f-). A more precise reconstruction of the proto-form is beyond my cognizance. The forms cited above do not permit a conclusion with regard to the number of roots involved (one or two). When comparing the most commonly attested forms \*pa/ fe and \*baa, it is necessary to keep in mind that at least the Proto-Bantu \*bàdí/bidí could be a reflex of \*di. In the case of ba- the proto-form should be interpreted as a prefix of a plural noun class (possibly class 2).<sup>3</sup> The latter proposal finds support in the dialectal Proto-Bantu form jòdè (zones BH) (< \*jò-dè?). The main forms show the following zonal distribution: bàdí (ABCHKLR), bidí (CDEFGJKLMNPS), bídí (?).

It was repeatedly stressed that the root for 'three' (\*tat) is one of the most stable in NC and in the Bantoid languages in particular. Phonetic variation within this root will be studied in Chapter 5.

##### 4.1.1.3 'Four' and 'Five'

The well-known NC root \*nai 'four' is represented in all of the pertinent languages. The only exception is Grassfields, where it was replaced with the innovative \*kwa/kya. According to Roger Blench, Momo -kpi and Ring kaikò as well as the Proto-Eastern Grassfields \*-kùà go back to the Proto-Benue-Congo #-kpà(ko) (Blench 2004: #387). This root, however, is commonly found in Mbam-Nkam, i.e. in all Grassfields languages, and is barely attested outside this branch.

---

<sup>3</sup>John Watters: "This analysis, if correct, could work also for most of Bantoid. So Ekoid would derive from ba- prefix and -l ~ -d ~ -n root. However, the /b/ may derive from /p/. Ekoid may derive from \*-pal and then you have the many other Bantoid languages with /p/" (p.c.).



Table 4.3: Bantoid stems for ‘2’ and ‘3’

	Language	‘2’	‘2’	‘3’
Northern				
Dakoid	Chamba-Daka		bààrá	tárā
*Mambiloid		fee/fal/hal	baa	taar
Fam			baale	tawnə
Tiba (Fà)			à-ḡēṛ-á	à-tár-á
Southern				
*Bantu			bàdí/bìdí	tátò/cátò
*Beboid		fe		tat, te
*Yemne-Kimbi		fi(n)		to
*Ekoid			ba(l)	sa/ra
*Jarawan			ḡar	tat
*Mamfe		pay/pea		rat/lɛ
*Mbam		fande?	bante?	tat
Mbe	Mbe	p <sup>w</sup> ál		sá
Ndemli	Ndemli	ifé		ítáá
Tikar	Tikar		ḡi	lê
*Tivoid		hal/har/vial		tat
*Esimbi		ra-kpə?		kələ (<*lə?)
Wide Grassfields	Befang	fe		tái
GF: Mbam-Nkam	Bamileke	pu/pwe	bo/bie	tat
GF: Mbam-Nkam	Ngemba	paa	baa/bəḡə	tarə
GF: Mbam-Nkam	Nkambe		baa	tar
GF: Mbam-Nkam	Nun	paa	baa	tɛt
GF: Momo			be	tat
GF: Ring			bo/ba	tat

The root for ‘five’ is almost invariably *\*tan*. One possible exception is the Ekoid form, unless *\*don/ron/lon* (Ekajuk *nlon*, Ejagham *érôn*, Nkem-Nkum *írôn*) is a reflex of *\*tan*.

It should be noted that the Ndemli root *it/ijè* may be related to *kwV* in the Grassfields languages. As we hope to demonstrate below, this is probably not a coincidence.

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Table 4.4: Bantoid stems for ‘4’ and ‘5’

		‘4’	‘4’	‘5’	‘5’
Northern					
Dakoid	Chamba- Daka	nàà-sá		túúná	
*Mambiloid		na(n)		tien/tin/con/son	ngii?
Fam			daare	tɸwiine	
Tiba (Fà)		à-nè-á		à-tᵛᵛᵛᵛ-á, tũᵛᵛ	
*Bantu		nàì/(nàì)		táànò/cáànò	
Southern					
*Beboid		na, ne		ti(n)	
*Yemne-Kimbi		nì			kɸon
*Ekoid		nì			don/lon <sup>4</sup>
*Jarawan		yi-ne?		towun/twan	
*Mamfe		n(w)i		ta(y)	
*Mbam		nì(s)		taan	
Mbe	Mbe	ñî		tɸân	
Ndemli	Ndemli		itɸijè	ítâᵛ	
Tikar	Tikar	ɲî		ɸǣ	
*Tivoid		ɲi(n)		tan	
*Esimbi		ɲi		tənə	
Wide Grassfields	Befang		kʷà (kɸà)	itʰân	
GF: Mbam-Nkam	Bamileke		kwa/kwo	tan	
GF: Mbam-Nkam	Ngemba		kwa/kya	taa(n)	
GF: Mbam-Nkam	Nkambe		kwe/kye	tan/ton	
GF: Mbam-Nkam	Nun		kwa/kpa	tan/tən	
GF: Momo			kwe	tan	
GF: Ring			kwi/kye/tsə	tan	

##### 4.1.1.4 ‘Six’

The Grassfields languages show a common root *\*toʔo*. Outside Grassfields, it is attested only in Ndemli (just like the Grassfields root for ‘five’) and thus can hardly be reconstructed for Proto-Bantoid. However, we cannot exclude this, if PB *\*tʷóʔá* ‘6’ attested in zones ABCD is related to the Grassfields forms.

<sup>4</sup>John Watters: the Proto-Ekoid probably is *\*-ron* (p.c.).

Table 4.5: Bantoid stems and patterns for ‘6’

		‘6’	‘6’	‘6’	‘6’
Northern					
Dakoid	Chamba-Daka			<5?	
*Mambiloid				5+1	
Fam				5+1	
Tiba (Fà)				5+1	
Southern					
*Bantu		tándà <3redupl.?	tóóbá		càmb-, kaaga so
*Beboid					
*Yemne-Kimbi		3PL?			
*Ekoid		3+3			
*Jarawan				5+1	
*Mamfe					kene?
*Mbam		3PL		5+1	
Mbe	Mbe	3+3			
Ndemli	Ndemli		tóhó		
Tikar	Tikar	3PL?			
*Tivoid		3redupl., 2*3?			
*Esimbi		<3redupl.?			
Wide Grassfields	Befang		ndòfú		
GF: Mbam-Nkam	Bamileke		toyo		
GF: Mbam-Nkam	Ngemba		toʔo		
GF: Mbam-Nkam	Nkambe		ntunfu		
GF: Mbam-Nkam	Nun		ntúwó/tuʔo		
GF: Momo					foy
GF: Ring			tufa		

As in some other NC branches, three patterns that can be used to derive ‘6’ from ‘3’ are attested in the Bantoid languages (the following observations are even more relevant in the case of the patterns for ‘eight’ based on ‘four’):

1. The change of a class prefix (or its addition): Ajumbu tò ‘3’ > k’à-tò ‘6’; this pattern is possibly attested in Tutomb (Mbam) pé-dààt ‘3’ > pí-tfín-dit ‘6’, Elip bǝ-dáǝ ‘3’ > bǝ-thín-dáǝ ‘6’ (this pattern is marked ‘3PL’ in the table above). To strengthen the etymology for ‘six’ in Tutomb, it should be noted

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that in Tunen (another Mbam language) that has *\*tat* ‘3’ > *lal* (*bé-láló*), the term for ‘six’ also contains [l]: *pé-lé<sup>n</sup>dáló*.

2. The combination of ‘three’ and ‘two’: Lyive: *hjá*l ‘2’, *tát* ‘3’, *kàlè-kà-tát* ‘6’ (<‘2\*3’?).
3. The reduplication of ‘three’ (or the simple addition ‘3+3’): Ekajuk *n-ra* ‘3’ > *n-ra-ke-ra* ‘6’, Ejagham *é-sá* ‘3’ > *è-sá-gà-sá* ‘6’, Nkem-Nkum *i-ra* ‘3’ > *i-ra-ra* ‘6’, Mbe *bé-sá* ‘3’ > *bè-sè-sár* ‘6’, Tiv *ú-tár* ‘3’ > *á-tér-á-tár* (this pattern is marked as ‘3+3’ in the table above).

The Kenyang (Mamfe) form *bé-tándât* ‘6’ (cf. *bé-rát* ‘3’) deserves special discussion. This form is reminiscent of the common Bantu form *tándà* ‘6’ attested in zones DGM. Its extended variant *tándâtó* is found in EFGJS, while the GNS zones use the form *tántâtó* which is even more interesting. Are the Bantu *tándà* forms cited above based on ‘3’? If so, *\*tat-tat* > *tatat* (*tántâtó*) in the languages to which Dahl’s law is applicable as well (> *tandat*, *tanda*).

In this case, the form *tóóbá* (zones ABCD) that can be interpreted as ‘\*3\*2’: *\*tat-X-ba* may also be a derivative form.

If so, the aforementioned Bantu forms (as well as the Kenyang form) are probably not innovations. They may reflect a Proto-Bantoid model where ‘six’ is based on ‘three’. It should be noted that a close parallel to the Kenyang form is attested in the Mbam branch: Nomaande *be-tíndétú* ‘6’.

In sum, it appears that the most probable word-formation pattern for ‘six’ in Proto-Bantoid is ‘3+3’ or ‘3PL’.

##### 4.1.1.5 ‘Seven’

The case of ‘seven’ seems pretty straightforward. In the majority of the Bantoid branches (including Bantu) the root is *\*samba/camba*. However, there is still a question whether this root is indeed primary: its Bantu reflex is strikingly similar to the root for ‘six’. Table 4.7 shows some selected examples.

It is noteworthy that the terms for ‘six’ and ‘seven’ show similarity not only in case of the root in question, but in case of other roots as well, e.g. J50: Fuliiru - *lindátù* ‘6’ ~ *-linda* ‘7’, Shi *ńdarhu* ‘6’ ~ *ńda* ‘7’. This similarity is usually conditioned by one of the following factors:

- the terms for ‘six’ and ‘seven’ follow the patterns ‘10–4’ and ‘10–3’ respectively: Yeyi (Bantu R40) *vùndzà é néé* ‘6’ (‘10’ ‘break’ ‘4 (fingers)’), *vùndzà é táâ:tô* ‘7’ (‘10’ ‘break’ ‘3 (fingers)’). This, however, is very rarely attested.

Table 4.6: Bantoid stems and patterns for ‘7’

		‘7’	‘7’	‘7’	‘7’	‘7’
Northern						
Dakoid	Chamba-Daka					dùtìm
*Mambiloid					5+2	
Fam					5+2	
Tiba (Fà)					5+2	
*Bantu		càmbà-dì/càmbò-à-dì	6+1?			púngàtí
Southern						
*Beboid		fumba?	6+1	4+3		
*Yemne-Kimbi				4+3		
*Ekoid		sima?		4+3?		
*Jarawan					5+2	
*Mamfe			6+1			
*Mbam			6+1			
Mbe	Mbe				5+2	
Ndemli	Ndemli	sà <sup>m</sup> bá				
Tikar	Tikar	jâm̀bì				
*Tivoid			‘6+1		5+2	
*Esimbi					5+2	
Wide Grassfields	Befang			4+3		
GF: Mbam-Nkam	Bamileke	samba				
GF: Mbam-Nkam	Ngemba	samba				
GF: Mbam-Nkam	Nkambe	samba				
GF: Mbam-Nkam	Nun	samba		4+3		
GF: Momo		sambe				
GF: Ring		samba				

Table 4.7: Similarities between ‘6’ and ‘7’ in Bantu

	‘6’	‘7’
PB	càmbànò (HL)/cààmànò (ABCHLR)/càmbombo (L)	càmbà-dì/càmbò-à-dì
A40 Bankon	bi-sámà	bi-sàmbòk
A80 Kol	twáb	tábèl
B20 Mbangwe	-syami	ntsaami
B60 Mbere	-syaami	ntsaami
B70 Teke-Tege	ósámìni	ónsààmì
B80 Tiene	ísyam	nsam
C40 Sengele	ísama	ísambiálé
C90 Ndengese	isamo	isambé

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

- the term for ‘seven’ is based on ‘six’ (‘6+1’). This pattern is much more common (see Table 4.8).
- The similarity may also be due to the derivation of these terms from ‘five’ using ‘5+1’ and ‘5+2’ patterns, respectively (this is the most common case). It should be noted that there is another, much less transparent pattern for ‘seven’ (‘X+2’ or ‘5+X’). It is frequently attested not only in the Bantoid languages, but also in the Mande languages.

- Finally, we may be dealing with an alignment by analogy.

maybe  
reference the  
relevant  
tables  
here

Table 4.8: Common stems for ‘6’ and ‘7’ in Bantu

	‘6’	‘7’
J50 Fuliiru	-lindátù	-linda
J50 Shi	ńdarhu	ńda
A80 Byep	tʷóp	tʷóp ɓàl (6+?)
C10 Yaka	βúè	βúè nà -mòtí (6+1)
D30 Budu	mèdĩà	mèdĩànikà (lit: níkà ‘to come’)
M20 Malila	ómɔtʰaːˀda	ómɔtʰaːˀda na jě:kʰa (6+1)
B10 Myene	òrówá	òrwáyénô (6+1)

Table 4.9: ‘6’ and ‘7’ from ‘5’ in Bantu

	‘6’	‘7’
H10 Koongo	sàmbánù	sàmbú-wàlì (wàlì ‘2’)
K20 Nyemba	pàndù	pàndù vâlì (-valì ‘2’)
K60 Mbala	sambanu	nsambwadi (mbadi ‘2’)
L30 Luba-Katanga	isamba	isambaibindi (ibindi ‘2’)
R10 Khumbi	epándú	epándúvalí (valí ‘2’)

Staying within the Bantoid family, it is difficult to say which of these explanations should be applied in the present case. If it is alignment by analogy, we should reconstruct a Proto-Bantoid primary root *\*samba/camba* for ‘seven’ and then explain the many irregular shifts in the forms of ‘six’ (e.g. t > s) by analogy with this root (as shown above, the Proto-Bantu ‘six’ is based on ‘three’ (\*tat)).

We may also be dealing with a derived proto-form *\*sam-ba/cam-ba* with the second element probably going back to ‘two’.

#### 4.1.1.6 ‘Eight’

Both Grassfields and Ndemli share the common primary root for ‘nine’ (*\*famV*). We have already seen this distribution, which only suggests that Ndemli belongs to the Grassfields branch (at least on the basis of their numeral systems). The majority of other branches point to the reconstruction of the term for ‘eight’ as

Table 4.10: Bantoid stems and patterns for ‘8’

		‘8’	‘8’	‘8’
Northern				
Dakoid	Chamba-Daka			7+1
*Mambiloid				5+3
Fam				5+3
Tiba (Fà)				5+3
Southern				
*Bantu		nainai(4 redupl.)/ nake		
*Beboid		ɲaŋ (<4?)		
*Yemne-Kimbi		4 redupl.		
*Ekoid		4+4		
*Jarawan				5+3
*Mamfe		4PL		
*Mbam		4 redupl.		
Mbe	Mbe	4 redupl.		
Ndemli	Ndemli		fɔ:mó	
Tikar	Tikar			
*Tivoid		4 redupl.		
*Esimbi		4 redupl.		
Wide Grassfields	Befang		éfómó	
GF: Mbam-Nkam	Bamileke		fum/hum/fo?	
GF: Mbam-Nkam	Ngemba		famə	
GF: Mbam-Nkam	Nkambe		waami	
GF: Mbam-Nkam	Nun		fame	
GF: Momo			fami/foŋ	
GF: Ring			faamə	

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based on ‘four’ (either by means of reduplication or by the noun class switch, or both).

##### 4.1.1.7 ‘Nine’

Table 4.11: Bantoid stems and patterns for ‘9’

		‘9’	‘9’	‘9’	‘9’	‘9’
Northern						
Dakoid	Chamba-Daka					kúūm
*Mambiloid			5+4			
Fam			5+4			
Tiba (Fà)			5+4			
Southern						
*Bantu		bùá	5+4		10–1	kèndá/ jèndá
*Beboid		bùkə?				fumbə?
*Yemne-Kimbi			5+4			
*Ekoid			5+4		10–1	
*Jarawan			5+4			
*Mamfe				8+1		
*Mbam			5+4	8+1		
Mbe	Mbe		5+4			
Ndemli	Ndemli	bù?è				
Tikar	Tikar		5+4?			
*Tivoid			5+4	8+1		
*Esimbi			5+4			
Wide Grassfields	Befang		5+4			
GF: Mbam-Nkam	Bamileke	fu?u				
GF: Mbam-Nkam	Ngemba	bu?u/pu?u				
GF: Mbam-Nkam	Nkambe	bù?ù? búum?			10–1?	
GF: Mbam-Nkam	Nun	pu?u?				cipo?
GF: Momo		bok				ko?
GF: Ring					10–1	



It seems likely that there was a primary root for ‘nine’ in Proto-Bantoid. It can be tentatively reconstructed as *\*bukV*.<sup>5</sup> In Bantu, this root is found in the ABCDHL zones. The most common pattern ‘5+4’ (as well as the less frequently attested ‘10–1’) often develops independently in various languages. A marginal pattern ‘8+1’, attested in Mamfe, Mbam and Tivoid is noteworthy. Because of its rarity, it is relevant for the genetic classification of the Bantu languages, since it is hard to imagine that this form developed independently in each of these branches. The last column of the table below lists bases that are exclusively found in a specific Bantoid branch.

#### 4.1.1.8 ‘Ten’

At least two Bantoid roots (*\*fu* and *\*kum/ kam*) may be useful for our reconstruction purposes. Both of them are attested in no fewer than six of the Bantoid branches (note also the Chamba-Daka *kúūm* ‘nine’). The Mambiloid languages show the greatest variety of roots.

It should be noted that a separate Proto-Bantoid form for ‘ten’ is not traceable in some of the pertinent languages. Despite this, it has been preserved as a part of the term for ‘twenty’, e.g. ‘ten’ is attested as *é-pɔ:t* in Ipulo (Tivoid). This form is probably related to Tiv *pùè/ púwè* and Lyive *epùè* and may be attested in the Mbam branch as well (Nubaca *mwa-pwat* ‘ten’, etc.).

It is clear, however, that the Ipulo ‘twenty’ (*i-ham*) is derived from the Proto-Bantoid term for ‘ten’ by means of a noun class switch. The same can be applied to Bhele (D30): *mɔkɔ* ‘ten’ but *e-kómi í-balé* ‘20’ (*í-balé* ‘two’). The root *kam* will be discussed below in connection to the terms for ‘hundred’.

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<sup>5</sup>John Watters: “Given the distribution of these forms for ‘nine’ I would conclude that Proto-Bantoid likely used 5+4 and that *\*bukV* was an innovation in the pre-Bantu era when Proto-Bantu had not yet separated from what became Grassfields and other closely located Bantoid groups”.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.12: Bantoid stems for ‘10’

		‘10’	‘10’	‘10’	‘10’	‘10’
Northern						
Dakoid	Chamba-Daka		kúũm- kórórǎ			
*Mambiloid				cóŋ		job-, jer, jula ? fěŋ ?
Fam Tiba (Fà)						kwoy à-wǒǒb-á
Southern						
*Bantu			kómì/ kámá			dòngò
*Beboid		jo-fi/jo- fu				
*Yemne-Kimbi		jo-fu		koŋ?		
*Ekoid		fo				gol, wobo lum
*Jarawan						
*Mamfe		fia, bjo				
*Mbam					p-wat/b- wad	
Mbe	Mbe	fwǎr				
Ndemli	Ndemli		džòm			
Tikar	Tikar		wùm			
*Tivoid		pue	*ham		pɔt	
*Esimbi						bu yu? (<9?)
Wide Grassfields	Befang		éyúm			
GF: Mbam-Nkam	Bamileke		yam			
GF: Mbam-Nkam	Ngemba		yám			
GF: Mbam-Nkam	Nkambe		?um			ri/ru
GF: Mbam-Nkam	Nun		yom			
GF: Momo			yum			
GF: Ring			yəm			

## 4.1.1.9 ‘Twenty’

It is not necessary to quote the forms for ‘twenty’, since in the majority of the Bantoid branches (including Bantu) this term is based on ‘ten’ and follows the pattern ‘10\*2’. Some minor but peculiar variations should be noted here, but all of them are of little significance for our reconstruction. E.g. the term for ‘twenty’ often employs the plural noun class with the two components in agreement. However, non-compound forms based on ‘ten’ or ‘two’ in the plural are also attested. For instance, in one of the Bafut dialects *bàà* ‘two’, *tà-wùm* / *nì-wùm* ‘ten’ > *mì-wùm mí-mbàà* ‘twenty’, while *tà-ghùm* ‘ten’ ~ *mì-ghum* ‘twenty’ in another. At the same time, Limbum *bá*: ‘two’ ~ *m-bá*: ‘twenty’. These patterns (especially the former) are common in the majority of the Bantu languages as well.

Primary roots for ‘twenty’ are rarely attested. They may go back to the lexical base ‘man’ (e.g. in D30 Komo *nkpá búí* ‘twenty’ = ‘whole person’), ‘head’ (Suga (Mambiloid)) *ḥuu bíb* ‘twenty’ < *ḥuu* ‘head’) or some other lexical bases (e.g. Bantu A50: Bafia *ì-tín/mà-tín* ‘twenty’ < ‘score’).<sup>6</sup>

## 4.1.1.10 ‘Hundred’ and ‘thousand’

It appears that the term for ‘hundred’ cannot be reconstructed for Proto-Bantoid: in most of the branches the pattern employed is ‘20\*5’,<sup>7</sup> whereas in some of the branches the term is borrowed. Both Grassfields and Bantu show innovations. The Grassfields root may be tentatively reconstructed as *\*ku*. Several roots are known for Bantu, their use being limited to certain zones: *kámá* ABCDHL, *gàná* DEFGJNPS, *tva* DL, *jànda* MNP. None of these roots is attested with this meaning elsewhere in the Bantoid languages, except for Bantu. The similarity of *kámá* with the root reconstructed for ‘ten’ is noteworthy. Moreover, it is attested with the meaning ‘thousand’ in at least three of the Bantoid branches as the table below shows (Table 4.14).

The root *kam* allows multiple interpretations. We will return to it after the evidence from other Benue-Congo branches has been examined.

<sup>6</sup>John Watters: “The Bakor group of Ekoid attest something like *\*-tên* and Mbe has *-têl*. The other two Ekoid groups have a form *-rim* or *-sam*. I would reconstruct for Proto-Ekoid *\*-têl* or *\*-tên* which is like Bantu Bafia. They are a few hundred kilometers apart with many languages and a significant mountain range in between, so this is not borrowing” (p.c.).

<sup>7</sup>John Watters: “The distribution of this form is suggestive of an older vigesimal system for Bantoid rather than a decimal one. I would take the decimal ones as innovations” (p.c.).

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Table 4.13: Bantoid stems for ‘100’

		‘100’	‘100’	‘100’	‘100’	‘100’	‘100’
Northern							
Dakoid	Chamba-Daka	20*5					
*Mambiloid		20*5					<fula
Southern							
*Bantu						kámá, gàná, twa, jànda	
*Beboid				gbi			
*Yemne-Kimbi				gbi?ɲwe?			
*Ekoid		20*5					
*Jarawan			10*10			luru?	<Hausa
*Mamfe		20*5					
*Mbam							<Engl.
Mbe	Mbe	20 *5					
Ndemli	Ndemli					mbókó	
Tikar	Tikar					ndu?	
*Tivoid		20*5					
*Esimbi			10*10				<Engl
Wide Grassfields	Befang					bòmí <sup>n</sup> dángàŋ	
GF: Mbam-Nkam	Bamileke				k(h)u		
GF: Mbam-Nkam	Ngemba				k(h)i/kirə		
GF: Mbam-Nkam	Nkambe				ɲkù?	rdʒèè?	
GF: Mbam-Nkam	Nun				ɲku		
GF: Momo					ki, ko		
GF: Ring					ȳí/vi	ntu?	

Table 4.14: Bantoid stems for ‘1000’

		‘1000’	‘1000’
Northern			
Dakoid	Chamba-Daka		100*10
*Mambiloid			ndúúŋ ‘sack’, <Fula
Southern			
*Bantu			nùnù, pòm̀b̀ì, kótò
*Beboid			cuku
*Yemne-Kimbi		kam?	kia?
*Ekoid			200*5?
*Jarawan			?
*Mamfe			nka?
*Mbam			<Engl.
Mbe	Mbe		400*2+200
Ndemli	Ndemli		kòlì
Tikar	Tikar	ŋkæm	
*Tivoid			20*10, engl.
*Esimbi			<engl
Wide Grassfields	Befang		ítʃón ~ étʃón
GF: Mbam-Nkam	Bamileke		tʃa/sa?
GF: Mbam-Nkam	Ngemba	kamə?	tsuʔu?
GF: Mbam-Nkam	Nkambe		cuki?
GF: Mbam-Nkam	Nun		100*10
GF: Momo			<engl
GF: Ring		kam	

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

The Proto-Bantoid numeral system can be reconstructed as in Table 4.15.

Table 4.15: Proto-Bantoid numeral system<sup>8</sup>

1	m-o-ʔ, m-o-i, m-o-ti, mo-di	7	samba/camba (<*c/saN+2?)
2	pa/fe, badi (*ba-di?)	8	na-nai (<4 redupl.)
3	tat	9	bukV
4	nai	10	fu, kum/kam
5	tan	20	10*2
6	ta-ta(t) (<3 redupl.?)	100	gbi? ki? 20*5? kam?
		1000	?

According to Kay Williamson, the base for ‘one’ in Benue-Congo should be reconstructed as *#-kani*. The only form quoted in support of this hypothesis in her first article (Williamson 1989: 255) is a supposed Bantoid reflex of the root in Tiba (*a-kina* ‘1’). Later (Williamson 1992: 396) she adduced one more Bantoid form, a Southern Bantoid Esimbi term *keni* ‘1’. That Williamson gives too much weight to these two marginal Bantoid forms is evident from the fact that she reconstructs this base not only for Benue-Congo, but for Niger-Congo as well. This leads her to the idea (probably expressed in the latter work for the first time) that Niger-Congo originally roots had a triconsonantal structure, hence her reconstruction of the proto-form for ‘one’ as *\*\*-kə’gəni*. This Niger-Congo etymology will be studied in detail below. At this point we will only note that the Esimbi form cited above is strikingly unusual for the Bantoid languages and was probably misinterpreted. The form *kēnā* ‘1’ is indeed attested in some of the Esimbi sources (see Brad Koenig, <https://mpi-lingweb.shh.mpg.de/numeral/Esimbi.htm>). However, in other sources the form *ɔ-nə* is attested (Cristin Kalinowski in (Chan)), so the term for ‘eleven’ is *bùyù nə-nə* (*bùyù* ‘10’). In other words, the base for ‘one’ in Esimbi is *-ni/-nə* (!), while the first syllable should be interpreted as the noun class prefix, just as in other numerals (cf. the forms *mārākpā* ‘2’, *mōjī* ‘4’, *mātānə* ‘5’, etc. in Koenig).

As for Tiba, it is still not certain whether this language indeed belongs to the Bantoid group (cf. Boyd 1999, where Tiba is considered an Adamawa language). The only Bantoid forms that could have been used by Williamson in support of her hypothesis are found in some of the Northern Mambiloid languages, cf. Twendi (Cambap) *tʃĩnĩ*, Mambila *tʃén* (with palatalization assumed). However,

<sup>8</sup>My competence does not allow me to reconstruct the tones in the numeral Bantoid languages, especially in Benue-Congo.

these forms are extremely marginal as well, so they cannot give ground for the proto-language reconstruction (in any case, not for Proto-Bantoid).

#### 4.1.2 Benue-Congo (the Bantoid languages excluded)

After the numerals of the Bantoid languages, let's consider the numerals in each of the other groups within this vast family, namely Cross, Defoid, Edoid, Idomoid, Igbooid, Jukunoid, Kainji, Platoid, Nupoid (Sections 4.1.2.1–4.1.2.9) and in some isolated BC languages – Ikaan, Akpes, Oko and Lufu (Sections 4.1.3.1–4.1.3.4). After this, we will generalize the results obtained in order to try to reconstruct the numerals of Proto-BC (§4.1.4).

##### 4.1.2.1 Cross

Let us consider the typical stems for numerals in the Cross languages.

Table 4.16: Cross stems for '1'

	'1'	'1'	'1'	'1'
1. Bendi				
Bendi	ken		-bónḡè?	
2. Delta-Cross				
Upper		ni (D <sup>9</sup> : *g <sup>w</sup> á-ni)	wòn, guṇ?	móò?
Central		nin		
Lower	sin/cin, ki/ge, kiet/keed (D:*cèèd)			
Ogoni	zìì	nɛ(n)		

Let us dwell on this table, using it as an example for understanding the majority of the subsequent tables given in this book. Almost every table represents the synthesis of the primary data. We cannot publish all of these primary forms. Let's make an exception. In order to make clear to the reader on what basis the generalizations were made, we present in Appendix D all the forms available for the numerals '1' in the Cross languages, including intermediate Proto-Upper

<sup>9</sup>Here and below, index D introduces the reconstruction proposed by [Dimmendaal \(1978\)](#).

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Cross and Proto-Lower Cross reconstructions, proposed by [Dimmendaal \(1978\)](#) and [Connell \(1991\)](#). From the Appendix D, it is clear that Connell accepts the Dimmendaal hypothesis, according to which in Upper Cross *\*g<sup>w</sup>á-* is interpreted as a prefix, and the lexical stem is represented by *\*-ni*, attested also in Central Delta-Cross and Ogoni. Based on the 60 sources listed in Appendix D, in table 3.15 for the numeral ‘1’, the root *ni(n)* is allocated. The table also identifies the second root for ‘1’, also possibly represented in the three branches of their five. Connell reconstructs it as *\*cèèd*, but the data from various Lower Delta-Cross, as well as from Dendi, suggests that perhaps we are dealing with a palatalization of the velar before the front vowel: *\*ked / ket / kin > ced / cin* (unfortunately, for most groups of the Niger-Congo, including Cross, we do not have sufficient grounds for reconstructing the tones). Finally, the third root presented in Icheve *à-mɔɔ* is probably related to Bantu.

#### ‘Two’ (Table 4.17)

Table 4.17: Cross stems for ‘2’.

	‘2’	‘2’	‘2’
1. Bendi			
Bendi		fe, ha?	
2. Delta-Cross			
Upper		fa(n)/poo (D:*ppán)	
Central			jal/yal/zal/wal
Lower	bà (D:*íbà)		
Ogoni	bàè/bèrè		

The roots *\*bae* and *\*po/pa* are noteworthy.



**‘Three’ and ‘Four’ (Table 4.18)** The common Niger-Congo roots are attested for these numerals in all of the branches (*\*ta(t)/ ca(t)* and *\*na(n)* respectively).

Table 4.18: Cross stems for ‘3’ and ‘4’

	‘3’	‘3’	‘4’	‘4’
1. Bendi				
Bendi	kie/cia/cat		ne	
2. Delta-Cross				
Upper	tat/tan/*sa, kia(t) (D: ttán ~ ttáD)	naan?	na (D: *nàṅì ~ này)	
Central	sar/rar		ṅa	
Lower	tá (D:*ítá)		nàaṅ/nìàṅ (D:*ìniàṅ)	
Ogoni	taa		nia	3+1

**‘Five’ (Table 4.19)** Two roots can be postulated for Cross, namely *\*tan* and its alternative, tentatively described as *\*gbo(k)*.

Table 4.19: Cross stems for ‘5’

	‘5’	‘5’	‘5’
1. Bendi			
Bendi	taṅ		dʲoṅ
2. Delta-Cross			
Upper	tóón/tāṅ/zen/cen	gbo/buo(k)	
Central		oṽ/wɔ?	
Lower	tīṅ/tin/tion, go? (D:*ítíòn)		
Ogoni	*rè	ʔòò/vòò/wò/*ʔa	

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

‘Six’ to ‘Nine’ (Table 4.20) At this stage it seems reasonable to maintain the forms and patterns represented in the last line of the table.

Table 4.20: Cross stems and patterns for ‘6’-‘9’

	‘6’	‘6’	‘6’	‘7’	‘8’	‘9’
1. Bendi						
Bendi	5+1			5 + 2	5 + 3	5 + 4
2. Delta-Cross						
Upper	5+1		ránē , 3+3	5+2, 4+3	4+4	10-1, 5+4
Central		di(n)		ďùal/ďuən	4PL	súyó
Lower	5+1			5+2	5+3	5+4
Ogoni	5+1	nĩĩ?	ʔər̀?	5+2	5+3	10-1, 5+4
CROSS	5+1	di?	3+3	5+2	4+4	10-1, 5+4

‘Ten’, ‘Twenty’, and ‘Hundred’ (Table 4.21) It should be noted that providing a detailed reconstruction for each of the Cross numerals lies beyond the scope of the present investigation, so there is probably no point in trying to establish which of the roots for ‘ten’ (*\*kpo* or *\*job*) should be reconstructed in the Proto-Cross (especially impossible without external evidence).

The Cross languages are highly divergent in regard to numerals (an exception should be made for ‘three’ and ‘four’ which are remarkably stable in Cross, as well as in the other NC branches). However, the forms cited above do not provide sufficient reason to suggest a closer relationship within any randomly selected pair of the Cross branches. Hence, it would be too daring to interpret the roots attested in both of these branches as shared innovations. Let us count the numbers of related numeral forms in different pairs of the Cross branches (Table 4.22).

This distribution is remarkable with regard to the total absence of shared forms (with the ‘three’ and ‘four’ excluded) between Bendi and Central Cross. Keeping this in mind, all of the established alternative roots and patterns can be reserved for a later discussion. At this point the following reconstruction of the Proto-Cross numerals can be suggested (Table 4.23).

Table 4.21: Cross stems and patterns for ‘10’, ‘20’ and ‘100’

	‘10’	‘10’	‘20’	‘20’	‘20’	‘100’
1. Bendi						
Bendi	kpu, hwo, fo		ci/si		jam	20*5
2. Delta-Cross						
Upper		jo(b)/zob/ jop (D:*jòb)	ti	lop, nip (D:*níb)	zol ...	20*5
Central		díob		lisiíβ/rusuβ	poy, 2PL	kùròn, 5*20, 80+20
Lower	kəp (D:*lùgòp)	duob/duop, dugu/lugu		e-dip (D: *édíp)		i-kie (D: *íkíè)
Ogoni	òb, ʔò				tub/cu	5*20
CROSS	kpo	job	ti/ ci?	dip?		20*5

Table 4.22: Number of related numerals in different pairs of the Cross branches

	Central	Lower	Ogoni	Upper
Bendi	0	4	4	5
Central		2	2	4
Lower			5	4
Ogoni				4

Table 4.23: Numeral system of Proto-Cross(\*)

1	*kin/cin, *ni(n), *gboŋ/gwan	7	5+2
2	*bae, *po/pa	8	4+4
3	*ta(t)/ca(t)	9	10-1, 5+4
4	*na(n)	10	*kpo/kop, fo? ʔo? *job
5	*tan, *gbo(k)	20	*ti/ci ? dip ?
6	5+1, di?, 3+3	100	20*5

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.1.2.2 Defoid

The Defoid branch is relatively compact: it is composed of four languages including Yoruba and its dialects. Historical phonetics of these languages should be considered for a proper reconstruction of the Defoid numeral system, because most of the terms show great phonetic variety. E.g. for ‘four’ several forms are attested: *-ne* (Arigidi), *-jē* (Ayere), *-rin/-hē/-ē* (Yoruba), *-lè* (Igala). The main forms are given in Table 4.24, and their reconstruction will be discussed below.

Table 4.24: Defoid numerals

	Arigidi (dial.)	Ayere (dial.)	Yoruba	Igala	*Yoruba- Igala	*Proto- Defoid
1	kě-ɛ-jē	ĩ-kǎ	ē-ní, ò-kǔ	é-jé/ò-kǎ	*jé, ka(n)	*jé, ka(n)
2	kè-ji	ì-dzì	è-jì	è-dzì	*jì	*jì
3	ke-dà	ĩ-tā	è-tā	è-ta	*tā	*tā
4	ke-ne	ĩ-jē	è-rĩ	è-lè	*lè(n)	*lè(n)/ ne, je
5	ké-ntò	ĩ-tǔ	à-rú	è-lú	*lú(n)	*lú(n)/tu(n)
6	ke-fà	ì-fà	è-fà	è-fà	*fà	*fà
7	ke-phi	ĩ-dzʷĩ	è-jē	è-bʲe	*byē	*byē
8	ke-rò	ĩ-rō	è-jō	è-dʒo	*jō	*jo/ ro
9	ké-ndà	ĩ-dǎ	è-sǔ	è-lá	*sá(n)	*sá(n), dà
10	ké-è	ĩ-gʷá	è-wá	è-gʷá	*gwá	*gwá
20	u-gbòrò	ē-gbǎlǎ	ò-gǔ	ó-gʷú	*gwú(n)	*gwú(n)/ gbolo
100	20*5	20*5	20*5	20*5	20*5	20*5

Following the Proto-Yoruba-Igala reconstruction (Pozdniakov, ms), the terms *\*lè(n)* ‘4’, *\*lú(n)* ‘5’ and *\*sá(n)* ‘9’ are reconstructed on the basis of the following regular phonetic correspondences (Table 4.25).

These examples illustrate the phonetic correspondences coming from \*l ‘(Table 4.26).

Table 4.25: Fragment of the Yoruba-Igala phonetic reconstruction

	Yoruba	Igala
*l	r	l
*r	r	d
*d	d/j	d
*n	l/n	n
*s	s	l
*ʃ	s	r
*c	ʃ	c

Table 4.26: \*L-stems in Proto-Yoruba-Igala and their regular reflexes

Meaning	*Yoruba-Igala	Yoruba	Igala
animal, meat	élɔ̃	ərɔ̃	éla
toad	àkèlé	àkèré	àkèlé
four	èlĩ	èrĩ	èlè
five	èlú	àrú	èlu
ant	èlilà	èèrà	èlilà
ashes	élílú	eérú	élúlú
feel	gbɔ̃ òlílù	gbɔ̃ òórù	é-gbúlù
star	ilàwò	ìràwò	ilàwò
small	kékélé	kékeré	kékélé
buy	là	rà	é-là
see	lí	rí	é-lí
plow	lo	roko	é-lo
body	óla	ara	óla
word	òlà	òrò	òlà
sun	ólílù	òòrù	ólù
sleep	oólũ	oorũ	ólu
neck	ólù	orù	ólò
thirst	òlùgbà	òrùgbà	òlùgbà
ring	ólù-ika	òrùka	èlika
run	sVlé	sáré	é-rulé
fat	ùla	òrá	ùlà
seed	úlú	irú	úlú

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Yoruba [s] is correspondent to Igala [r] (<\*f) or [l] (<\*s) in at least six examples, see Table 4.27 below.

Table 4.27: Reflexes of \*f and \*s in Yoruba-Igala

Meaning	*Yoruba-Igala	Yoruba	Igala
leg	éṣè	àsè	érè
fruit	èfo	èso	èro
block/ close	fé	sé	é-ré
launch	ṣo	so	é-ro
nine	èsú	èsú	èlá
sleep	sù	sù	*é-lu-

The reconstruction of the term for ‘seven’ (\*byē) is based on the following correspondences (Table 4.28).

Table 4.28: One more fragment of the Yoruba-Igala regular correspondences

	Yoruba	Igala
*by	j	by
*j	j	j
*b	b	b

The reflexes of \*by- can be represented as follows (Table 4.29).

Table 4.29: Reflexes of \*by in Yoruba-Igala

Meaning	*Yoruba-Igala	Yoruba	Igala
dog	abyá	ajá	abyá
blood	èbyè	èjè	èbyè
seven	ebye	èje	ebye

Finally, the terms \*gwá ‘10’ and \*gwú(n) ‘20’ are reconstructed in view of \*gw > Yoruba w (before [a])/g (before [u]) ~ Igala gw (Table 4.30).

Table 4.30: Reflexes of \*gw in Yoruba-Igala

Meaning	*Yoruba-Igala	Yoruba	Igala
ten	ègwá	èwá	ègwá
beans	ègwà	èwà	ègwà
dig	gwà	wà	é-gwà
swim	gwà	wè	é-gwà
sweat	(ò)úgwù	òógù	úgwù
bone	égwúgwú	egũgũ	ógwúgwú
ascend	gwù	gù	é-tə-gwù
war	ógwũ	ogũ	ógwu
twenty	ōgwú	ōgú	ó-gwú
vulture	úgwúnú	igúnugú	úgwúnú

These correspondences are treated here in detail because they may be of special interest for the comparative study of the Defoid languages.

#### 4.1.2.3 Edoid

The following reconstruction is based on nearly forty sources which represent twenty languages within this group. The reconstruction proposed by Elugbe was also considered.

Being no specialist in the comparative study of the Edoid languages (unlike Elugbe), I don’t feel competent enough to criticize his ideas. Elugbe likely had his reasons for reconstructing the same consonant (\*ch-) in the terms for ‘three’, ‘five’, ‘six’ and ‘seven’. Indeed, the comparison of data from the four Edoid branches confirms that the terms for ‘three’ and ‘five’ (but not for ‘seven’) have the same initial consonant. This is common for many of the NC branches (and probably for the Proto-NC as well).

In view of this, I would like to suggest a simplified reconstruction that is closer, in my opinion, to the actually attested forms (Table 4.31).

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.31: Edoid numeral systems and Proto-Edoid

	1. Delta	2. North-Central	3. North-western	4. South-western	Proto-Edoid (Elugbe)	*Proto-Edoid
1	βɔ	kpa, wo/gwo	kpa	vɔ		kpa, wo/gwo/vu
2	βə/βa	va	va	vɛ	i-və	va/və
3	saa	sa	sa	sa	u-chaGɪ	sa
4	ni	ne	ni	ni	niə	ni
5	súwón/syòni	sen/fen	sie	soi/siorin/jorin	ii-chiNənhi	sien/su(w)on
6	3PL	3+3?	3+3	3PL?	chaN	3PL, 3+3
7	5+2	hiron/hilon, 5+2	sie/hi/rhi	ɣwré/hre	i-chiə	ghie?
8	4PL, 4 redupl	renren/lelen	nien	re(r)e	nhɪNanhɪ	4 redupl.
9	10-1	sin(rin), tili	5+4	rhi(r)i, zi	i-ciənhi	cien/sin
10	gbeny/gbei	gbe	gbe	kpe/xwe	gbeNi	gbe, kpe
20	jow/yei	gie/je	gboro, ghe/ze/ye	dhe/ʒè/ʒè	u-gheGi ~ u-ʒh	gie/jie
100	20*5	20*5	10PL	20*5		20*5
1000		ria/li, gbele	500*2	du, riorin		du, ria/li

##### 4.1.2.4 Idomoid

The roots attested in about ten of the Idomoid languages are represented in Table 4.32.

Table 4.32: Idomoid numerals

1	nze/je/nye/ye, kpokpoh? <sup>a</sup>	7	5+2, renyi
2	pa, miyeh?	8	5+3
3	ta/la	9	5+4
4	nè, ndo, he	10	gwo/wo, jwo
5	do/lo, ho, ro/rwo	20	fu/hu, su
6	rowo/riwi, ji, hili	100	20*5, 10*10

<sup>a</sup>Please note that hypothetically related forms are separated by a slash (/), whereas unrelated ones are separated by a comma.



It should be noted that the data on the Yatye-Akpa branch (one of the two Idomoid branches) is systematically absent. The analysis is based on the Akweya languages only, so unexpected issues may arise.

#### 4.1.2.5 Igboid

This is a small group consisting of several languages. The forms which could be found in modern Igboid languages are listed in Table 4.33.

Table 4.33: Igboid numerals

1	tù, ɲìné (Ekpeye)?	7	saà
2	bó	8	5+3
3	tó	9	totu/tolu
4	nó	10	dî/ri/li
5	sé	20	gw <sup>ɛ̃</sup> /y <sup>hɛ̃</sup> , kpɔrɔ
6	ʃi	100	20*5
		1000	puk(w)u

Interestingly, the terms for ‘one’ attested in the Igboid languages (as found in Koelle 1963[1854]) are subject to significant variation. The following forms are noteworthy: ‘1’ – Īsôāma *oo-te*, Íṣiēle *mfiu*, Ábādṣa *na*, Aro *mbɔ*, Mbôfia *mpon* (the transcription of the forms and languages follows Koelle). The rest of the numerals quoted by Koelle are essentially the same as the ones found in Table 4.34.

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##### 4.1.2.6 Jukunoid

Table 4.34: Jukunoid numerals

	1. Bete (Juk.)	2. Central	3. Yukuben-Kuteb	Proto-Jukunoid
1	jífe	(d)zun/(d)zun	nzo, ji?, yǒn?, ngēmé?, tǎŋ?	*d)zun? jífe? tǎŋ?
2	há	pye(na)	pa(n)/fa(n)	*pa(n)/fa(n)
3	tà	(t)sara	ta	*ta
4	jè	nye(na)	ji, nje/nzi	*nye
5	tsòŋ	(t)swa(na)	t(s)oŋ	*tsoŋ
6	5+1	5+1	5+1	*5+1
7	5+2	5+2	5+2	*5+2
8	5+3	4 redupl., 5+3	5+3	*4 redupl., 5+3
9	5+4	5+4?	5+4	*5+4
10	wo	dub (<Hausa?), dz(w)e	kur? kuwub, bji/bzi, jwēr	*jwe, wo? kur?
20	?	'body' (á-dì)	kam/k(w)om	*'body' (di)
100	?	20*5	20*5, Hausa	*20*5
1000	?	<Hausa	Hausa	<Hausa

Tentative reconstructions for the three major branches of this relatively small family are presented in the table above. The terms for 'one' and 'ten' vary significantly.

##### 4.1.2.7 Kainji

The comparative analysis of the Kainji group is hindered by the fact that there is no linguistic description for the majority of its languages. However, there is a great range in numerical terms within those languages, for which reliable data is available. The following analysis is based on thirty pertinent sources, including the comparative list of forms compiled by [Dettweiler & Dettweiler \(1993\)](#). What follows is a step-by-step analysis of the available data that will hopefully yield some answers.

## 4.1.2.7.1 ‘One’

Table 4.35: Kainji stems for ‘1’

Language		‘1’	‘1’	‘1’	‘1’
Eastern					
Jera	Iguta			dínkā	
Jera	Janji			dínkɛ	inde
Jera	Bunu		ù-ńńínì	dínkà	
Jera	Buji			dínkà	
Amo	Amo			*lu-run	
Western					
Basa	Basa	hĩn			
Duka	C’lela	tʃĩ			
Duka	Hun-Saare(Duka)	cɔɔn			
Duka	Ut-Ma’in	tʃɔ:n			
Duka	Rijau	tʃoon			
Duka	Darangi	tʃoor			
Duka	Bunu	d̪iĩ			
Duka	Iri	dən			
Duka	Dukku	dɛn			
Duka	Giro	d̪iĩn			
Kambari	Tsishingini (Kambari)		íyyán		
Kambari	Agaushi (Tsikimba)				‘-tè
Kambari	Kambali (Koelle)		íípa		
Kamuku	Western Acipa (Cicipu)				tô:
Kamuku	Kamuku (dial.)		ĩjá		
Kamuku	Hungworo (Hungwere)		ĩ:jǎ		
Kamuku	Pongu (Pangu)	hĩ:			
Kamuku	Kamuku (Koelle)	hĩ́a			
Kamuku	Fungwa	hĩ			
Reshe	Reshe (Tureshe)	tsúnnè			

The grouping principles for the forms included in this table are admittedly haphazard. On the one hand, the relationship between some of the forms arranged into the same column (e.g. *hĩn*, *tʃɔ:n* and *dɛn* or *dínkā* and *\*lu-run*) is not immedi-

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ately apparent. On the other hand, some of the forms placed in separate columns might be etymologically related (e.g. *dii*n Giro and *dinkā* Iguta). In these circumstances it seems reasonable to go back to the reconstruction of the Kainji term for ‘one’ on the basis of the data provided by other Benue-Congo branches (see §4.1.4).

##### 4.1.2.7.2 ‘Two’

The above considerations regarding the term for ‘one’ are applicable to the term for ‘two’ as well. The inventory of forms found in Table 4.36 is neither helpful

Table 4.36: Kainji stems for ‘2’

		‘2’	‘2’	‘2’	‘2’
Eastern					
Jera	Iguta			rè:pú	
Jera	Janji		ti-rɛ (~wa--a-)	-rèpó	
Jera	Bunu				
Jera	Buji			rèpó	
Amo	Amo				im-ba
Western					
Basa	Basa	jèbí (yééwi)			
Duka	C’lela		ʔílí		
Duka	Hun-Saare(Duka)		yoór		
Duka	Ut-Ma’in		j̥ɔːr		
Duka	Rijau		joor		
Duka	Darangi		joor		
Duka	Bunu		jɔːr		
Duka	Iri		joor		
Duka	Dukku		juur		
Duka	Giro		joor		
Kambari	Tsishingini (Kambari)		ì-rè		
Kambari	Agaushi (Tsikimba)		-rè		
Kambari	Kambali (Koelle)		íí-lɛ		
Kamuku	Western Acipa (Cicipu)	jápù			
Kamuku	Kamuku (dial.)	ⁿdɔ́wɔ̀			
Kamuku	Hungworo (Hungwere)		ʔíʒ-dʒɔ̀		
Kamuku	Pongu (Pangu)		rè:nù		
Kamuku	Kamuku (Koelle)				wúúlee
Kamuku	Fungwa	jó:gó			
Reshe	Reshe (Tsureshe)				rìsɔ̀

for the reconstruction of the Proto-Kainji term for ‘two’, nor suggestive of the morphemic analysis of the pertinent forms within each of the branches. As we hope to demonstrate below, additional information that may prove useful for the reconstruction of the term for ‘two’ can be obtained through the analysis of the term for ‘seven’.

## 4.1.2.7.3 ‘Three’, ‘Four’ and ‘Five’

Table 4.37: Kainji stems for ‘3’-‘5’

		‘3’	‘4’	‘5’	‘5’
Eastern					
Jera	Iguta	tààrū	nà:nzī		ʃù:bì
Jera	Janji		tɪ-naze		ʃɪbì
Jera	Bunu		nà:zé		ʃí:bì
Jera	Buji		nàzé		ʃíbí
Amo	Amo		nnas	n-ntaun	
Western					
Basa	Basa	tàtɔ	néʃi (nááʃii)	táná	
Duka	C’lela	tí:ʃù	ná:sé	tǎ	
Duka	Hun-Saare(Duka)	tett	náss	táán	
Duka	Ut-Ma’in	tɔt	ná:s	tán	
Duka	Rijau	tɪt <sup>h</sup>	nəss	taan	
Duka	Darangi	tɪt <sup>h</sup>	nas	taan	
Duka	Bunu	tɪt <sup>h</sup>	nas	tan	
Duka	Iri	tɪrt	nass	taan	
Duka	Dukku	tiit	nas	taan	
Duka	Giro	tɪt <sup>h</sup>	nass	taan	
Kambari	Tsishingini (Kambari)	tàʔàtsú	nóʃín	tá:ʷwún	
Kambari	Agaushi (Tsikimba)		‘-nəʃi	‘-tǎũ	
Kambari	Kambali (Koelle)	tááatsu	nóóʃín	tááu	
Kamuku	Western Acipa (Cicipu)	tá:tù	nósi	tǎu	
Kamuku	Kamuku (dial.)	tátɔ	nəʃi	tóu	
Kamuku	Hungworo (Hungwere)	tâɔ	ùnəʃĩ	sàtá	
Kamuku	Pongu (Pangu)	tá:tù	nǔ:ʃĩ	tá	
Kamuku	Kamuku (Koelle)	tááto	náʃii	taa ~ tááa	
Kamuku	Fungwa		nó:ʃi	tá	
Reshe	Reshe (Tsureshe)	tàtswā	nāʃě	tǔ	

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Unlike the terms for ‘one’ and ‘two’, the numerals covering the sequence from ‘three’ to ‘five’ are quite homogeneous and thus can be reliably reconstructed (just as in the majority of other NC branches). The provisional forms suggested for ‘three’, ‘four’, and ‘five’ are *\*tat*, *\*nas*, and *\*tan* respectively. The latter form can also be reconstructed for Eastern Kainji on the basis of the Amo evidence. Thus *fibi* (*fī-bī*?) ‘five’ is an innovation of the Jera subgroup.

##### 4.1.2.7.4 ‘Six’ and ‘Seven’

Table 4.38: Kainji stems and patterns for ‘6’-‘7’

			‘1’	‘2’	‘5’	‘6’	‘7’	‘7’
Eastern								
1	Jera	Iguta				twà:sì		súnà:rí
2	Jera	Janji		ti-rɛ		tase		sunare
3	Jera	Bunu				tá:sè ~tá:sé		súnà:rɛ
4	Jera	Buji				tásé		súnà:ri
5	Amo	Amo			n-ntaun	ku-toŋfin	kuzor	
Western								
6	Basa	Basa	hīn		táná	tʃihin	tʃéndʒe	
7	Duka	C’lela	tʃĩ	*ʔi-lì	tá	tʃihĩ	táʔilĩ	
8	Duka	Hun-Saare	cɔɔn	*yoo-r	táán	cind	tá’yoor	
9	Duka	Ut-Ma’in	tʃɔ:n	*jɔ:r	tán	ʃiʃin	tàʔɛr	
10	Duka	Rijau	tʃoon	*joo-r	taan	tʃiin	ta’joor	
11	Duka	Darangi	tʃoor	*joo-r	taan	tʃin	taŋ’jor	
12	Duka	Bunu	dii	*jɔɔ-r	tan	tʃiin	ta’juu	
13	Duka	Iri	dən	*joo-r	taan	tʃinnd	ta’joor	
14	Duka	Dukku	dɛn	*juu-r	taan	tʃinɟ	ta’jaar	
15	Duka	Giro	diin	*joo-r	taan	tʃind	ta’joor	
16	Kambari	Tsishingini		i-rɛ	tá:wún	tà:lí	tʃindɛrɛ	
17	Kambari	Agaushi	-tɛ	-rɛ	-táũ	-tə:lí	ʃindɛrɛ	
18	Kambari	Kambali		íí-le, *rɛ	tááu	tóólí	tsindeɛrɛ	
19	Kamuku	West.Acipa		*jà	táũ	tóríhĩ	tíndàjà	
20	Kamuku	Cinda		*uɔ	tóù	tánəhi	təndəuɔ	
21	Kamuku	Hungworo		ʔʔ-dʒə, *rʔ	sàtá	ũ-túnihĩ	ũ-təndərʔ	
22	Kamuku	Pongu	hĩ:	rɛ:nù, *rə	tá	tʃinĩhi	tʃəndərɛ	
23	Kamuku	Kamuku	hĩja	*lee	taa ~ táaa	túnui	tandálee	
25	Kamuku	Fungwa	hĩ	*lò	tá	ʃihĩ	tíndàlò	
25	Reshe	Reshe	tsúnnɛ		tʃ	tēnzɔ	tànsǎ	

Some of the previously discussed terms for ‘one’, ‘two’ and ‘five’ are quoted in the table above alongside the terms for ‘six’ and ‘seven’. Such grouping might facilitate a better understanding of compound numerals (if ‘six’ and ‘seven’ are indeed compounds) as well as the methodological and theoretical aspects behind their reconstruction. In addition, it might help to establish whether parts of compound numerals can be used to enhance the reconstruction of the primary numerical terms such as ‘one’, ‘two’, and ‘five’.

The compound nature of the term for ‘seven’ is betrayed by its ‘length’: the forms quoted in the table normally have two to three syllables, whereas the primary numerals are as a rule mono- or (rarely) bisyllabic.

At the same time, in some of the cases the pattern ‘7=5+2’ is immediately apparent (cf. languages 7–11, 13–15).

At this point, however, we will deal with those languages that show only faint (or no) traces of the pattern in question (‘7=5+2’). E.g. in Tsishingini (16) we have to assume the pattern ‘7=X+2’, where ‘X’ is an unknown element, whereas in language 12 the pattern is ‘7=5+X’ (the relationship between ‘X’ and the term for ‘two’ is questionable).

Let us assume that the Proto-Kainji terms for ‘two’ and ‘five’ are \*CL-re (cf. e.g. Duka \**jo-re* > *joor*) and \**tan* respectively. In this case, the compound term for ‘seven’ would be \**tan*-(CL)-re or \**tan*-X (connector)-(CL)-re. The most typical diachronic scenarios for the emergence of the ‘X’-patterns effective on the synchronic level are as follows:

1. Both basic elements of the compound ‘seven’ (i.e. reflexes of the terms for ‘two’ and ‘five’) are preserved in the language, as is the compound itself (sometimes slightly modified in accordance with the relevant phonotactic rules). Cf. e.g. the Darangi (11) evidence: \**jo-re* > *joor* ‘2’, \**tan* > *taan* ‘5’, \**taan-jo-re* > *tan’jor* ‘7’. In this case, the reconstruction comes down to the simple statement that in the Darangi language ‘7=5+2’.
2. The compound ‘seven’ (even if slightly modified) is preserved in the language, while the term for ‘two’ is replaced with an innovation. Let us assume that in the Basa language (6) *jèbí* (Koelle: *yééwi*) ‘2’ < \**jo-bi* (innovation), *táná* ‘5’ (the reflex of \**tan*), *tféndze* < \**tan-re* ‘7’. In this case, \**tan-re* > *tan-dze* > *tendze* (regressive assimilation) > *tféndze* (palatalization before the front vowel). Hypothetical as it may be, this example is phonetically plausible.

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Any of these model processes may result in the loss of phonetic resemblance between a derived form and its source. This may lead to a situation where a derivation pattern is no longer recognizable by speakers. As a consequence, the term for ‘seven’ becomes opaque on the synchronic level and can no longer be analysed as ‘5+2’.

This means that the replacement of the original term for ‘two’ by an innovation does not affect the compound term for ‘seven’, i.e. that its second part is not automatically replaced. Moreover, in case there is sufficient evidence that the second of the aforementioned scenarios was applied, we may enhance the reconstruction of the primary term for ‘two’ on the basis of the compound term for ‘seven’. E.g. the form *tféndze* suggests that the original Basa root for ‘two’ was *\*dze / re* and not *\*bi* as in the majority of the Kainji languages.

The available pertinent forms point toward the reconstruction of the Proto-Kainji form as *\*tan-da-re* (‘5’-connector-‘2’). The reconstructed forms for ‘two’ (marked with [\*] in Table 4.38) suggest a Proto-Kainji form *\*re* ‘2’ and the pattern *\*7=5+2*. The Eastern Kainji forms for ‘seven’ are probably innovations.

However, some of the forms attested for ‘seven’ may point toward the reconstruction of ‘two’ as *\*ba/bi* in Proto-Kainji. In this case our reference list should be expanded by adding dialects that were not included for reasons of space: it is not possible to quote every single NC source every time. E.g. Cawai (Eastern Kainji) *a-ba* ‘2’, *a-tar-ba* ‘7’, Ngwoi (Hungworo) *e-bia* ‘2’, *sa-bia* ‘7’ (the root *\*ba/bi* is also suggested by Eastern: Gure *pi-ba*, Gbem *ve*, Piti *ba*, Surubu *ka-va*).

The forms for ‘six’ are more problematic since they may go back to a primary root (or roots). They may be tentatively reconstructed as *\*ci(hi)n*, *\*tas*, and *\*tel*. We will come back to these forms in order to enhance their reconstruction in case similar forms are detected in other BC branches.

##### 4.1.2.7.5 ‘Eight’

The Eastern Kainji and Duka forms (if related) suggest that the primary root *\*-ru* should be reconstructed for ‘eight’ in Proto-Kainji. At this point, let us reserve a preliminary form *\*u-ro/ ji-ru* for further comparison. In most of the Kamuku languages the pattern ‘8=5+3’ is traceable (but note the Western Acipa form that is comparable to those attested in Kambari and possibly Amo (Eastern)). This points towards an alternative form of uncertain morphological structure (*\*kunle(v)/ kunlo* ‘8’).



Table 4.39: Kainji stems and patterns for ‘8’

		‘8’	‘8’	‘8’
Eastern				
Jera	Iguta	ùrū		
Jera	Janji	uro		
Jera	Bunu	ùrú		
Jera	Buji	úrú		
Amo	Amo			kuliv
Western				
Basa	Basa		tɔndatɔ (5+3)	
Duka	C’lela	jé:rù		
Duka	Hun-Saare(Duka)	yéér		
Duka	Ut-Ma’in	é:r		
Duka	Rijau	eer		
Duka	Darangi	er		
Duka	Bunu	εεr		
Duka	Iri	ɪr		
Duka	Dukku	εεr		
Duka	Giro	εεr		
Kambari	Tsishingini (Kambari)			kùnlà
Kambari	Agaushi (Tsikimba)			kúnlài
Kambari	Kambali (Koelle)			kúnlo
Kamuku	Western Acipa (Cicipu)			kùrìl:ò
Kamuku	Kamuku (dial.)		tántátò (5+3)	
Kamuku	Hungworo (Hungwere)		ũ-tátàṭò (5+3)	
Kamuku	Pongu (Pangu)		ṭénda:tù (5+3)	
Kamuku	Kamuku (Koelle)		túndaat (5+3)	
Kamuku	Fungwa		tíndátù (5+3)	
Reshe	Reshe (Tsureshe)		dálànzò	

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##### 4.1.2.7.6 ‘Nine’ and ‘Ten’

There are several forms and patterns for ‘nine’ whose reconstruction is equally plausible: ‘9=5+4’, *\*tor(b)oj* (possibly <‘10–1’), *\*jiro*. Each of the forms/patterns is characteristic of a particular sub-group of languages. The term for ‘ten’ is reconstructed as *\*pwa*, with its reflexes attested in all Western Kainji branches. Three alternative forms (*\*turu*, *\*kuri*, *\*kup/kpa*) are found in Eastern Kainji, where they are employed for counting and in quantity measures.

##### 4.1.2.7.7 ‘Twenty’ and ‘Hundred’

The diversity of patterns for ‘hundred’ may indicate the absence of the term in Proto-Kainji. The term for ‘twenty’ likely followed the pattern ‘20=10\*2’. However, the form *\*fín/fík* attested in three of the Western Kainji branches is noteworthy.

##### 4.1.2.7.8 Summary

It should be noted that a full reconstruction of the Kainji numeral system is not presently achievable for a number of reasons: some of the forms have multiple alternative variants, many terms are not attested outside Kainji (or have an obscure morphological structure), the elements of the compound terms are not always identifiable (e.g. in the patterns ‘7=X+2’ or ‘7=5+X’), etc.

The numerals attested within this group are so peculiar (at least for a non-specialist in the Kainji languages like myself) that one may wonder whether the Kainji group should indeed be treated as a branch of Benue-Congo. In any case, it seems reasonable to record all the forms reconstructable within the Kainji sub-groups. These forms and patterns are represented in the table below (Table 4.40).

Table 4.40: Kainji summarized data for BC reconstruction

1	<i>*tsin, hin, din, jan/yan, *te ...</i>	7	<i>*5+2</i>
2	<i>*re, *ba/bi, -pu?</i>	8	<i>*ro/ru, *5+3, *kunle(v)/kunlo</i>
3	<i>*tat</i>	9	<i>*5+4, *10–1, *jiro</i>
4	<i>*nas</i>	10	<i>*pwa, *turu, *kuri, *kup/kpa</i>
5	<i>*tan</i>	20	<i>*10*2, *fín/fík</i>
6	<i>*ci(hi)n, *tas (&lt;3?), *tel</i>	100	?

Table 4.41: Kainji stems and patterns for ‘9’ and ‘10’

		‘9’	‘9’	‘9’	‘10’	‘10’
Eastern						
Jera	Iguta		tòrbò (10–1)			bū-tú:rú
Jera	Janji		toroəi (10–1)			turo, kɪrəu
Jera	Bunu		tò:rêj (10–1)			bì-tú:rú; rú-kúrí
Jera	Buji		toroj (10–1)			bì-túrú; rì-kùrì
Amo	Amo		ku-tivi			ku-lidir *li-kure
Western						
Basa	Basa	tʃindʒɪfɪ (5+4)				uɲpwá
Duka	C’lela			dó:rè	ʔó:pá	
Duka	Hun- Saare(Duka)			jírò	əpp	
Duka	Ut-Ma’in			dʒʷə:r	əp	
Duka	Rijau			dʒɪrɔ	əp <sup>h</sup>	
Duka	Darangi			dʒɪrɔ	’əp <sup>h</sup>	
Duka	Bunu			dʒɪrɔ	əp <sup>h</sup>	
Duka	Iri			dʒɪrɔ	əp <sup>h</sup>	
Duka	Dukku			dʒɪrɔ	əp <sup>h</sup>	
Duka	Giro			dʒedɔ	əp	
Kambari	Tsishingini (Kambari)	kùttʃɪ				kùppá
Kambari	Agaushi (Tsikimba)	kùtʃɪ				kùpà
Kambari	Kambali (Koelle)	kúciici				hókpa
Kamuku	Western Acipa (Cicipu)	kùtítɪ (5+4)				ùkúpà
Kamuku	Kamuku (dial.)	téndáʃɪ (5+4)				òpá
Kamuku	Hungworo (Hungwere)	ūtənəsɪ̃ (5+4)				ikóp’è
Kamuku	Pongu (Pangu)	tũndúʃɪ (5+4)				úpwá
Kamuku	Kamuku (Koelle)	tándaafii (5+4)				ópaa
Kamuku	Fungwa	tíndíʃɪ (5+4)				úpá
Reshe	Reshe (Tsuresshe)	tānāʃé (5+4)				úpwà

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Table 4.42: Kainji stems and patterns for ‘20’ and ‘100’

		‘20’	‘20’	‘20’	‘100’
Eastern					
Jera	Iguta			12+8	12*8+4
Jera	Janji				
Jera	Bunu				ri:mú
Jera	Buji			10*2	*ri-nu
Amo	Amo			akut-2	li-kalt
Western					
Basa	Basa	wéfi (K:wóófi)			dupu íjèbi (50*2)
Duka	C’lela	d <sup>o</sup> k <sup>w</sup> èzè			k <sup>w</sup> èfɛtǎ/vzǐngù
Duka	Hun- Saare(Duka)	ɛr-kwooz			kwooz-ɛt táán (20 * 4 ), o-zùngu
Duka	Ut-Ma’in		ɛrɛfík		ɛrɛfíkɛtán (20 * 5 )
Duka	Rijau				
Duka	Darangi				
Duka	Bunu				
Duka	Iri				
Duka	Dukku				
Duka	Giro				
Kambari	Tsishingini (Kambari)		ú:fín		?
Kambari	Agaushi (Tsikimba)			kà-màngà	
Kambari	Kambali (Koelle)		úfí		
Kamuku	Western Acipa (Cicipu)			10*2	10*10, mándá
Kamuku	Kamuku (dial.)			10*2	dàrí (<Hausa) or dè òpá
Kamuku	Hungworo (Hungwere)			10*2	ihɔŋg <sup>w</sup> à, 10*10
Kamuku	Pongu (Pangu)	wéfi			bijĩnǎ
Kamuku	Kamuku (Koelle)			10*2	
Kamuku	Fungwa		kùdɛjìò		ikwà:ku, <Hausa
Reshe	Reshe (Tsureshe)			álèsà	ránǎkū

## 4.1.2.8 Platoid

## 4.1.2.8.1 ‘One’ (Table 4.43)

The grouping of roots here is admittedly provisional, because their morphological structure is often obscure. In addition, phonetic changes that may have taken place are unknown. It is very difficult to propose any etymological interpretation for the forms represented in the table. Which of them could be attributed to the Proto-Platoid is unclear (*\*(y)in* represents a possibility, in case noun class markers are indeed incorporated into the numerical terms).

Table 4.43: Platoid stems for ‘1’

1.	Alumu-Tesu	Tesu				à-nyimbere
2.	Ayu	Ayu	ɪ-dɪ			
3.	Biromic	Birom		gw-ìniŋ/(d)-ìniŋ		
3.	Biromic	Eten	dáy			
4.	Cenral	Izere		z-ìniŋ		
4.	Cenral	Irigwe				ʔzrú
4.	Cenral	Kaje (dial.)				yirun/yirən
4.	Cenral	Tyap			a-nyun	
5.	Hyamic	Hyam		ʒ-ìni		
6.	Ninzic	Mada		*nen		gyər
6.	Ninzic	Ninzo		*ni		jír
7.	Northern	Ikulu				ínjí
8.	Southeastern	Fyam		kʰ-én, *in		
9.	Southern	Lijili	lō			
10.	Taroid	Tarok (dial.)			ù-zìŋ, *dín?	
11.	Western	Yeskwa (dial.)				è-nyí
11.	Western	Rukuba (dial.)		gy-ín		
11.	Western	Eggon (dial.)				á-kián
11.	Western	Eggon (dial.)	ò-rí			
11.	Western	Hasha		nʷ-ināŋ		
?	Sambe		n-ínínā			

Tesu data are taken from [Blench & Kato 2012](#).

## 4.1.2.8.2 ‘Two’, ‘Three’ and ‘Four’ (Table 4.44)

The roots for ‘two’ containing voiced and voiceless labials are attested in the Platoid languages (as well as in some other BC branches). They may be tentatively reconstructed as *\*pa/ fa/ ha* and *\*ba/ wa*.

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Table 4.44: Platoid stems for ‘2’, ‘3’ and ‘4’

			‘2’	‘2’	‘3’	‘4’
1.	Alumu-Tesu	Tesu		à-hùrwi	à-taato	a-ane
2.	Ayu	Ayu	ahwa/afah		a-taar	a-naŋaɟ
3.	Biromic	Birom		-bā	-tāt	-nā:s
3.	Biromic	Eten	fà		tāt/tfāt	nā:s
4.	Cenral	Izere	fà		taar	nààs
4.	Cenral	Irigwe		ʔm̩ʲè	ʔtsʲè	ʔni
4.	Cenral	Kaje (dial.)	’-hwa		’-tat	-nai
4.	Cenral	Tyap	a-feaŋ		a-tat	a-naai
5.	Hyamic	Hyam	f̥eri, *fo		taat	naaŋ
6.	Ninzic	Mada		y-wā, *gba	tar	nlyē
6.	Ninzic	Ninzo	há	*gba	tár	nō(s)
7.	Northern	Ikulu	ín-pààlá		ín-táá	ín-nāā
8.	Southeastern	Fyam	por		táár	naas
9.	Southern	Lijili		à-bẹ̣	à-tfẹ̣	à-nàrọ̣
10.	Taroid	Tarok (dial.)	ù-pàríim		ù-fádíŋ	ù-nèdíŋ
11.	Western	Yeskwa (dial.)		èn-và	èn-tât	èn-nà
11.	Western	Rukuba (dial.)	’-hàk		-tát	-nàs
11.	Western	Eggon (dial.)	à-hàà		à-tráá	ù-jí
11.	Western	Eggon (dial.)	ò-hà		ò-cá	ò-jì
11.	Western	Hasha	à-p <sup>w</sup> ò		ā-tāt	à-nìŋ
?	Sambe	bèkà-fà	kà-tú	kà- tār/béká- tār	kà- nè/bèkà- nè	

The roots for ‘three’ and ‘four’ are more stable. Some of their reflexes suggest that the Proto-Platoid forms must have been close to the NC forms: \*tat ‘3’ and \*nai / \*nas ‘4’.

## 4.1.2.8.3 ‘Five’ and ‘Six’ (Table 4.45)

Table 4.45: Platoid stems and patterns for ‘5’ and ‘6’

			‘5’	‘5’	‘6’	‘6’
1.	Alumu-Tesu	Tesu	a-túngú		térékífi (<3?)	
2.	Ayu	Ayu	a-tugen		a-teer (3PL)	
3.	Biromic	Birom	-tūjūn			-tī:mìn
3.	Biromic	Eten		wí	tà:rà (<3)	
4.	Cenral	Izere	tùwùn		ìgà-rà:r (3PL)	
4.	Cenral	Irigwe	ʔtɛʷòò		rì-tsʰé (3PL)	
4.	Cenral	Kaje (dial.)		-pɸwɔn	kə-tat (3PL)	
4.	Cenral	Tyap		a-fwuon	a-taa (3PL)	
5.	Hyamic	Hyam	twoo		twaa-ni (5+1)	
6.	Ninzic	Mada	tun		tān-nèn (5+1)	
6.	Ninzic	Ninzo	tʰí		tā-nì (5+1)	
7.	Northern	Ikulu	ín-cūū		ín-cúnú (5+1?)	
8.	Southeastern	Fyam	tóón		táár-in (5+1)	
9.	Southern	Lijili	à-sq̄		mìn-zí (3PL?)	
10.	Taroid	Tarok (dial.)	ù-túkún		ù-kpá-díŋ (X+1?)	
11.	Western	Yeskwa (dial.)	èn-tyúò		èn-cí (5+1)	
11.	Western	Rukuba (dial.)	-túŋ		tàŋ	
11.	Western	Eggon (dial.)	ò-tnó	*fúúŋ	ù-fín (5+1?)	
11.	Western	Eggon (dial.)	ò-tnô	*fɔ̃ŋ	à-fĩ(5+1?)	
11.	Western	Hasha	ā-tūkūn			à-kʷip
?	Sambe	kà-tūn			kù-hò/dògò-hò	

The term for ‘five’ is reconstructed as *\*tu(ku)n*. It is likely that there was no primary term for ‘six’ in the Proto-Platoid group: in all pertinent languages (except for Eggon, Hasha and Sambe) the term in question either follows the pattern ‘5+1’ or is built by adding a plural class to the term for ‘three’.

## 4.1.2.8.4 ‘Seven’ and ‘eight’ (Table 4.46)

Word-building patterns for the term for ‘seven’ are normally quite transparent: ‘7=5+2’ is attested in the majority of the sub-groups, whereas ‘7=4+3’ is more rare. The same can be applied to the term for ‘eight’, which either follows the pattern ‘8=5+3’ or is built by partial reduplication of ‘four’ (4 redupl.). Sometimes the archaic primary terms for ‘two’ and ‘five’ are traceable in the forms for ‘seven’ and ‘eight’ (such forms are marked with an asterisk in the respective tables).

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Table 4.46: Platoid stems and patterns for ‘7’ and ‘8’

			‘7’	‘8’	‘8’
1.	Alumu-Tesu	Tesu	térékífi napí (6+X)		tsyátšyá
2.	Ayu	Ayu	a-taraŋaŋ (3+4)	a-na-ba-bog (4+X)	
3.	Biromic	Birom	-tā:mà (5+2)		-rwīt
3.	Biromic	Eten	nītā (4+3)	nàràs (4+X)	
4.	Cenral	Izere	kà-nàsàtáár (4+3)		ì-kará
4.	Cenral	Irigwe	nats <sup>l</sup> é (4+3)		klaŋvā
4.	Cenral	Kaje (dial.)	tì:ruŋ (cf. yiruŋ ‘1’)	nai-mōwak (4+X)	
4.	Cenral	Tyap	a-natat (4+3)	a-ninai (4 redupl.)	
5.	Hyamic	Hyam	twarfo (5+2)?	naaraŋ (4+X)	
6.	Ninzic	Mada	tāngbā (5+2)	tāndā (5+3)	
6.	Ninzic	Ninzo	tāngbā (5+2)	tāndār (5+3)	
7.	Northern	Ikulu	tóòpāā (5+2)	nínñāā (4 redupl.)	
8.	Southeastern	Fyam	tāmōr (5+2)		tjínít
9.	Southern	Lijili	mú-tá		rúnó
10.	Taroid	Tarok (dial.)	ù-fāŋ-ját (X+3)	ù-nènnè (4 redupl.)	
11.	Western	Yeskwa (dial.)	tònvā (5+2)	tóndát (5+3)	
11.	Western	Rukuba (dial.)	taŋbák (5+2)	ta:rat (5+3)	
11.	Western	Eggōn (dial.)	à-fóhà (5+2)	à-fóté (5+3)	
11.	Western	Eggōn (dial.)	ò-fóhà (5+2)	ò-fóté (5+3)	
11.	Western	Hasha	à-k <sup>w</sup> ip n <sup>y</sup> ināŋ (cf. 6, 4)	nàniŋ (4 redupl.)	
?	Sambe	kōrōnkérā/kúrkōnrā		ī-tór	



## 4.1.2.8.5 ‘Nine’ and ‘Ten’ (Table 4.47)

It is likely that the term for ‘nine’ attested in Ikulu, Yeskwa and Sambe (*toro/cora*) is primary. The hypothetical inter-relationship of these roots may be of interest for the Proto-Platoid reconstruction, because these languages do not belong to the same sub-group. The forms of ‘nine’ in the majority of the languages show traces of ‘five’, ‘four’, ‘ten’ and ‘one’, which suggests that two alternative patterns (‘9=5+4’ or ‘9=10-1’) could have been in use. Some rare patterns (e.g. ‘9=12-3’ (Biom) and ‘9=8+X (Tesu)) are of interest for the linguistic typology.

According to Bouquiaux (1962) the term for ‘twelve’ (*kūrū*) is attested in Biom. In this language ‘21’ (*kūrū ná syā:-tāt*) = ‘12+9’ (*syā:-tāt*), while ‘80’ (*bākūrū bātī: mìn ná rwī:t*) = ‘12\*6’ (*-tī: mìn*) + ‘8’ (*-rwī:t*). The pattern ‘9=12-3’ is not totally unexpected within this context. A similar system can be traced in the Mada language. As stated in our source (Abiel Barau Kato), “Like many languages in Platoid area, Mada has an old duodecimal numeral system up to 24.”<sup>10</sup> The Mada terms for ‘twelve’ and ‘twenty-one’ are *tsɔ* and *tsɔtīyār* (*tīyār* ‘9’) respectively. The same root for ‘twelve’ (*tsó* ‘12’) is found in Ninzo for which our source notes that “In the traditional counting system, to count beyond twelve (12), that is from thirteen onwards, entails counting in sets of twelve.”<sup>11</sup> Moreover, the same root is attested in Tesu (*tsɔ* ‘12’). According to Uche Aaron, a primary root *ḷ-c* “12” is discernible in Eggon (beside the composite term ‘12=10+2’). This root is also found in Rukuba (Che) in *u-sók* ‘12’. The duodecimal numeral system as attested in this language is of the utmost sophistication. According to Luc Bouquiaux: “There are two words for number ‘72’, *kitu* and *atu*, 144 can be expressed as *atu ahak* and 200 is *atu ahak ni isok inas ni hak ni ta:rat* (  $72 * 2$ ) +  $(12 * 4) + 8$ .”<sup>12</sup> Other languages in this group normally use less exotic systems. In some of them, however, e.g. in Eten, “The highest number that can be counted in traditional way is 144,”<sup>13</sup> i.e. ‘12\*12’. To sum up, it seems that a primary term for ‘twelve’ can be reconstructed on the Proto-Platoid level, hence the pattern for ‘nine’ should most probably be reconstructed as \*9=12-3’.

The system outlined above adds a new perspective to the forms with the meaning ‘ten’. Presumably, there was a Proto-Platoid primary term for ‘ten’ that may be tentatively described as \**kop*. The alternative forms *sok/swak* may be etymologically related to the forms for ‘twelve’ cited above. If so, their change of meaning may have resulted from the adoption of a decimal system. The root *gur/wur* is distinguished as well.

<sup>10</sup><https://mpi-lingweb.shh.mpg.de/numeral/Ninzo.htm>

<sup>11</sup><https://mpi-lingweb.shh.mpg.de/numeral/Ninzo.htm>

<sup>12</sup><https://mpi-lingweb.shh.mpg.de/numeral/Rukuba.htm>

<sup>13</sup><https://mpi-lingweb.shh.mpg.de/numeral/Aten.htm>

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Table 4.47: Platoid stems and patterns for ‘9’ and ‘10’

			‘9’	‘9’	‘10’	‘10’	‘10’
1.	Alumu-Tesu	Tesu	tɕyátsyá nájí (8+X)				gòròmàvɔ
2.	Ayu	Ayu	a-tu-lu-bog (5+4?)			i-fog/ a-ja-la-bog	
3.	Biromic	Birom	syā:-tāt (12- 3)				12-2
3.	Biromic	Eten	dù:dʒàŋ (10-X)				dù:bò
4.	Cenral	Izere	kātúbók (5+X?)			kù-sók	
4.	Cenral	Irigwe		kruvájá		ʃʷá	
4.	Cenral	Kaje (dial.)	kumɔwi:ruŋ (10-1?)		*ku?	swak	
4.	Cenral	Tyap	akubunyun (10-1?)		*kub?	swak	
5.	Hyamic	Hyam	mbwan kɔb (10-1)		kób		
6.	Ninzic	Mada	tīyār (X-1?)				gùr
6.	Ninzic	Ninzo	tīr (s) (3-X?)				wūr
7.	Northern	Ikulu		tɔ̀llāā	nù-kɔp		
8.	Southeastern	Fyam	téres (3-X?)				dukút
9.	Southern	Lijili	zà-tfɛ́ (X-3?)				zà-bɛ́
10.	Taroid	Tarok (dial.)	ùfàŋzín̄tín̄ (X+4)		ù-gbápei		
11.	Western	Yeskwa (dial.)		tyúôrá	ó-kóp		
11.	Western	Rukuba (dial.)	ta:ras (3-X?)				u-wùruk
11.	Western	Eggon (dial.)	áfúúní (5+4)		ó-kpo		
11.	Western	Eggon (dial.)	ɔ́fɔ́n̄í (5+4)		ɔ́-kbɔ́		
11.	Western	Hasha	nàn̄n̄ màrēŋ (4+X)				ā-wük
?	Sambe		tōrō/kà-tóró			jò-wō	

The specific nature of the Platoid numeral system prevents us from providing separate forms for ‘twenty’ and ‘hundred’. The pattern  $^{**}20=12+8$  traceable in a number of pertinent languages is reconstructed for Proto-Platoid. A compound nature is also assumed for ‘hundred’.

The results pertaining to the advanced reconstructions of numerals in Proto-Platoid are summed up in the table below (Table 4.48).

Table 4.48: Proto-Platoid numeral system (\*)

1	(y)in, di(n), jir, nìŋ	7	5+2, 4+3
2	pa/fa/ha, ba/wa.	8	4 redupl., 5+3
3	tat	9	5+4, 10–1, 12–3, tu(ku)n
4	nai/nas	10	kop, gur/wur
5	tu(ku)n	20	12+8
6	5+1, 3PL	100	?

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##### 4.1.2.9 Nupoid

Let us try to reconstruct the Proto-Nupoid numeral system.

Table 4.49: Nupoid numerals and Proto-Nupoid (\*)

Nupoid	Ebira	Gbari	Kakanda	Nupe	*Nupoid
1	òð-nyĩ	gb <sup>ma</sup> :- rĩ,*wĩ	gú-ní	ni-ní	ni/nyi, wi? ri?
2	èè-vā	ŋ <sup>w</sup> ã̃-ba	gú-bà	gú-bà	ba
3	èè-tá	ŋ <sup>w</sup> ã̃-tʃa	gú-tá	gú-tá	ta
4	èè-nà	ŋ <sup>w</sup> ã̃-ɲi	gú-ni	gú-ni	na/ni
5	èè-hí	ŋ <sup>w</sup> ã̃-t <sup>n</sup> ù	gú-tũ	gú-tsũ	tun/tnu/tsun, hi?
6	hĩ-nɔ̃-nyĩ (5+1)	t <sup>n</sup> ú-wĩ (5+1)	gú-tua-ɲĩ (5+1)	gú-tswà- ɲĩ (5+1)	5+1
7	hĩ-m̃-bā (5+2)	t <sup>n</sup> â-ba (5+2)	gú-tua-bà (5+2)	gú-twà-bà (5+2)	5+2
8	hĩ-ñ-tá (5+3)	t <sup>n</sup> ã̃-tʃa (5+3)	gú-tò-tá (5+3)	gú-to-tá (5+3)	5+3
9	hĩ-ñ-nà (5+4)	t <sup>n</sup> â-ɲi (5+4)	gú-tua-ni (5+4)	gú-twã̃-ni (5+4)	5+4
10	èè-wó	ŋ <sup>w</sup> ã̃-wò	gú-wo	gú-wo	wo
20	òð-hũ,*tʃĩ	wo-ʃi	e-ʃĩ	e-ʃi	ʃi, hu?
100	ē-tʃĩ-hí (20*5)	40*2+20	ʃit-ũ (20*5)	ʃit-sũ (20*5)	20*5
1000	400*5???	100*10		kpá-tsũ (200*5)	?

The Nupoid group is relatively small and homogeneous and poses no problem for reconstruction.

### 4.1.3 Isolated BC languages

#### 4.1.3.1 Ikaan

The following description of the Ikaan numeral system (Table 4.50) is based on the analysis of data from a number of its dialects.

Table 4.50: Proto-Ikaan numeral system (\*)

1	ǰí	7	h-ránèǰí ('6+1')
2	wà	8	nà:náǰ (4 redupl.)
3	tā:s/h-rāhr	9	h-ráòǰí (X-1)
4	nā <sup>i</sup> /nā/náhí	10	ò-pú/fú
5	tò:n/h-rò:n/sò̃n/cò̃nv	20	ù-gbóró (<'sack'), * à-gbá
6	h-ràdá/sàdá/sàrá	100	à-gbá à-h-run(20*5)

#### 4.1.3.2 Akpes

Table 4.51: Akpes numerals

1	í-gbōn, ē-kìnì	7	ī-tǰēnētǰ(ì)
2	ī-dīan(ì)	8	ā-nāānīǰ(ì) (4 redupl.)
3	ī-sās(ì)	9	ò-kpǒlǒǰ(ì)
4	ī-nīǰ(ì)	10	ī-yōf(ì), *t-ēfī
5	ī-fōn(ì)	20	ō-gbō(15)
6	ī-tǰānās(ì)	100	ī-gbó fōnì (20*5)

The original BC forms for 'five' (\**tan*) and 'one' may have been preserved in the term for 'six'. These forms will be treated below as hypothetical.

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### 4.1.3.3 Oko

Table 4.52: Oko numerals

1	ò-óré, ò-jéré	7	ú-fómbòrè (5+2)
2	è-bòrè	8	ònókónókónò(4 redupl.?)
3	è-ta	9	ù-bóòrè(10-1)
4	è-na	10	è-fò
5	ù-pì	20	ó-gbòlò
6	ò-pónóóré (5+1)	100	í-pì

### 4.1.3.4 Lufu

Table 4.53: Lufu numerals

1	ù-tí	7	5+2
2	(ba)-máhà	8	5+3
3	bá-tá	9	5+4
4	ba-pì	10	ú-wó
5	bá-tsó	20	e-ce
6	5+1	100, 1000	?

## 4.1.4 Proto-Benue-Congo

### 4.1.4.1 ‘One’

The reconstruction of the term for ‘1’ is objectively the most challenging (the term is especially difficult to reconstruct in languages with noun classes and complex systems of determinatives). This situation is even more complicated in the Benue-Congo languages, since more than one reconstruction of the term has been suggested. The existing hypotheses must be studied here, especially because the ones pertaining to the etymology of the term were proposed by Kay Williamson, the leading specialist in NC comparative studies. Moreover, Kay [Williamson \(1989\)](#) used her reconstruction of the term for ‘one’ as an argument in favor of triconsonantal structure of Niger-Congo roots. This hypothesis has been actively developed by Roger Blench (2012 etc.).

It should be noted that our evidence does not support Kay Williamson's reconstruction. Furthermore, her hypothesis regarding the triconsonantal nature of Niger-Congo roots is, in my opinion, untenable. The Bantoid data utilized by Williamson was discussed above. Now let us review the evidence she uses in support of her hypotheses. Originally she treated the root *#-kani* '1' as one of the basic BC roots ('old root', Williamson 1989: 255). Later she changed her approach (on the basis of a wider NC context, namely on the data from the ljo languages) suggesting a derivation of BC froms from a triconsonantal root *\*\* - 'kə'gəni* '1', for which she assumed a different set of reflexes (Williamson 1992: 396). The changes introduced by Williamson in this article are significant. She adds the reflexes of the reconstructed root in Akpes and Nupoid, includes its additional reflexes in Esimbi and Bekwarra (Bantoid), adjusts its reflexes in Cross and Platoid (e.g. by reinterpreting PUC previously analysed as an isolated form as a reflex of the root in question), and, finally, omits Kanji and Jukunoid reflexes.

In further interpretation of the BC numeral systems we will use a template chart representing the fourteen branches of BC (Table 4.54). It should be noted that Bantu (as the largest sub-branch of the BC family with the most detailed reconstruction) is treated separately. This means that the Bantoid field will only include non-Bantu forms. The chart below reproduces the data published by Kay Williamson (middle sections) as well as the relevant forms obtained as a result of our step-by-step reconstruction (the rightmost section).

It should be noted that the difference in the results achieved by means of our step-by-step reconstruction (see above) and those of Williamson is significant. According to our evidence, the postulation of the root *\*\* - 'kə'gəni* '1' for Western Benue-Congo is unsustainable. The existence of this root in Bantoid is also questionable. In her earlier publication, Kay Williamson quoted its only Bantoid reflex (*a-kina* '1') supposedly attested in Northern Bantoid Tiba (Williamson 1989: 255). However, the affiliation of Tiba with the Bantoid languages is debatable (a connection with the Adamawa languages is suggested in Boyd 1999). In the article that followed, Williamson quoted another Bantoid form, this time the one attested in Southern Bantoid Esimbi (*keni* '1'). As noted above, this form was probably misinterpreted, because it includes the root *-ni/-nā*. At the same time, as I tried to demonstrate above, a number of related forms may be attested in the Mambiloid languages (Northern Bantoid): Twendi (Cambap) *tʃínī*, Mambila *tʃén*. Thus, we are possibly dealing with Proto-Eastern Bantoid *\*cin/kin*. In order to decide whether this form is an innovation or a reflex of an inherent Niger-Congo root (as Kay Williamson says) we need to place it into a wider linguistic context. This issue will be addressed later. At this point we will deal with another root for 'one' postulated by Williamson. According to her, the root is a Benue-Congo innovation.

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Table 4.54: BC \*kin/cin ‘1’ and alternative reconstructions

Benue-Congo		
Nupoid	Oko	Kainji
Defoid	Akpes	Platoid
Edoid	Ikaan	Cross
Igboid	Lufu	Jukunoid
Idomoid	Bantu	Bantoid

Williamson 1989: #-*kani* ‘1’

Yoruba ò-kǝ		Basa kə Pyem kēŋ Bete-Bendi ì-kǝn, Bokyi kǝn, PLC *-kǝn Jukun kǝ
Eloyi kǝnzé		Tiba a-kina

Williamson 1992: Proto-Atlantic-Congo \*\*-'*kǝ'gǝni*‘1’

Gbagyi gmǎnyi		
Yoruba ò-kǝ	Ikeram ɛ-ki	PP2-J -gini, PP4 -yan PUC gǝ-ni? , PLC -kǝn
Eloyi kǝnzé		Tiba a-kina, Esimbi keni, Bendi: Bekwarra o-kin

\**kin-/cin-* forms for ‘1’ (step-by-step data)

		tsin, hin
	ē-kìnì, *si	(y)in, kyeŋ, gyin
	ʃi	kin/cin
		ʃíʃe?
		cin (Mambiloid)

Different colors are used in the charts to distinguish between the Eastern and the Western BC languages. A special marking is used for the Bantu languages due to their overall importance for the reconstruction. The abbreviations in the middle sections follow Williamson op. cit. with PLC-Proto-Lower Cross, PUC – Proto-Upper Cross, PP – Proto-Platoid.

Since the root *nǝ / ni* is distinguishable in Esimbi, it seems logical to treat it together with another set of terms for ‘one’ (#-*diin*). This data (termed BC innovation by Williamson) compared to the results of our step-by-step reconstruction is quoted in the table below (Table 4.55).



Table 4.55: BC \*ni ‘1’ and alternative reconstructions

Benue-Congo		
Nupoid	Oko	Kainji
Defoid	Akpes	Platoid
Edoid	Ikaan	Cross
Igboid	Lufu	Jukunoid
Idomoid	Bantu	Bantoid

Williamson 1989: BC innovations: #-*diɪŋ*

Gwari ñ-pĩ	Oko ɔ́ɔɾɛ	Gurmana nɪ
PY *i-ně		PP2K *-niɪŋ OG è-ně, CD #-niin
Ikwere í-ním		PJ *-yiŋ
PIđ *-nyí		Lamja nūné, Ekoid #-jid, -jiŋ

\**ni* forms for ‘1’ (step-by-step data)

*ni/nyi		Bunu ù-ŋŋíni
*ɲé		nìŋ, (y)in, di(n) *ni(n)
ɲiné?		*-jin?
nze/je/nye/ye		Esimbi -nə/-ni

Let us review the distribution of this root within the Benue-Congo branches.

are there  
only two  
branches?

**Western Benue-Congo.** This root can be reliably reconstructed in Nupoid and Defoid, but not in Edoid. In Igboid it might be attested in Ikpeye: *ɲi-né* (*ɲ-iné?*). The root is possibly found in some of the Idomoid languages as well: Etulo, Agatu *ó-yè*, Idoma *é-yè*, Alago *ó-je*, Eloyi (dial.) *ò-nzé*, *ńgwò-nzé*.

**Eastern Benue-Congo.** Several Kainji forms deserve closer attention. The Gurmana form quoted by Williamson is unfamiliar to me. It may be related to the Bunu form, but the root itself is uncommon for Kainji and thus cannot be reconstructed. Moreover, the root is only marginally attested in the Platoid languages (single occurrences include Eskwa *è-nyi* ‘1’ and possibly Ikulu *í-ń-jí* ‘1’, and *kàp-ìrì-zĩŋ* ‘11’). Another rare form is *di(n)* with an initial oral consonant (e.g. Ayu *ɪ-dɪ* ‘1’, Eggon *ò-rí* ‘1’ and its palatalized variant *tʃiŋ* – cf. *à-kbá à-tʃiŋ* ‘11’, *à-kbáhá là-tʃiŋ* ‘21’). These (etymologically unrelated?) forms, however, should not be reconstructed for Proto-Platoid, because the root *kin* (see above) is clearly

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distinguishable in the majority of the Platoid branches. At the same time, the Platoid data discredits the reconstruction of the root as *\*kin/cin*. Multiple arguments can be adduced in favor of the interpretation of the initial velar as a reflex of an archaic noun class prefix, which would yield a Proto-Platoid form *\*k-in*. This invites the possibility of an etymological connection between the Benue-Congo roots studied above, namely *\*-in* and *\*-ni*. The analysis of the Platoid compound numerals points toward the same conclusion. A number of noteworthy forms can be quoted in support of this, cf. Hyam *zìni* '1' but *twaa-ni* '6' ('5+1', *twoo* '5'), Mada *tānn-èn* '6' ('5+1', *tun* '5'), Ninzo *tāni* '6' ('5+1', *tʷi* '5'), Rukuba *tàin* '6' ('5+1', *-tún* '5'). These Platoid forms bring to mind the case of the Jukonoid term for 'six'. Kay Williamson quotes a Proto-Jukunoid root *\*-yin*. The reasons behind this reconstruction are not immediately apparent, since in the majority of the languages other forms are reserved for this meaning. Her reconstruction may be based on the compound terms for 'six' that follow the pattern '5+1' (or rather '5+X', with  $X \neq 1$ ), cf. e.g. Jibu *sùn-jin* '6' (*swana* '5', *zyun* '1'), *cin-jen*/*fi-zen* (*swana* '5', *dzun* '1'). As noted above, the root in question is not reconstructable for the Platoid languages. The reconstruction of *\*ni(n)* is assured only for the Eastern Benue-Congo branch (Cross), where it is systematically attested in at least three branches out of five, cf. Proto-Upper Cross (*\*ni*), Central-Cross (*nin*), and Ogoni (*ne*). Since *\*ni* can be safely reconstructed for Nupoid, Defoid and Cross, its further comparison to the pertinent roots attested in the languages that belong to other NC branches is required.

In conclusion, it should be noted that regardless of whether a conservative or a more speculative reconstruction (i.e. *\*kin* and *\*ni* vs. *\*k-in/ni*) is preferred, the resulting root (or roots) is not tri- or disyllabic but rather monosyllabic.

In addition to this, several isolated roots for 'one' are attested in Benue-Congo. Undoubtedly, they represent local innovations. At first glance, this is applicable to the most common Bantoid roots for 'one', including the Bantu forms *mòì/mòdì mòtí*. This, however, may not be entirely correct for reasons that will be discussed in the next chapter. Another noteworthy root that may be tentatively described as *\*jir* is attested in both Oko and Platoid.

The table is subject to further interpretation. We will return to it later after the evidence from the other Niger-Congo branches has been collected. A few remarks are in order here:

1. Both Akpes terms for 'one' (*ē-kìni*, *í-gbōn*) find close parallels in the Cross languages (*\*kin/cin*, *\*ni(n)*, *\*gboŋ/gwan*). The Icheve form *à-móó* is probably borrowed from one of the Bantu languages;

2. The Kainji term finds parallels in the Platoid languages (Ayu, Eten, Tarok, Eggon) and may be etymologically related to the Bantu and Nupoid terms (the morphological structure of the Proto-Bantu form is, however, unclear: *\*mòdì?* *\*m-òdì?* *\*mò-dì?*);
3. The Oko form is reminiscent of another Platoid form that is tentatively reconstructed as *\*jir*. The Akpes root *gbōn* '1' finds parallels in the Cross (*gbon*) and possibly Edoid languages (*gwo/ wo/ wu*).

## 4.1.4.2 'Two'

Table 4.56: BC stems for '2'

		'2'	'2'	'2'
East	Bantu			bà-dí/bì-dí
East	Bantoid (-Bantu)	pa/fe	ba	
East	Cross	po/pa	bae	
East	Jukunoid	pa(n)/fa(n)		
East	Kainji	-pu?	*ba/bi	re
East	Platoid	pa/fa/ha	ba/wa	
West	Defoid			jì
West	Edoid		va/və	
West	Idomoid	pa		
West	Igboid		bó	
West	Nupoid		ba	
West	Akpes			ī-dian(i)
West	Oko		è-bòrè	
West	Ikaan		wà	

The root *\*pa* (also found in the Idomoid languages) is reconstructable for Eastern Benue-Congo, but is not systematically attested in Bantu.

The Bantu form (as represented above) does not seem to be related to other Bantoid forms. However, it finds parallels in Defoid and possibly Akpes and Kainji. The most common BC form (*\*ba/bai*) may go back to *\*ba-i*, with *\*ba-* being a noun class prefix. In this case, the BC form may be reconstructed as *\*ba-di* / *ba-ji* > *bai* > *ba*, which would make the Bantu form the most archaic within Benue-Congo.



## 4.1.4.4 ‘Six’

Table 4.58: BC stems and patterns for ‘6’

East	Bantu	3 redupl.				
East	Bantoid (–Bantu)	<3 redupl.?				
East	Cross	3+3	5+1	di?		
East	Jukunoid		5+1			
East	Kainji	<3?			ci(hi)n	tel
East	Platoid	3PL	5+1			
West	Defoid					fà
West	Edoid	3PL, 3+3				
West	Idomoid			riwi/rowo	ji	hili
West	Igboid				ʃii	
West	Nupoid		5+1			
West	Akpes		5+1?			
West	Oko		5+1			
West	Ikaan					h-ràdá/ sàdá/ sàrá

As the table shows, there was probably no primary Proto-Benue-Congo root for ‘six’. Two alternative patterns are traceable, namely ‘3PL’ (‘3 redupl.’, ‘3+3’) and ‘5+1’. Other forms are marginal. The phonetic resemblance of the Kainji and Igboid forms is noteworthy.

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##### 4.1.4.5 ‘Seven’

Table 4.59: BC stems and patterns for ‘7’

East	Bantu	càmbà (< **c/saN+2?)		
East	Bantoid (–Bantu)	samba (5+2?)		
East	Cross	5+2		
East	Jukunoid	5+2		
East	Kainji	5+2		
East	Platoid	5+2		4+3
West	Defoid		byē	
West	Edoid		ghie?	
West	Idomoid	5+2	renyi	
West	Igboid			saà
West	Nupoid	5+2		
West	Akpes			ī-tʃēnētʃ(i)
West	Oko	ú-fómbòrè (5+2)		
West	Ikaan		h-ránèʃi (‘6+1)	

A primary root for ‘seven’ is also indistinguishable. The form *\*camba/samba* may have lost any phonetic resemblance to its Benue-Congo prototype *\*7=5+2* in Proto-Bantoid. The Defoid and Edoid forms are phonetically comparable (a shared innovation?).

## 4.1.4.6 ‘Eight’

Table 4.60: BC stems and patterns for ‘8’

East	Bantu	nai-nai (<4 redupl.)			
East	Bantoid (–Bantu)	na-nai (<4 redupl.)			
East	Cross	4+4			
East	Jukunoid	4 redupl.	5+3		
East	Kainji		5+3	ro/ru	kunle(v)/kunlo
East	Platoid	4 redupl.	5+3		
West	Defoid			jo/ro	
West	Edoid	4 redupl.			
West	Idomoid		5+3		
West	Igboid		5+3		
West	Nupoid		5+3		
West	Akpes	ā-nāānīŋ(i) (4 redupl.)			
West	Oko	ò-nókó-nókóno (4 redupl.?)			
West	Ikaan	nà:ná <sup>j</sup> (4 redupl.)			

In this case, the pattern *\*nai* ‘4’ > *\*na(i)-nai* ‘8’ fits the reconstruction better than its alternative. The similarity between Kainji and Defoid is peculiar and may be due to innovations.

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##### 4.1.4.7 ‘Nine’

Table 4.61: BC stems and patterns for ‘9’

East	Bantu			bùá	
East	Bantoid (-Bantu)			bukV	
East	Cross	5+4	10-1		
East	Jukunoid	5+4			
East	Kainji	5+4	10-1		jiro
East	Platoid	5+4	10-1		12-3, tu(ku)n
West	Defoid			sá(n)	dà
West	Edoid			cien/sin	
West	Idomoid	5+4			
West	Igboid				totu/tolu
West	Nupoid	5+4			
West	Akpes				ǝ-kpɔ̀lǝ́f(ì)
West	Oko		ù-bɔ̀ɔ̀rɛ̀		
			(10-1)		
West	Ikaan		h-ráòfì		
			(X-1)		

The rightmost column of the table includes many isolated forms (among them some primary ones). The term *\*buka*, which may appear as an important BC innovation, is reconstructed for Proto-Bantoid. In addition, the pattern ‘9=5+4’ is distinguishable in Proto-Benue-Congo. Like for ‘8’, Defoid and Edoid forms closely resemble each other.



## 4.1.4.8 ‘Ten’

Table 4.62: BC stems for ‘10’

East	Bantu		kómì/ kámá			
East	Bantoid (–Bantu)	fu	kum/ kam			
East	Cross	fo?		kpo/ kop	ʔo?	job
East	Jukunoid			wo?	kur?	jwe
East	Kainji	pwa		kup/ kpa	kur?	turu
East	Platoid			kop	gur/ wur	
West	Defoid				gwá	
West	Edoid			kpe	gbe	
West	Idomoid	(fu ‘20’)			gwo/ wo	jwo
West	Igboid					dī/ri/ li
West	Nupoid	(hu ‘20’)			wo	
West	Akpes					ī-yōf(i), *t-ēfi
West	Oko	è-fɔ				
West	Ikaan	ò-pú/fú				

This is a heterogeneous group of forms. The root *\*pu/fu* attested in both Eastern and Western BC is the most likely candidate for BC reconstruction. However, it is missing from Bantoid, for which the term *\*kum/kam* is reconstructable. The latter form must be a Bantoid innovation. However, assuming that the second consonant may have undergone nasalization in Proto-Bantoid, this form is comparable to a number of other roots, suggesting that *\*kup/ kop* should be reconstructed for Eastern Benue-Congo. As the table shows, other roots should not be neglected either. They will be treated in combination with the evidence from other NC branches.

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##### 4.1.4.9 ‘Twenty’

Table 4.63: BC stems and patterns for ‘20’

East	Bantu	10*2			
East	Bantoid	10*2			
	(–Bantu)				
East	Cross		*ti/ci?		dip?
East	Jukunoid				‘body’ (di)
East	Kainji	10*2	ʃín/ʃík		
East	Platoid				12+8
West	Defoid			gwú(n), gbolo	
West	Edoid			gie/jie, gboro	
West	Idomoid				fu/hu, su?
West	Igboid			gwǝ́/ɣʰǝ́, kpǝ́ǝ́	
West	Nupoid		ʃi		hu?
West	Akpes			ɓ-gbɓ(lɓ)	
West	Oko			ɓ-gbɓɓ	
West	Ikaan			ù-gbɓrɓ (< ‘sack’), *à-gbá	

It is highly unlikely that the Proto-BC term followed the pattern reconstructed for Proto-Bantoid (\*‘20=10\*2’). In all likelihood there was no root for ‘twenty’ in Proto-BC at all. It should be noted that numerous branches of Western BC use the root (*g*)*bolo* (possibly related to the lexical root with the meaning ‘sack’) to make ‘twenty’. A shorter root (\**gba*/*gwe*) is reconstructable in the same Western BC branches as well. Its source is likely lexical: it is well-known that the term for ‘twenty’ in the NC languages often goes back to lexemes with the meaning ‘man’, ‘leader’, and ‘body’ (cf. Jukonoid). The resemblance between the reconstructed Idomoid and Nupoid forms is noteworthy. However, these forms might be etymologically related to the term for ‘ten’.

## 4.1.4.10 ‘Hundred’ and ‘thousand’

Table 4.64: BC stems and patterns for ‘100’ and ‘1000’

		‘100’	‘100’	‘100’	‘1000’
East	Bantu		kámá	gàná, tsa, jànda	nùnù, pòm̀bì, kótò
East	Bantoid (–Bantu)	20*5?	kam?	gbi? ki?	?
East	Cross	20*5			
East	Jukunoid	20*5			<Hausa
East	Kainji	?			
East	Platoid	?			
West	Defoid	20*5			
West	Edoid	20*5			du, ria/li
West	Idomoid	20*5, 10*10			
West	Igboid	20*5			puk(w)u
West	Nupoid	20*5			?
West	Akpes	ī-gb́ó fṑnì (20*5)			
West	Oko			í-pì	
West	Ikaan	à-gbá à-h-ruǹ (20*5)			

If Proto-Benue-Congo did not have the term for ‘twenty’, it probably did not have the term for ‘hundred’ either, because the only pattern it could follow is  $^{*}100=20^{*}5$ . In this respect the Proto-Bantoid innovation ( $^{*}kam$ ) is noteworthy. It resembles another Proto-Bantoid innovation, namely the term for ‘ten’ ( $^{*}kum/kam$ ), which is hardly a coincidence. The possibility that in the cases of ‘ten’ and ‘hundred’ we are dealing with alignment by analogy cannot be excluded. This could explain the irregular nasalization of the root for ‘ten’, cf. Proto-Bantoid  $^{*}kup$  ‘10’  $\rightarrow$   $kum$  by analogy with  $^{*}kam$  ‘100’. The term for ‘thousand’ was certainly nonexistent in BC.

## 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

### 4.1.4.11 Summary

Taking this into account, the segmental reconstruction of the Proto-BC numeral system may be suggested (Table 4.65).

Table 4.65: Proto-Benue-Congo numeral system (\*)

1	ni, kin/cin (<k-in?), gbon, (o-)di(n)?, (o-)ti?	7	5+2
2	ba-di/ba-ji, pa? ba(i)?	8	4 redupl.
3	tat	9	5+4
4	nai	10	pu/fu, kup/kop, gwo/jwo
5	tan/ton	20	absent? gwa/gwe? <'person'?
6	3PL/3 redupl./3+3, 5+1	100	absent? 20*5

This table gives an overview of the BC evidence that will be used for further comparison with other NC branches.

## 4.2 Kwa

More than eighty Kwa sources were used for the reconstruction. They are representative of the major groups and sub-groups of this family, which consists of about seventy languages. A plausible internal classification of the Kwa languages does not exist. A step-by-step reconstruction of numerals may well be viewed as another important step in this direction. Our preliminary survey of the pertinent evidence is based on the traditional classification that distinguishes five major Kwa branches. We will start with the study of the numerical terms by branch. Then, individual reconstructions will be evaluated with regard to their potential for the general reconstruction of the Proto-Kwa numeral system.

### 4.2.1 Ga-Dangme

These two languages exhibit isolated forms of the term for 'one'. Both terms will be preserved for further comparison (note that the first syllable of the Dangme term probably represents a noun class prefix). The term for 'eight' is undoubtedly constructed as '6+2'. The term for 'six' is primary, hence the term for 'seven' must be formed of '6+1'. This would suggest the existence of an additional term for 'one' (\*-gō/-wo). Two separate forms are attested for 'hundred'. Apart from that, the Dangme and Ga numeral systems are quite homogeneous.

The Adampe system is in many respects different, so there may be doubts as to whether it indeed belongs together with Dangme. The Adampe evidence will be treated later in this chapter.

Table 4.66: Ga-Dangme numerals

	Dangme	Ga	Dangme	Ga
1	kákē	é-kòmé	7 kpà-à-gō (6+1)?	kpà-wo (6+1?)
2	é-ɲḑ	é-ɲò	8 kpà-a-ɲḑ (6+2)	kpà-a-ɲḑ (6+2?)
3	é-tē	é-tē	9 nēē	nēehú
4	é-ywè/é-wìè	é-ɲwè	10 ɲḑɲmá (PL: ɲḑmí)	ɲḑɲmá
5	é-nūḑ	é-nùmḑ	20 ɲḑmí éɲḑ (10*2)	ɲḑɲmá -í éɲḑ (10*2)
6	é-kpà	é-kpàa	100 làfá	ò-há, pl. -ì
			1000 à-kpé	à-kpé, pl. -ì

#### 4.2.2 Gbe

The reconstruction of the Proto-Gbe numeral system is straightforward, since alternative forms are few (Table 4.67). It is based on the available evidence from twelve of the Gbe dialects.

Table 4.67: Proto-Gbe numerals and patterns (\*)

1	è-dɛ/dɛ-kpo	7	‘hand’+2, 5+2
2	è-ve/e-wè	8	e-ɲí, ‘hand’+3
3	è-tḑ	9	8+1, 5+4
4	è-nè	10	e-wó, *bula
5	à-tḑḑ	20	10*2, ko
6	à-dḑ/zḑ	40	e-kà
100	40*2+20	1000	à-kpé, kotokū

The Gbe term for ‘six’ is primary. Its form, however, differs significantly from the (also primary) one attested in the languages of the Ga-Dangme group.

The term for ‘eight’ seems to be derived from ‘four’, whereas the term for ‘nine’ follows the pattern ‘8+1’.

The forms for ‘twenty’ follow the pattern ‘X\*2’ in Aja (*bulaa-ve*), Waci-Gbe (*blá-ve*) and Ewe (*blá-vè*), which suggests an alternative form for ‘ten’ (\**bula*).

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

The etymological relationship between the term for ‘fifteen’ and a lexical root with the meaning ‘foot’ attested in two of the dialects is an apparent innovation: Maxi-Gbe  $\dot{a}\text{-f}\dot{\text{ɔ}}\text{-t}\dot{\text{ɛ}}$  (‘foot’, ‘3’) and Kotafon-Gbe  $\text{f}\dot{\text{ɔ}}\text{-t}\dot{\text{ɛ}}$  (‘foot’, ‘3’). This pattern is attested in a number of the NC languages (including Atlantic).

A primary term for ‘forty’ is distinguishable (hence ‘50=40+10’, ‘60=40+20’, ‘70=40+30’, ‘80=40\*2’, ‘90=40\*2+10’).

##### 4.2.3 Ka-Togo

Ka-Togo is a quite diverse group of the Left Bank languages. The reconstructions for each of its three branches are provided in the table below (Table 4.68). Its rightmost column lists forms and patterns that are the most likely candidates for the Proto-Ka-Togo reconstruction.

Table 4.68: Proto-Ka-Togo numeral system (\*\*)

	*Avatime-Nyangbo	*Kebu-Animere	*Ikposo-Ahlo-Bowili	**Proto-Ka-Togo
1	o-le	ʈé-ì, bɛ-xi	è-dɪ/è-dɪ-gbo	<b>di</b>
2	ɛ-bha	din/ji	è-va/è-fwa	<b>bha, din</b>
3	ɛ-ta	tha	è-ta/è-la	<b>ta</b>
4	ɛ-né	nie	è-na	<b>na/nɛ</b>
5	ɛ-tí, ɛ-cu	thu(ŋ)	è-tɔ	<b>tu(N)</b>
6	golo/holo	kòràŋ	è-gɔlu/è-wɔlu	<b>golo/ koro</b>
7	6+1	10-3	6+1, kònò, ù-zòni	<b>6+1</b>
8	10-2? a-nse	4*2	è-lɛ?, <4	<b>4*2, nse/lɛ?</b>
9	10-1? zi+3?	5+4?	8+1, 10-1?	<b>8+1? 10-1</b>
10	kɛ-fɔ	the	wa/wu, i-jo, *bula	<b>fo/wo, te, bula</b>
20	10*2	10*2?	bula-2, lye-2, ɲué-2, tééyá?	<b>10*2</b>
100	a-lafa (< Ewe)	tùùrù, sala	gbɔwa	<b>lafa?</b>
1000	a-kpe (< Ewe?)	lààfā	a-kpe	<b>a-kpe</b>

It needs to be stressed that the forms marked with /\*\*/ are only suggestive and should not be taken at face value. They are not reconstructions in the strict sense and only serve for comparative purposes, so the absence of a tonal marker in a reconstructed form should not be considered meaningful. It only shows that at this point the available evidence does not allow reconstructing a tone in the pertinent case.

#### 4.2.4 Na-Togo

An overview of numerical terms as attested in the branches of Na-Togo and some isolated languages is provided below (Table 4.69). A tentative reconstruction of the Na-Togo numeral system can be found in the rightmost column.

Table 4.69: Proto-Na-Togo numeral system (\*\*)

	Adele	Anii	*Lelemi	*Likpe-Santrokofo	Logba	**Proto-Na-Togo
1	è-kí	ḍiŋ, *mi	ù-nwi/ḍ-wě	nòé/nwû (lêwé)	i-kpɛ	i-wɛ/kpɛ?, di(N)?
2	è-nyḍḍn	i-piḥ	í-ɲó	ɲó/núà	i-nyɔ	i-nyɔ
3	à-sì	i-rīū	è-tɛ	tié	i-ta	i-ta
4	è-nàà	i-nāŋ	í-na	na	i-na	i-na
5	tòn	i-nōŋ	è-lɔ	nó	i-nú	i-no(N)
6	kòòròn	i-kōlōŋ	è-ku	kua	i-gló	golo/kolo, ku
7	6 + 1	kūlūmī (6+1?)	4+3?	6+1?	6+1	6+1
8	niyè	4PL	4PL?	4PL?	4PL	4PL
9	yè-1	tʃiini	10-1	nase	X-1	10-1
10	fò	tɕb	vu/we	fo/wo?	u-dú	fo, dú, tɕb
20			10*2	10*2		10*2, ɔ-dɔ(n), ā-kōō, dikpilin
50	20*2+10	20-PL+10	ti	10*5	10*5	20*2+10
100	20*5	20*5, gā-sōwā	50*2, lafa	kò-lòfá	u-ga	20*5, lofa, u-ga
1000	200*5	ū-fɕlɕ, kōtōkū	pim, ka-kpi	kò-kpí	a-kpi	a-kpi, pim?

The Lelemi term for ‘fifty’ (*li-ti*) is peculiar because it is a likely source of ‘hundred’: *è-ti á-ɲó* (‘50\*2’).

#### 4.2.5 Nyo

The Nyo group, which is comprised of dozens of languages, is the most representative within the family. For this reason (even though the Nyo numeral systems are closely related to each other) they will be studied separately (by sub-group) and then compared to each other.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.2.5.1 Agneby (Abbey, Abiji, Adiokru)

Alternative sources representative of these three languages are quoted below (Table 4.70). Significant variation of forms is sporadically attested.

Table 4.70: Proto-Agneby numeral system (\*)

	Abbey1	Abbey2	Abiji1	Abiji2	Adiokru1	Adiokru2	*Proto-Agneby
1	ḡkp̄	ḡkp̄	ń 'nó	ḡnò	ḡâm	ḡâm	N-kp̄, ḡ-âm, *a-ri
2	āp̄	āp̄	áá 'nó	áān̄	yón	ḡón	a-p̄/n̄
3	ārī	ārī	ḡḡ 't̄	ḡḡt̄	ḡâh̄	ḡâh̄	a-ti(N)/ ri
4	āl̄	āl̄	ḡḡ 'l̄	ḡḡl̄	yâr	jâr	a-ni/la, jar
5	ōn̄	ōn̄	ēē 'nē	ēēn̄	yên	jên	o-ne,l̄h̄, jên
6	l̄h̄	l̄h̄	nâh̄	nâh̄	n̄h̄	n̄h̄	hu(n)
7	l̄h̄-ārī	l̄h̄-ārī	n̄b̄	n̄b̄	l̄b̄	l̄b̄	6+1, bu(n)
8	èpyè	èp̄	nówò	nówò	níw̄	níw̄	è-pyè, wo(n)
9	ḡâkó	ḡâkó	n̄ḡ 'br̄	n̄ḡbr̄	lib̄m̄	lib̄m̄	bare(-n)
10	èn̄	nn̄	ḡd̄	ḡd̄	l̄w̄	l̄w̄	n̄(n) (< 5PL?), diw/ liw
20	ēbr̄-p̄	òbr̄p̄	àbr̄áí	àbr̄áí	líkj̄	líkj̄	<'hand' *2?,li-kj̄
100	yā	jā	yā	jā	ékj̄-yén	ékj̄ jên (20*5)	ja, 20*5
1000	àkp̄	àkp̄		àkp̄		fāndí (Engl.?)	a-kpi

The presence of the primary terms for 'seven', 'eight' and 'nine' is an important characteristic of this sub-group.

##### 4.2.5.2 Attié

Internal reconstruction of the Attié numeral system yielded the following results (Table 4.71).



Table 4.71: Attié numeral system (\*)

1	kə(n)	7	nson
2	mwə(n)	8	ma-4? 2 de 10?
3	ha(n)	9	ŋgwan
4	dʒí(n) < *kɥe?	10	kɛŋ
5	bə(n)	20	'hand' (bwa?)*2?
6	mu(n)	100	ja
		1000	a-kpi

#### 4.2.5.3 Awikam-Alladian

No numerical terms (except for 'one' and 'nine') are reconstructable on the sub-group level. This raises doubts as to whether these languages should indeed be grouped together. A representation of the pertinent forms is presented in the table below (Table 4.72) and may serve as a starting point for further discussion.

Table 4.72: Avikam-Alladian numerals

	Awikam	Alladian	Awikam- Alladian		Awikam	Alladian	Awikam- Alladian
1	étɔ́	ɛ̀tò	ɛ̀- <b>to</b>	7	ébyɔ́	ɛ̀bwè	é-byɔ́, ɛ̀-bwè
2	ápɔ́	ā̀yrè	á- <b>ɲɔ́</b> , ā̀- <b>yrè</b>	8	ètyé	ḕqri	è-tyé, ḕ- <b>qri</b>
3	ázá	ā̀ò	á- <b>zá</b> , ā̀- <b>ò</b>	9	émrɔ́	ēmwrò	é-mrɔ́
4	àná	ā̀zò	à- <b>ná</b> , ā̀- <b>zò</b>	10	èjú	ḕvà	è-jú, ḕ- <b>và</b>
5	ànú	ḕnrì	à- <b>nú</b> , ḕ- <b>nrì</b>	20	èvé	ḕqá, *ḕkòqì	è-vé, ḕ- <b>qá</b>
6	áwá	ḕwrè	á- <b>wá</b> , ḕ- <b>wrè</b>	100	àkpá 'ɲú	20*5	20*5, àkpá 'ɲú

#### 4.2.5.4 Potou-Tano

##### 4.2.5.4.1 Potou

The following forms are distinguishable in the Potou sub-group (Table 4.73).

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Table 4.73: Potou numerals

	Ebrie	Mbato	*Potou		Ebrie	Mbato	*Potou
1	bè/brè	lóḡō	bè/brè, ló-ḡō; ce/se	7	ák <sup>h</sup> wác <sup>h</sup> è	óḡísé	ḡ+1
2	mò	ónoḡ	noḡ	8	ábyá	ógḡī	ḡyá/ ḡḡī
3	ḡwàḡyá	néjē/nóje	ḡyá/je	9	áḡrò	ótrū	ḡrò, trū
4	ḡwèḡí	néní/nóní	ḡí/ni	10	áwó	ówā	wó
5	mwàná	nénā	na	20	áp <sup>h</sup> è	ópè	pè
6	ák <sup>h</sup> wá	ókoā	kwa	100	àya	yā	ya

##### 4.2.5.4.2 Tano

The Tano branch consists of nearly thirty languages. It seems reasonable to treat them by sub-groups.

##### Western Tano

Table 4.74: Western Tano numerals

	Abure1	Abure2	Eotile	Western Tano
1	okuè	ókúè	ìkò	o-kue
2	apù	ápù	àḡḡ	a-ḡu(n)
3	nḡà	ḡḡà	àhā	n-ha(n)
4	nnàn	ínḡ	ànè	n-na(n)
5	nnú	nnú	ànù	n-nu(n)
6	nciè	jíciè	àhíè	n-cíè/híè
7	ncùn	jícḡ	áfà	n-cùn, à-fà
8	mòkùé	mòkúè	ànèmrò	mò-kùé, à-nèmrò
9	puáléhùn	pòàlḡhḡ	brúkú	puáléhùn, brúkú
10	óblún	òbùlú	èdí	ò-bùlú, è-dí
20	éfin	éfi	èfè	é-fi(n)
100	èvá okuè	èyā kùè	átá	è-vá/è-yā, átá
1000	akpí okuè			a-kpi

## Central Tano Akanic (Table 4.75):

Table 4.75: Akanic numerals

	Akan1 (Twi dial.)	Akan2	Abron1	Abron2	*Akanic
1	baakó~	baakɔ̃	bakũ	biàkɔ̃?	ba-kó(n)
2	àbié-ń	mmie-nú	mie-nu	mìènú?	mie-nú
3	àbiè-sá~	mmie-nsá	mie-nsá	mìènzá?	mie-nsá(n)
4	à-nán	(ɛ)nán	nain	ńnáí	náin
5	à-núm	(e)núm	num	ńnúm	núm
6	à-siá~	(e)nsiá	nsiä	ńziá	siá(n)
7	à-són	(ɛ)nsón	nsɔ	ńzɔɔ	só(n)
8	à-wòtɔwé/tw/	nwɔtwé	ɲɔtʃwie	wɔcɔɪ	twé/cué
9	à-krón	(ɛ)nkrón	ɲkrɔŋ	ɲgɔnɔ	n-krón
10	dú	(e)dú	du	dú?	dú
20	àdùònú	aduonú	edu enu	àdùònú	10*2
100	àhà	ɔha	ɔha	hà	ɔ-ha
1000	àpím	apém	apim		a-pím

**Bia** The numeral systems in these languages (Agni, Baoule, Sefwi, Nzema, Ahanta, and Jwira-Pepesa) are virtually identical and can be described as follows (Table 4.76).

Table 4.76: Proto-Bia numeral system (\*)

1	ko(n)	7	su(n)
2	nu, ɲɔ(n)	8	cɔɛ/twɛ
3	sa(n)	9	ɲgɔlɛ, nkrón
4	na(n)	10	bulu
5	nu(n)/nu(m)	20	10*2
6	sia(n)	100	ya
		1000	akpi

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**Guang** This sub-group has two branches, Southern and Northern Guang which consist of four and eleven languages, respectively). Despite, the Guang numeral systems do not differ significantly, hence quoting individual forms seems unreasonable. Our reconstructions for both branches, as well as the general Guang reconstruction, are given below (Table 4.77).

Table 4.77: Guang numerals

	*Northern Guang	*Southern Guang	**Guang
1	kɔ́	kɔ	kɔ
2	ɲɔ́	ɲɔ	ɲɔ́
3	sá	sa(n)	sa(n)
4	ná	nɛ(n)/na	na(n)
5	nú(n)	nu/ni	nu(n)
6	síyé	siɛ(n)	siɛ(n)
7	súnɔ́	súnɔ́	súnɔ(n)
8	bùrùwá, kwé	twi/cwi	bùrùwá, kwé/cwi
9	kɔ̀nɔ, sàngɔ́ɔ?	kpunɔ	kpunɔ, sàngɔ́ɔ?
10	dú	du	du
20	o-ko, 10*2	10*2	10*2, ko?
100	lafa (< Akan?)	ɔ̀lɔ́fɛ/lafa	lafa
1000	kpín, pim	a-kpe	kpi(N), pim

**Krobu; Basilia-Adele; Ega** To make our presentation complete, the evidence of these three isolated Tano languages is presented in the table below (Table 4.78).

#### 4.2.6 Proto-Kwa

Intermediate reconstructions suggested above should be compared in order to reconstruct the forms of the Proto-Kwa numerals. It seems reasonable to group potentially related forms (or patterns) together. The rightmost column contains isolated forms attested in one particular group only.

##### 4.2.6.1 ‘One’

The Awikam-Alladian term for ‘one’ is definitely an innovation.

The root \**di* is attested in four branches out of five and thus is likely reconstructable at the Proto-Kwa level.

Table 4.78: Numerals in Tano isolated languages

	Krobu	Basila-Adele	Ega
1	kɔ̌	kɔ̌, li/diŋ	ì-lō-gbó
2	ɲ-ɲɔ̌	ɲúà	ì-ɲò
3	ń-sá̌	sa	ì-tà
4	ń-ná̌	na	ì-lè
5	ń-nù̌	ton, nun	ì-ɲwè
6	ń-sỹ̌	koron	5+1
7	ń-sò̌	6+1?	5+2
8	mò-kwé̌	4-4, cɔ̌é	5+3
9	ɲ-grɔ̌ā	-1, gwalan	5+4
10	brú̌	fo, teb, bulu	ì-zù
20	à-brūā̌ (10*2?)	dikpilin, koo, bulV	ú-glū
100	yǎ̌	20*5	20*5
1000		kpen?	

Table 4.79: Kwa stems for '1'

	1	1	1	1
*Ga-Dangme	ká-kē, *go/wo			é-kòmé
*Gbe	ɔ̌e-kpo	è-ɔ̌e		
*Ka-Togo		di		
*Na-Togo	i-wɛ/kpɛ?	di(N)?		
*Nyo:				
*Agneby	N-kpɔ̌	*a-ri		ɲ-âm
Attié	kə(n)			
Awikam			é-tɔ̌	
Alladian			ɛ̌-tò̌	
<i>Potou-Tano</i>				
Potou	*ce/se			bɛ̌/brɛ̌, ló-fō
<i>Tano</i>				
Western	o-kue			
<i>Central</i>				
Akanic	ba-kó(n)			
Bia	ko(n)			
Guang	kɔ̌			
Krobu	kɔ̌			
Ega	ì-lō-gbó	ì-lō-gbó (< *li-kpo?)		

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The forms given in the left column are more problematic. Each of them contains a velar consonant (the Potu form *\*ce* may have resulted from the palatalization of a velar before a front vowel, *ce* < *\*kue* – cf. Western Tano).

Regular phonetic correspondences between these languages have not been established and therefore cannot be used for purposes of reconstruction. In any case, the following considerations might prove useful for the NC reconstruction. The inventory of forms attested in the eighty Kwa idioms may seem rather diverse. However, only two of them may be considered for the Proto-Kwa reconstruction, namely *\*di* and *\*k(p)o* (or the compound form *\*di-kpo* suggested by the Gbe (*ḑe-kpo*) and Ega (*\*li-gbó?*) forms).

##### 4.2.6.2 ‘Two’

Table 4.80: Kwa stems for ‘2’

	‘2’	‘2’	‘2’	‘2’
*Ga-Dangme	é-ɲò(n)			
*Gbe			è-ve/e-wè	
*Ka-Togo		din		bha
*Na-Togo	i-nyɔ			
*Nyo				
*Agneby	a-ɲɔ̃/nɔ̃			
Attié			mwə(n)	
Awikam	áɲɔ̃			
Alladian		āyɾè		
<i>Potou-Tano</i>				
Potou	noɔ̃			
<i>Tano</i>				
Western	a-ɲu(n)			
<i>Central</i>				
Akanic	mie-nú			
Bia	nu, ɲò(n)			
Guang	ɲó			
Krobu	ɲí-ɲɔ̃			
Ega	ì-ɲò			

The only form reconstructable at the Proto-Kwa level is evidently *\*ɲɔ̃*.

## 4.2.6.3 ‘Three’ and ‘Four’

Table 4.81: Kwa stems for ‘3’ and ‘4’

	‘3’	‘4’	‘4’
*Ga-Dangme	é-tě		é-ɟwě
*Gbe	è-tǝ	è-ně	
*Ka-Togo	ta	na/nɛ	
*Na-Togo	i-ta	i-na	
*Nyo			
*Agneby	a-ti(N)/ri	a-ní/la	jar
Attie	ha(n)		dʒí(n) < *kɛ?
Awikam	ázá	àná	
Alladian	āò		āzò
<i>Potou-Tano</i>			
Potou	ɖyá/je	ɖi/ni	
<i>Tano</i>			
Western	n-ha(n)	n-na(n)	
<i>Central</i>			
Akanic	mie-nsá(n)	náín	
Bia	sa(n)	na(n)	
Guang	sa(n)	na(n)	
Krobu	ń-sá	ń-ná	
Ega	ì-tà	ì-lě	

Just as in the majority of the NC branches, the roots for ‘three’ and ‘four’ are the most persistent. Suggested Proto-Kwa reconstructions are *\*ta* and *\*na* respectively.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.2.6.4 'Five'

Table 4.82: Kwa stems for '5'

	'5'	'5'	'5'
*Ga-Dangme		é-nùḽ	
*Gbe	à-tṣṣ		
*Ka-Togo	tu(N)		
*Na-Togo		i-no(N)	
*Nyo			
*Agneby		o-ne	lòhṵ, jèn
Attié			bə(n)
Awikam		àṇú	
Alladian			ēnrì
<i>Potou-Tano</i>			
Potou		na	
<i>Tano</i>			
Western		n-nu(n)	
<i>Central</i>			
Akanic		núm	
Bia		nu(n)/nu(m)	
Guang		nu(n)	
Krobu		ń-nù	
Ega		ì-ṇwè	

The root *\*tan* ('five') is only traceable in the Left Bank languages. Another root, commonly attested in other languages (*\*nun*), is found in these languages as well. Both roots should be considered for the reconstruction (note that the former is comparable to the pertinent form reconstructed for Proto-Bantu).



## 4.2.6.5 ‘Six’

Table 4.83: Kwa stems for ‘6’

	‘6’	‘6’	‘6’	‘6’
*Ga-Dangme		é-kpà		
*Gbe			à-dě/zě	
*Ka-Togo	golo/koro			
*Na-Togo	golo/kolo	ku		
*Nyo				
*Agneby		hu(n)		
Attié				mu(n)
Awikam				áwá
Alladian	ē-wrè			
<i>Potou-Tano</i>				
Potou		kwa		
<i>Tano</i>				
Western			n-cíè/híè	
<i>Central</i>				
Akanic			sìá(n)	
Bia			sia(n)	
Guang			siε(n)	
Krobu			ń-sỹē	
Ega				5+1

The evidence presented in Table 4.83 is inconclusive. At this stage our task is to process the complex Kwa data so that it can be compared to the evidence of other NC languages. In this respect, three provisional Kwa forms are noteworthy: \**golo/kolo*, \**kua*, and \**ciε*. In any case, as the forms for ‘seven’ suggest, the Proto-Kwa term for ‘six’ was probably primary.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.2.6.6 ‘Seven’

Table 4.84: Kwa stems and patterns for ‘7’

	‘7’	‘7’	‘7’	‘7’
*Ga-Dangme	6+1			
*Gbe				5+2, ‘hand’+2
*Ka-Togo	6+1			
*Na-Togo	6+1			
*Nyo				
*Agneby	6+1		bu(n)	
Attié		nson		
Awikam			ébyɔ̃	
Alladian			ɛ̃bwɛ̃	
<i>Potou-Tano</i>				
Potou	6+1			
<i>Tano</i>				
Western		n-cùn		
<i>Central</i>				
Akanic		só(n)		
Bia		su(n)		
Guang		súnɔ̃(n)		
Krobu		ń-sô		
Ega				5+2

The forms presented in the table above point toward the pattern ‘6+1’ being used for the Proto-Kwa term for ‘seven’, whereas Proto-Nyo developed the primary term \**sun*.

## 4.2.6.7 ‘Eight’

Table 4.85: Kwa stems and patterns for ‘8’.

	‘8’	‘8’	‘8’	‘8’	‘8’
*Ga-Dangme					6+2
*Gbe		e-ní	‘hand’+3		
*Ka-Togo	4*2	nse/le?			
*Na-Togo	4PL				
*Nyo					
*Agneby				è-pyè	wo(n)
Attié	ma-4?				10-2?
Awikam		ètyé			
Alladian		ēɸrì			
<i>Potou-Tano</i>					
Potou				ɸyá/gɸī	
<i>Tano</i>					
Western		mò-kùé			à-nèmrɔ̀
<i>Central</i>					
Akanic		twé/cué			
Bia		cɔɛ/twɛ			
Guang		kwé/cwi			
Krobu		mò-kwé			
Ega			5+3		

Based on the evidence attested in the table above, the Proto-Kwa term for ‘eight’ may be reconstructed as either primary (*\*kwe/ kye*) or derivative, in which case it must have been based on ‘four’ (*\*‘4PL’*).

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.2.6.8 ‘Nine’

Table 4.86: Kwa stems and patterns for ‘9’

	‘9’	‘9’	‘9’	‘9’	‘9’	‘9’
*Ga-Dangme						něě(hú)
*Gbe	8+1		5+4			
*Ka-Togo	8+1?		10–1			
*Na-Togo			10–1			
*Nyo						
*Agneby		bare(-n)				
Attié					ɲgwan	
Awikam		émrɔ̃				
Alladian		ēmwrɔ̃				
<i>Potou-Tano</i>						
Potou		ɓrɔ̃				trũ
<i>Tano</i>						
Western		brúkú				puáléhùn
<i>Central</i>						
Akanic				n- krón		
Bia				nkrón	ɲgɔ̃lǎ	
Guang						kpunɔ, sàngóó?
Krobu					ɲ-grɔ̃ǎ	
Ega			5+4			

This is the hardest form to interpret. A rare pattern ‘8+1’ is attested in the Left Bank languages. In contrast to this, the Togo pattern is ‘10–1’, while the Nyo term (\**brɔ̃/mrɔ̃*) is ‘primary’. The latter is probably connected to the term for ‘ten’, although this connection does not necessarily imply a derivation (‘10–1’) and could be explained by analogy. All three forms/patterns are considered for reconstruction.

## 4.2.6.9 ‘Ten’

Table 4.87: Kwa stems for ‘10’

	‘10’	‘10’	‘10’	‘10’	‘10’	‘10’
*Ga-Dangme						ɲòŋmá
*Gbe	e-wó	*bula				
*Ka-Togo	fo/wo	bula			te	
*Na-Togo	fo		ɖu		təb	
*Nyo						
*Agneby				diw/liw		nɛ(n)<5PL?
Attié						kɛŋ
Awikam			ɛ́jú			
Alladian	ɛ̃-và					
<i>Potou-Tano</i>						
Potou	wɔ					
<i>Tano</i>						
Western		ò-bùlú		è-dí		
<i>Central</i>						
Akanic			dú			
Bia		bulu				
Guang			du			
Krobu		brú				
Ega			ì-zù			

Isolated forms are attested in Ga-Dangme and Attié. The root *tə(b)* is traceable in the Ghana–Togo Mountain languages (Togo-remnant) and is not found elsewhere. Thus we are dealing with another isogloss suggesting that these languages belong to the same branch. The stem *\*du* supported by R. Blench could be proposed for Proto-Kwa. This stem is indeed attested in the majority of the groups that do not belong to the Left Bank languages (including Na-Togo).

The stem *\*bula* (Left Bank)/*\*bulu* (Tano) is distributed fairly evenly.

Finally, a Niger-Congo root reflected in Kwa as *\*fo/wo* can be reconstructed in a number of languages.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.2.6.10 ‘Twenty’

Table 4.88: Kwa stems and patterns for ‘20’

	‘20’	‘20’	‘20’	‘20’	‘20’	‘20’
*Ga-Dangme	10*2					
*Gbe	10*2	ko				
*Ka-Togo	10*2					
*Na-Togo	10*2	ā-kōō	dikpìlìn			ɔ-dɔ(n) (<10?)
*Nyo						
*Agneby	‘hand’ (bra)*2?		li-kɲ			
Attié	‘hand’ (bwa?)*2?					
Awikam				è-vé		
Alladian		*èkòùì		ē-ɥá		
<i>Potou-Tano</i>						
Potou					pɛ	
<i>Tano</i>						
Western					é-fi(n)	
<i>Central</i>						
Akanic	10*2					
Bia	10*2					
Guang	10*2	ko?				
Krobu	à-brūā́é (10*2?)					
Ega						ú-glū

The pattern ‘10\*2’ attested in the majority of the branches. The root \**ko* is also to be taken.

##### 4.2.6.11 ‘Hundred’ and ‘thousand’

In addition to the pattern ‘20\*5’, the roots *lafa/lofa* and \**ya/ja* (Nyo) are reconstructable for ‘hundred’. The latter may be etymologically related to \**ga/ha*.

The term for ‘thousand’ is commonly attested as \**a-kpi*. Its less common by-form is \**pim*.

Table 4.89: Kwa stems and patterns for ‘100’ and ‘1000’

	‘100’	‘100’	‘100’	‘100’	‘1000’	‘1000’
*Ga-Dangme	lǎfǎ		ò-há		à-kpé	
*Gbe				40*2+20	à-kpé	
*Ka-Togo	lafa?				a-kpe	
*Na-Togo	lofa	20*5	u-ga		a-kpi	pim?
*Nyo						
*Agneby		20*5	ja		a-kpi	
Attie			ja		a-kpi	
Awikam				àkpá ' -2		
Alladian		20*5				
<i>Potou-Tano</i>						
Potou			ya			
<i>Tano</i>						
Western			è-vá/è-yǎ	átá	a-kpi	
<i>Central</i>						
Akanic			ɔ-ha			a-pím
Bia			ya		a-kpi	
Guang	lafa				kpi(N)	pim
Krobu			yǎ			
Ega		20*5				

Table 4.90 lists provisional Proto-Kwa reconstructions based on the evidence discussed above.

Table 4.90: Proto-Kwa numeral system (\*)

1	di-kpo	7	6+1
2	ɲɔ, **di?	8	4PL, kwe/kye
3	ta	9	10-1?
4	na	10	fo/wo, bula, du
5	nu(n), ton	20	10*2, ko
6	golo/kolo, kua, cie	100	20*5, lofa, ja/gya?
		1000	kpi, pim

The remaining roots and patterns are probably innovations that developed separately within a branch/language. They may help to adjust the internal classification of the Kwa languages.

### 4.3 Ijo

According to traditional classification, the Ijo family is comprised of the Ijaw languages and the Defaka language. Some scholars express doubts as to whether the latter indeed belongs to this family. According to Roger Blench, “The Ijo languages constitute a well-founded group, but the membership of Defaka (constituting Ijoid) remains problematic. Defaka has numerous external cognates and might be an isolate or independent branch of Niger-Congo which has come under Ijo influence” (Blench 2013).

Ijaw languages consist of the Eastern and the Western groups (the latter is sometimes called Central).

The following reconstruction is based on the evidence of all three Ijo branches (Table 4.91).

Table 4.91: Proto-Ijo numeral system

	Defaka	*East	*West	**Ijo
1 (qualifying)	gbéri	gbéri	?	?
1 (counting)	?	ɲgèi	kèni	*n-kèni
1 in 6 (5+1)	–	die/ie	die/zie	*die
2	mààmà	màmi	maamɔ	*mamV
3	táátó	tárú	tǎɾɔ	*tató
4	néi	i-neĩ	néin/nóin	*néin
5	túúnò	sónó	sǒnɔ-rɔ	*túnó
6	mààngò	5+1	5+1	*5+1
7	5+2	5+2	5+2	*5+2
8	5+3	4+4	4+4	*4+4
9	5+4	5+4	5+4?	*5+4
10	wói	ójí/àtié	ójí	*(w)ójí
15	10+5	jìé	dié	*dié
20	sii	sí	síi	*síi

Both qualifying and counting terms for ‘one’ are attested in the Eastern Ijo languages (e.g. in Ibani). The Defaka form may be a borrowing. An unexplained allomorph for ‘one’ is attested as a part of the term for ‘six’ in Ijaw (?).

The root for ‘two’ (\**mam*) is an Ijo innovation. It has no parallels outside this language family. Its phonetic similarity to several other forms is a mere coincidence, e.g. *ma-* in the Jaad (Atlantic) *maae* does not belong to the root and can be



explained as a class prefix. The lexical meaning ‘twin, pair’ (as attested in Nembe (East) according to (Kaliai 1964)) may underlie the Ijo term. However, no reliable parallels for this term with the meaning ‘twin, pair’ are establishable in NC.

The root for ‘three’ is apparently of NC origin, with its most archaic form attested in Defaka.

The term for ‘four’ is undoubtedly a reflex of the NC root.

The term for ‘five’ probably goes back to the NC root *\*tan(o)*. As in the case of ‘three’, its most archaic form is found in Defaka.

The terms for ‘six’, ‘seven’, and ‘nine’ follow the common patterns (‘5+1’, ‘5+2’, and ‘5+4’ respectively).

The Ijaw term for ‘eight’ must have derived from ‘four’ by means of partial reduplication (*\*ni-néín*). This pattern is reconstructable on the Proto-NC level and will be discussed at length in the next chapter.

A specific counting term for ‘ten’ is reconstructable in the Eastern Ijo languages (*\*àtié*). The Defaka form is comparable to those found in the Ijaw languages.

A special form for ‘fifteen’ is reconstructable in Ijaw (*\*dié*), cf. e.g. the Nembe evidence: *dié-èsí* ‘300’ (=‘15\*20’). This form may go back to Ijaw *\*díè* ‘divide; separate into parts; split or break up into parts; share’, ‘distribute, donate’, cf. Nembe *dìè*, Ibani (Koelle 1963[1854]) *dìè-*, *dié*.

As in a number of other languages that belong to different families within NC, a special form is attested for the term for ‘twenty’ (*\*síí*). The term itself has several functions. It serves as a basis for a number of other terms for tens (also in Defaka), e.g. ‘40=20\*2’, ... ‘100=20\*5’. The Ijaw terms for 16–19 are based on it as well, e.g. ‘16=20–4’, etc.

## 4.4 Kru

Our analysis of the Kru numerals is based on nearly forty sources representative of five major groups and eleven major subgroups of the family. Preliminary reconstructions of the pertinent numerical terms (by sub-group) are represented in commented tables below.

### 4.4.1 ‘One’, ‘Two’ and ‘Three’

As in the majority of the NC languages the term for ‘three’ is the most persistent: the root *\*taa(n)* can be reliably reconstructed for Proto-Kru.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.92: Kru stems for ‘1’-‘3’

	‘1’	‘1’	‘1’	‘2’	‘2’	‘3’
Aizi		mumɔ	yre	i-ɸt		i-ta
<i>Eastern</i>						
Bakwe/Wané	dô			sô		ta
Bete/Godié		ɸlo/gbolo		sɔ		ta
Dida/Neyo		bolo		só		ta
Kodia		gbɤlɤ/ɸɤlɤ		sɔ:		ta:
Kuwa	dee			sɔr		tãã
Seme	dyuɔ̃		byéẽ		nĩ	tyáār
<i>Western</i>						
Bassa <sup>14</sup>	doo	(g)boo?		s̥		tã
Grebo <sup>15</sup>	do(o)			s̥	hw̃/h̃	taa(n)
Klao/Tajuasohn	do			son		tan
Wee <sup>16</sup>	due/too			sɔn		taan

The same is applicable to the root for ‘two’ reconstructed as *\*so(n)* in Proto-Kru (isolated forms are attested in the Seme and Grebo sub-groups only). It should be noted that in general the Seme numeral system is peculiar in many respects. These peculiarities (e.g. Seme being the only language with a full set of primary terms covering the sequence from ‘one’ to ‘ten’) may be due to the isolated status of the language. In his recent article entitled “Le sèmè/siamou n’est pas kru” Vogler argues that Seme is not a Kru language (see [Vogler 2015](#)). On the basis of a comparison between Kru, Gur and Mande (Samogo) morphology and lexicon he concludes that Seme is either remotely related to the Mande languages or represents a separate branch of Niger-Congo. As we hope to demonstrate below, Seme shows systematic correspondences with neither Kru nor Mande (including the contact Mande languages – Samogo and Jowulu).

‘One’. It is likely that the root *\*do* should be reconstructed on the Proto-Kru level. However, there is enough evidence for reconstructing the alternative root *\*(g)bolo*.

<sup>14</sup>Bassa, Dewoin, Gbii.

<sup>15</sup>Grebo, Krumen, Glio-Oubi.

<sup>16</sup>Wee is a Western Kru group which includes (among other languages) Sapo, Krahn, Nyabwa, Wobe.

## 4.4.2 ‘Four’ and ‘Five’

Table 4.93: Kru stems for ‘4’ and ‘5’

	‘4’	‘4’	‘4’	‘5’	‘5’	‘5’
Aizi			yebi	yu-gbo		
<i>Eastern</i>						
Bakwe/Wané		hiẽ <sup>4</sup>	mrɔ:	ḡbàà, ɲ <sup>w</sup> ũ		
Bete/Godié			mɔ̃-wana	gbu/gbi		
Dida/Neyo	na			gbí		
Kodia	na			<sup>n</sup> gbɣ		
Kuwa	nijêhɛ					wàyòò
Seme			yur			kwẽl
<i>Western</i>						
Bassa	hì-nyɛ(n)				h-mm	
Grebo		hɛn		gbə	mm	hun
Klao/Tajuasohn	nyìè	hɛn			mù, hoom? (< m?)	
Wee	nyìè				mm	

The forms for ‘four’ in the left column apparently are the reflexes of the NC root that is preserved in its archaic form *\*na* in Eastern Kru, whereas in Western Kru it changes into *nyìè*.

Two major forms are observable for ‘five’, namely *\*gbə/ gbo* and *\*mm* (Western).

## 4.4.3 ‘Six’ to ‘Nine’

It is immediately apparent that these numerals already followed the pattern ‘5+X’ in Proto-Kru. As noted above, the Seme forms are innovations.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.94: Kru stems and patterns for ‘6’-‘9’

	‘6’	‘6’	‘7’	‘7’	‘8’	‘8’	‘8’	‘9’	‘9’	‘9’
Aizi		fɔ	fri+2				patɛ			fi
<i>Eastern</i>										
Bakwe/Wané	5+1		5+2		5+3			5+4		
Bete/Godié	5+1		5+2		5+3			5+4		
Dida/Neyo	5+1		5+2		5+3			5+4		
Kodia	5+1		5+2		5+3			5+4		
Kuwa	5+1		5+2		5+3			5+4		
Seme		kpāā		kĩĩ			kprɛ̃n			kɛ̃l/kal
<i>Western</i>										
Bassa	5+1		5+2		5+3			5+4		
Grebo	5+1		5+2		5+3			5+4		
Klao/Tajuasohn	5+1		5+2			4PL			10–1	
Wee	5+1		5+2		5+3			5+4		

##### 4.4.4 ‘Ten’ and ‘Twenty’

The root *kʊgba* is attested beside the common NC root for ‘ten’ (*\*pu/fu*) in Eastern and Kuwa. The root for ‘twenty’ is attested as *golo* in both Eastern and Western.

##### 4.4.5 ‘Hundred’ and ‘Thousand’

All Kru sub-groups are characterized by the lack of a primary term for ‘hundred’.

The form for ‘thousand’ in Western Kru was borrowed from the Mande languages. A primary term for ‘400’ (*\*dwi*) that developed in Eastern Kru served as the basis for a rare pattern for ‘thousand’ attested in these languages (‘400\*2+200’).

The reconstruction of the Proto-Kru numeral system is given in Table 4.95.

Table 4.95: Proto-Kru numeral system (\*)

1	do, (g)bolo	7	5+2
2	so(n)	8	5+3
3	taa(n)	9	5+4
4	na	10	pu, kʊgba?
5	gbə/gbo, mm	20	golo
6	5+1	100	20*5
		1000	400*2+200

Table 4.96: Kru stems for ‘10’ and ‘20’

	‘10’	‘10’	‘20’	‘20’	‘20’
Aizi	bɔ		gu		
<i>Eastern</i>					
Bakwe/Wané	pò, bu?		grò, g’lɔ		
Bete/Godié		kógba	gwɛ́/gɔ́lɔ		
Dida/Neyo		kógba	gló/góló		
Kodia		kɔ́gba	ǵalo		
Kuwa		kowaa		10*2	
Seme	fu				kār
<i>Western</i>					
Bassa	baɗa-bùè, puue, vu			<10	
Grebo	pu		gōrō/wlò		
Klao/Tajuasohn	pue/punn		wlòh-2		quilar-2
Wee	pue/bue		gwɛ́-2		kwela 2

Table 4.97: Kru stems and patterns for ‘100’ and ‘1000’

	‘100’	‘100’	‘1000’	‘1000’	‘1000’
Aizi		juyugbo			
<i>Eastern</i>					
Bakwe/Wané	20*5		400*2+20*10		
Bete/Godié	20*5		400*2+200		
Dida/Neyo	20*5		400*2+200		
Kodia					
Kuwa		kòlɛh?		100*10	
Seme	20*5				lit: ‘goat one’
<i>Western</i>					
Bassa	20*5				borrowed
Grebo	20*5				borrowed
Klao/Tajuasohn	20*5				borrowed
Wee	20*5				?

## 4.5 Kordofanian

The evidence of about twenty Kordofanian languages does not permit reconstructing the Proto-Kordofanian numeral system (assuming that Proto-Kordofanian existed). Comprehensive data for each of the four major groups is represented below (Table 4.98). Forms and patterns traceable in at least two groups are in bold. The forms are grouped within the lines in a more or less ad hoc manner, e.g. there is no special reason to believe that Talodi *\*lu(k)/li(k)* ‘one’ corresponds to the forms with initial **t-/t̥-** attested in other groups.

The systematic presence of the final velar **-k** in some of the terms can also be found in the Atlantic languages (especially in North Atlantic).

The term for ‘ten’ appears in numerous forms in the Kordofanian languages, which is rare. At the same time, no root for ‘ten’ is represented in at least two languages simultaneously. Moreover, nearly every language in a group has its own term for ‘ten’.

Table 4.98: Kordofanian numerals 1–5

	*Heiban	*Katla	*Rashad	*Talodi	*Kordofanian
1	kwɛ-(t)tɛ(k)	t̥i-t̥ɬk	-tta	lu(k)/li(k)	<b>t̥e(k)/lu(k)</b>
1	ɲɔ-(t)tɔ	ɬ-t̥een/t̥im			<b>t̥ɔ(n)</b>
1	*-lel?			t̥leidi	<b>lel/led?</b>
2		cik/heek	(k)ko(k)		<b>kok/kek/cik</b>
2	-can /-ɕan, rɔm			we-t̥ɬk/-tta	(can/ɕan, rak, rɔm)
3	tɔɕɔl/t̥ɛɕel	t̥ɬt̥	tta	wa-t̥t̥ak	<b>tat/t̥ɔɕ/t̥ak</b>
3	-ɕicin/-ɕit̥ɕim	i-hwɔɔ			(ɕitin/ɕicin, hwɔɔ)
4	k(w)ɔ- ɕɔɲɔ/ma- ɕɲan/-ɕlon/- t̥ɕɔ		ya-rem/wa- rɔm	-ɕando	<b>-ɕɔɲ/-ɕando/- ranto/-rɔm?</b>
4		ɬ-gɔɔɔm/i- hɔɔɔm		kekka	(-gɔɔɔm, kekka)
5	tɔ-dini/-ðene	i-duliin			<b>dinin/dulin?</b>
5	ɲer-/ɲer-		*ɲer-		<b>ɲer-/ɲer-</b>
5		ɔ-gbɔɔm	wɔ-ram, ma	‘hand’-‘1’, ki-liəgum	(‘hand’, ...)

Table 4.99: Kordofanian numerals &gt;5

	*Heiban	*Katla	*Rashad	*Talodi	*Kordofanian
6	5+1	<5	nere(-r/-l/-y) (< *5+1?)	5+1	5+1
6	3+3? 3PL				(3+3)
7	5+2	5+2	5+2	5+2	< A5+2
7	4+3	3PL+1			(4+3, 3PL+1)
8	duuba(η)		dubba/tuppa		<b>dubba</b>
8	5+3, 4 redupl.?			5+3, 4 redupl.	5+3, 4 <b>redupl.</b>
8	bɔ	tɔŋgɪl/tɪŋɛɛy			(bɔ, tɪŋi-)
9	10-1	10-1	10-1		<b>10-1</b>
9	5+4	ʃɔlbɔtɪn (<5?)		5+4	<b>5+4</b>
10	di/di/ri	*tɔɔ, ɔ-rɔ	kɔ-man (5PL)	ma-tu(l)	?
10		rakpac, i-hedɔkun	fəŋən (fə-ŋən?)	tiəɾum, ɲipɾa, gurrɪŋ)	?
20	10*2	10*2	10+10	10*2	10*2
20	tuɾi (‘grain’), ‘big figure’			‘body’, (a-riɔl, a-(na)ttu)	(‘body’, ...?)
100	20*5, < Arabic	10*10	10*10	10*10, 20*5	10*10, 20*5
1000	Arabic, 20*2*10	absent	10*10*10	ɑ-ðar	?

A primary term for ‘eight’ is distinguishable<sup>17</sup> in the Heiban and Rashad languages.

<sup>17</sup>I used data from the following Kordofanian languages and dialects: Acheron, Dagik, Heiban, Jomang, Katla, Koalib, Lafofa, Laro, Logol, Lumun, Moro, Nding, Orig, Rere, Shirumba, Tagoi, Talodi, Tegali, Tegem, Tima, Tira, Tocho, Utoro, Warnang.

## 4.6 Adamawa

Adamawa is the most divergent of the NC families. The variety of numeral systems attested in the Adamawa languages confirms this statement. This can be observed not only in cases of forms that belong to different groups, but often within groups and sub-groups as well, which makes the reconstruction of its numeral system quite problematic. In other words, it is not a rare case that small Adamawa branches consisting of only a pair of languages show incomparable forms. Some examples are in order here.

Let us compare the terms from ‘one’ to ‘ten’ in the Kim branch that is commonly attributed to the Mbum-(Day) group (Greenberg 14) (Table 4.100).

Table 4.100: Numerals in the Kim branch

Besme	Kim
1 mōndā/mbírāŋ	dú
2 tǝírí	zí
3 hāsī (hā-sī?)	tā
4 ndày	ndà
5 ndiyārá	nūwēy
6 māngùl	mènèngāl
7 dīyārā	bēálā/bēálār
8 ndā-sì (4+3?)	tīmāl/wá-zì-zí(10–2)
9 nòmīnā	lāmāđō/wá-zì-dú (10–1)
10 wàl	wòl

Only the terms for ‘four’, ‘six’, and ‘ten’ are comparable in these systems.

The Longuda language constitutes a separate branch of Waja-Jen (Greenberg 10). The table below gives an overview of the first ten numerical terms as attested in two dialects of Longuda (Table 4.101). The evidence for both dialects was collected by the same scholar (Ulrich Kleinewillinghöfer<sup>18</sup>). Morphological analysis of the forms is given according to Longurama of Koola (Longuda1) and Wala Lunguda (Longuda2).

Although we are dealing with two dialects of the same language, the roots for ‘one’, ‘two’, ‘three’, ‘six’, and ‘ten’ attested in them are different. At the same time, the terms covering the sequence from ‘six’ to ‘nine’ follow patterns com-

<sup>18</sup><https://mpi-lingweb.shh.mpg.de/numeral/Niger-Congo-Adamawa.htm>



Table 4.101: Longuda numerals

	Longuda1	Longuda2
1	laa-twè	naa-khal
2	nàà-kwé	naaa-shir
3	nàà-tsór	naa-kwái
4	nèé-nnyir	naa-nyir
5	nàà-nyó	nàà-nyó
6	tsààtèn	na-khí-nà-kwái (2*3)
7	í-néé-nyir i-nàà-tsór( 4+3)	nyi-na-kwái (4+3)
8	nyíi-tìn (<4?)	nyí-thìn (<4?)
9	é-nàà-nyó í-néé-nyir( 5+4?)	nyi-na-nnyó (4+5)
10	koo	nôm

monly attested elsewhere. Thus the differences between these dialects appear to be greater than those between the languages within Mande or Bantu families. This raises the question as to whether a Proto-Kim or Proto-Longuda reconstruction is indeed relevant.

Moreover, the reconstruction is additionally hindered by the fact that numerical terms in the majority of the Adamawa languages are subject to the alignment by analogy more frequently than in other NC languages. General considerations regarding this problem can be found in Chapter 3. This is of special significance for the Adamawa languages since it affects etymological interpretations. The evidence from a number of languages belonging to the Duru sub-group of Leko-Nimbari (Greenberg 4) may serve as a case study (Table 4.102).

Table 4.102: Duru numerals

	Peere	Doyayo	Gimme	Gəunəm	Vəmnəm	Momi	Longto
1	dəə	gbúnú	wəɔna	mani	màn	muzoz	wəŋŋá
2	iro	ééré	idtigè	tək	ètèn	ittáz	sittó
3	tāāro	taare	taagè	taarək	tāán	tāáz	tāābó
4	naro	náɔ	nàagè	náárək	nānnò	náz	nabbó
5	núuno	nooné	nəɔnigè	nəɔnòk	gbà náárò	gbanáá	nǝmó
6	nón-dəə	nəɔn-gbúnú	nəngè	nəɔ-waŋgə	gbāā-sə māl	bāmbáz	sáame

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Matching final segments of the first few numerical terms in each of these languages are highlighted in red. I agree with Larry Hyman that “it might not be analogy, rather the use of a marker” (p.c.) but it should be noted that though these segments are different in each case (i.e. they do not match even within a pair of languages), they are present in each language under discussion.

In Mumuye-Yandang, which is another branch of Leko-Nimbari (Greenberg 5), an additional sub-morpheme (-t) is attested that is not present in Duru (Table 4.103).

Table 4.103: Analogical alignments in Mumuye-Yandang

	Mumuye	Bali	Yendang (dial.)
2	ziti	i-ye	í-nĩ
3	ta:ti	taat	tâ:t
4	dě:ti	naat	nâ:t

The following conclusions with regard to the Proto-Duru numeral system can be reached upon the basis of this evidence. First, the final segments (whatever their phonetic difference) should not be viewed as a hinderance to the comparison of numerical terms. This means that Momi *tàáz* ‘three’ can (and should be) compared to Longto *tāábó*. The question of whether their final segments should be analysed as morphemes or sub-morphemes is of secondary importance for our purposes. At the same time, the quality of the second consonant in Proto-Leko-Nimbari is obscure, so we have to reconstruct the form as *\*taaX*, where X is an unknown consonant.

As demonstrated above, numerical terms are exceptionally divergent within the family. In addition to this, systematic (diversified) alignment by analogy is often employed in the languages under study. Both factors make the reconstruction a challenging task, even though an attempt at reconstruction of the Adamawa numerals by a highly competent scholar is available (see Boyd 1989). His results, however, are of limited relevance for our comparative purposes, as the following example shows. According to Boyd, the Proto-Adamawa term for ‘one’ is to be reconstructed as *\*ku-di-n* (the root *\*di*) with *\*kwin* being its later development. His ideas on how this proto-form is reflected in particular branches of the Adamawa family are summarized in the table below (Table 4.104). Notations in the first column refer to Grinberg’s grouping of the Adamawa languages.

Table 4.104: \**kwin*- reflexes in Adamawa according to Boyd

	*Proto	Reflexes
G1	kwin	kun
G1	kwin	kwaan
G2	kwin	gu-(a)s(a)
G4	kwin	gun, gbun, bin, wun-ga, guu
G5	kwi(t)	gbet, gorV
G5	kwin	in(d)i
G6	kwin-k	soŋ
G7	kwin	indi > fa-ndi
G8	kwin-kwin	bimbimi
G8	kwi(n)	gwi > ju
G9	kwin	tsuŋ/tsiŋ, cɔŋ
G10	kwi-t	> kwat > kal
G13	kwit	ɸuru, gulu
G13	kwit	> kwat > bara(k)
G13	kwin	ɸoŋ
G14	kwin	ɸu
Day	kwin-k	ngoŋ
Day	kwin	(k)wan > mɔn

Even if Boyd's reconstruction of the Proto-Adamawa form is correct, a diachronic interpretation that implies an etymological relationship between *bim-bimi*, *cɔŋ*, *ɸu* and *gbet* does not fit the purpose of our integral comparative study of NC numerical terms because it can be used to justify nearly any etymological connection. In view of this, the Adamawa numerical terms will be treated in the same way as those from the preceding language families. First, the main forms of the numerical terms will be established, with no attempt at tracing them down to a provisional proto-form. Then the numeral systems of each of the Adamawa branches will be studied separately. Finally, an integral analysis of the available evidence pertaining to each of the terms will be offered. This approach will enable us to treat the Fali languages and even Laal together with the Adamawa languages, although their relationship to the latter is often questioned (in the case of Laal, doubts are raised as to whether it belongs to NC at all).

#### 4.6.1 Fali-Yingilum (G11)

It should be noted that after a nasal, *-r-* in the Fali forms regularly corresponds to *-N-* in those of Yingilum, cf. ‘5’ Fali *kɛrɛw* ~ Yingilum *kɛ̀nàw*, ‘7’ *ɔ̀rɔs* ~ Yingilum *jánàs*. An alignment by analogy is probably attested in the terms for ‘three’ and ‘four’ (*\*taaX* > *taan* may have changed by analogy with *\*naan*).

Table 4.105: Fali-Yingilum numerals

1	kpolo/balo (< *lo?)	7	jɔɾɔs
2	cuk, gbara	8	4 redupl.
3	taan (< taaX)	9	10–1/ŋgɔs kàm(kàn) kɔ̀pòlò ‘rest hand one’
4	naan	10	ra
5	kẽrew	20	10*2
6	yira/yilo	100	< Fula
		1000	< Fula

#### 4.6.2 Kam (Nyimwom, G8)

Table 4.106: Kam numerals

1	bii (Meek: bimbini) (< *b-ii?)	7	jùp yi-raak (6,2 - ‘second six’?)
2	yi-raak (i-ra)	8	sâl
3	câr	9	níízaa
4	nár (< *naX)	10	bóò
5	ɲwún	20	kpaímí , *̀̀̀kpó
6	jù:p	100	20*5
		1000	?

Within the NC context, a reversible alignment by analogy may be considered: *\*naX* '4' > *nar* by analogy with *\*car* '3'. As Boyd rightfully observes, in the case of 'one' it is often unclear whether the initial consonant is a part of the root, or a reflex of the noun class prefix.

The term for ‘seven’ simulates the pattern ‘7=6+2’ (this phenomenon is not infrequent in NC). Sometimes (e.g. in some of the Mande languages) this impression is due to the fact that the term for ‘six’ originally derived from ‘5+’. Over

time, an innovation replaced the original term for ‘five’, which was only preserved in the derived term for ‘six’. Alternatively, the term for ‘seven’ could be explained as ‘the other six’ (or ‘a big six’ in some languages), as perhaps in Kam, assuming that *jù:p* does not go back to the term for ‘five’.

#### 4.6.3 Leko-Duru-Mumuye (G4, G2, G5)

This group is often labeled Leko-Nimbari. Here we follow Raimund Kastenholtz and Ulrich Kleinewillinghöfer, who note that “The term ‘Nimbari’ should not to be used as a classificatory term, nor should the scarce and surely in large parts erroneous data be given central significance in any comparative approach to Adamawa languages” (Kastenholtz & Kleinewillinghöfer 2012).

##### 4.6.3.1 Duru (G4)

Table 4.107: Duru numerals

1	dáə, gbúnú, wá-ŋŋá/wəɔna/dá(ŋ)gá/*nge, man(i)/*mal	7	5+2, (gútambe, 6+’odd’, dámsàrà, 4+3)
2	du/ru/to, te/re	8	4PL/4+4, 5+3, (< Hausa)
3	tãátó/tããro	9	‘one finger is left’, níŋsínè, 5+4, 10–1
4	nató/naró (< *naX)	10	bōʔ, kob/kop/fób
5	núno/nɔɔnì, gbà náárò/gbanáá, sáá	20	gbeg/gbàhsí (=’staff’), *wóóg (‘head’), zul/zur (‘head’), (10*2, ráárò, jùgúyɔ),
6	gúú, 5+1	100	temere < Fula, 20*5
		1000	uzinere < Fula, (dukə)

This table provides an overview of forms and patterns attested in eleven sources for this sub-group. This degree of variety is not normally attested within a single sub-group, which raises doubts as to whether these languages should be grouped together.

#### 4.6.3.2 Leko (G2)

Our study of this sub-group is based on the evidence of two languages. The summary table above is not descriptive of the language-specific mechanisms of the alignment by analogy. An overview of the numerical terms covering the sequence from ‘two’ to ‘five’ by language is provided in Table 4.109.

Table 4.108: Leko numerals

1	níŋa/níiá (<ŋa?)	7	5+2
2	nnú, ra?, *-i?	8	5+3, < Hausa
3	toorà/toonú	9	5+4, ‘one is left’
4	naarà/nɛɛr-əb	10	kób/kóp
5	núúnà/núnn-ub	20	nɛd níi gbɛd, laa-1
6	nôŋgôs/núŋgós	100	20*5, < Fula
		1000	20*10?, < Fula

Table 4.109: Analogical alignments in two Leko languages

	Kolbila (Zurá)	Samba Leko
2	innú	iirà
3	toonú	toorà
4	nɛɛrəb	naarà
5	núnnub	núúnà

Apparently, the terms from ‘three’ to ‘five’ in these two languages are related to each other. At the same time, two groups of terms (‘2–3’ and ‘3–4’) with an alignment by the ultima are observable in Kolbila. This is applicable to a group of Samba Leko terms as well, namely ‘2–4’ (possibly also ‘5’; the fact that the Samba Leko terms are adjusted by both the vowel quality and the tone is noteworthy). This means that the seemingly unrelated roots for ‘two’ may have derived from a common etymon (still unknown to us) by means of alignment by analogy. The source form of ‘two’ remains obscure. Assuming that it was similar to the one reconstructed for the Duru sub-group (e.g. *\*ru*), it is likely that the same form is to be reconstructed for Leko as well: *\*ru* > Kolbila *nu* by analogy with *toonú* ‘3’; *\*ru* > Samba Leko *rà* by analogy with *toorà* ‘3’. However, the evidence in favor of this reconstruction is inconclusive. Alternatively, the initial vowel of the term for

‘two’ (\*ii-/in-) may reflect the source root, while the final segment is potentially explained via an alignment by analogy with ‘3’.

#### 4.6.3.3 Mumuye-Yandang (G5)

Table 4.110: Numerals in Mumuye-Yandang

1	ḡinti/ḡini (* < nti/ni?) , gbétè	7	5+2
2	ziti, ye, nī	8	5+3
3	taat	9	5+4
4	naat	10	kop/kob
5	mă:ni, nɔŋ/ghinān	20	mba-1, kar-1, mim-1
6	5+1	100	20*5
		1000	derived

This sub-group is represented by three languages that show different forms of ‘two’. The terms for ‘three’ and ‘four’ are adjusted by analogy. Studying them in a wider NC context reveals that the final consonant in ‘four’ was adjusted by analogy with ‘three’. The alignment itself must have occurred already at the Proto-Mumue-Yandang level, which explains our provisional reconstructions suggested for this proto-language in the table above.

No evidence pertaining to the Nimbari numerals is available to us. The forms of ‘one’ given by Boyd (Boyd 1989) are noteworthy (Nimbari (*n*)yeme/ geme/ (zeme?)).

#### 4.6.4 Mbum-Day (G13, G14, G6, Day)

##### 4.6.4.1 Bua (G13)

This is very divergent branch that has been poorly documented. I’d like to thank Pascal Boyeldieu who has provided me with his personal data on Ba (Bua) and Lua (Niellim), as well as some other rare sources. The main forms and patterns are shown in Table 4.111.

Numerals in the Bua group can be presented as follows (Table 4.112)

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Table 4.111: Bua numerals

	Fanya Niellim	Tunya Bua	Zan Gula	Kulaal	Bolgo	Koke	
1 do/lo	búdū/ būrū	sèli	gúlu	sammā, saado	ṭón	ba(k)ra, silla	barak
2 i-ru/ li-ru	ndidí/ ndirí	à-rī	i-li/i-rī:	ris:i/lissi	ròk	lèti, retè	lèdi
3 taro	tērí	à-tā	í-tēr	to:ri	tòòs	teri	tēri
4 nagi/ naro	niā:ní/ néni	à-nā	í-pāw/ paō	na:sɪ	nòrò	har	hār
5 lugni	lùní	à-lōnī	í-lwār	tɛ(r)	lún	tisso	tisó
6 kaba	tár	nānò	tār	5+1	lú-én-ṭón	tipsi	dípsil
7 5+2	longa	lúlú	lūr	5+2	lú-é-ròk	5+2	tiglén
8 <4	3+4, <Bagirmi	kòntā	<*4 PL?	5+3		orhor (4 redupl.), 5+3	4 redupl.
9 10-X	<Bagirmi	à-tī	lór-lor	5+4	sàkólínnòrò	diar, 6+3	jār
10 teba	<Bagirmi, hulóa	kùtù	húlil/ lor-poo	filo:le/ filori	yíppà	do(k)	dog
20 10*2	doksap	10*2	<10PL	ɔ-fa:lɛ		a-rep, a-hun, tehu	
100	ro/ru	à-rū	a-ru	< Arabic	míà/miè		ae léd
1000	dubu	dūbú	dubu	< Arabic	hálif		ae har

Table 4.112: Bua numerals (summarized)

1	*do, *de?, bara(k), (ṭón)	7	5+2, 3+4, lúlú/lòng5/lur, (tiglen)
2	*di, *ri?, *ru?, (ròk), (rete)	8	4 redupl., 5+3
3	tar/tori/teri	9	ti, jar, 5+4, 10-X
4	na/nagi/niani, har	10	do(k), (kùtù), (filo:le), (yíppà), (teba)
5	luni/loni/*lu,tɛ(r), *kɔn?, (tiso)	20	10*2, do-ksap, fa:lɛ, (a-rep), (a-hun)
6	5+1, tá:r, (nānò), (kaba), tipsi	100	ro/ru
		1000	< Bagirmi



## 4.6.4.2 Kim (G14)

The first ten terms of Besme and Kim are given in the table above (Table 4.100). The term for ‘twenty’ in these languages follows the pattern ‘10\*2’, whereas the Kim term for ‘hundred’ is borrowed from Arabic. The Besme term for ‘hundred’ is borrowed from the French *sac* ‘sack’, whereas the term for ‘thousand’ is borrowed from Bagirmi.

## 4.6.4.3 Mbum (G6)

Table 4.113: Mbum numerals

1	mbew/mbiew, bǝǝŋ/búónó/bóm/vaŋno	7	10–3, rɪŋ, (rěñām, tàrnágà)
2	seǝe/sere, gwa/ǝ̀-ǝ̀, ǝ̀-ǝ̀-tì	8	10–2, nama/namma/nènmaʔä
3	say	9	10–1, doraŋ
4	nìŋ, nai	10	boo, dʒama/dʒémà, (dùc, hù-wàlè )
5	ndifi/ndēǝē/dūwēe/dápì	20	10*2, ‘2 hands’, 10+10
6	ze(y)/ye(a), (tótókló, bì-gírò)	100	sód/sot, < Fula, < Arabic
		1000	‘sac’, bag’, < Fula, < Bagirmi

This sub-group is represented by a dozen languages. Unlike Leko-Duru-Mumue no alignment by analogy is attested. Some forms of ‘two’ are of unclear morphological structure.

## 4.6.4.4 Day

Table 4.114: Day numerals

1	ngǝ́ŋ, *mon	7	4+3
2	díí	8	4 redupl.?
3	tà	9	‘lacking one’
4	ndà, *bī-yām	10	mò
5	sēri	20	10*2
6	5+1	100	tù
		1000	< Bagirmi

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This branch is comprised of an isolated language. Its attribution to Mbum-Day has been a subject of scholarly debate. The form *\*mon* ‘1’ is postulated on the basis of *sēri mōn* ‘six’, whereas the reconstruction of *\*bīyām* (*\*bī-yām?*) ‘4’ is based on *bīyām tà* ‘seven’.

##### 4.6.5 Waja-Jen (G9, G10, G1, G7)

###### 4.6.5.1 Jen (G9)

Table 4.115: Jen numerals

1	kwín/*fín/tsing	7	5+2
2	ráb/*re, bwə-ng, bwa-yung	8	4PL, 5+3
3	gbunuŋ, bwa-tə	9	5+4
4	net, bwa-nyə	10	fóób, bwa-hywə
5	nóob/*na, bwa-hmə/*hwĩ	20	fa-1, ngwu-1
6	5+1	100	20*5
		1000	fik-1, 20-fe

This branch is represented by two languages: Burak and Jenjo (Dza). The evidence from this group is among Boyd’s best arguments for the reconstruction of *\*kwin* (< *\*ku-di-n*) ‘one’. The primary term *li* (*bwa-li*) ‘fifteen’ is attested in Jenjo. Accordingly, the term for ‘sixteen’ follows the pattern ‘15+1’ (*bwali ji tsing*). Interestingly, in Burak the term for ‘hundred’ is *li* (*li kwín*).

The form *\*hwĩ* ‘five’ is traceable in Jenjo compound terms covering the sequence from ‘six’ to ‘nine’ (*hwĩ-tsing* ‘six’, *hwĩ-yung* ‘seven’, etc.) as is the corresponding Burak form *\*na* ‘five’ (*naa-fín* ‘six’, *náá-re* ‘seven’, *ná-tát* ‘eight’). The form *\*re* ‘two’ is observable in *náá-re* ‘seven’, whereas *\*fín* ‘one’ is traceable in *naa-fín* ‘six’.

###### 4.6.5.2 Longuda (G10)

The evidence for the first ten numerals in two Longuda dialects can be found in the table above (Table 4.101). The term for ‘twenty’ in these languages follows the pattern ‘10\*2’. The forms of ‘hundred’ are *pùlò(wé)/phulewe*.

Table 4.116: Waja numerals

1	w-in/d-in/kw-an/g-εen/*k-un?	7	ni-bir/ni-ber/ni-bil/ni-bi(y)
2	yó-rób/róɔp/yob/yo, (su)	8	na-rib/na-lib/na-rub (4*2)
3	taat, kunuŋ, (bwanbí)	9	10-1, teer/teet/tɔɔɔ
4	naat, (gwár)	10	kób/kub/kwab/kpop/kwu
5	nu(ŋ), (fwá:d)	20	10*2, ‘2 hands’
6	nu-kun (<5+1?)	100	<10?, wɔn, (bwa-tige)
		1000	kɔɔl, nèe/kú-néŋ, 100*10, bi-kate, tedu

#### 4.6.5.3 Waja (G1)

Some languages in this sub-group are characterized by a sub-morphological alignment of the terms for ‘three’ and ‘four’ well-attested in Adamawa: Dadiya *tal* ‘3’ ~ *nal* ‘4’, Bangunji (dial.) 1 *táát* ‘3’ ~ *náát* ‘4’, Bangunji (dial.) 2 *taar* ‘3’ ~ *naar* ‘4’, Tula (Kitule) *jí-t:à* ‘3’ ~ *já:-nà* ‘4’. As a result, these terms are treated as minimal contrastive pairs in the paradigm. Within the NC context, forms with the final -t should be considered prototypical in the case of both terms. This means that \**naaX* ‘four’ (final consonant unknown) may have evolved into \**naat* by analogy with ‘three’ in Proto-Waja. Later, an innovative form for ‘three’ developed in Awak and Waja: Awak *kunúŋ*, Waja *kunuŋ*. The Dijim-Bwilim *bwanbí* is apparently an innovation.

Interestingly, the forms for ‘six’ attested throughout the sub-group resemble the Awak and Waja forms for ‘three’. However, the forms for ‘six’ can be explained as ‘5+1’ (assuming that they include an allomorph of \**kun* ‘one’).

#### 4.6.5.4 Yungur (G7)

The terms for ‘twenty’, ‘hundred’ and ‘thousand’ are attested in only one source (Kaan (Libo)) out of the eight sources available for this branch, hence they are quoted in brackets. Morphological analysis of the terms for ‘one’ and ‘two’ is unclear: \**fV* may be a reflex of the original noun class prefix.

### 4.6.6 Laal

Finally, let us turn to the Laal numeral system. Laal’s attribution to the Adamawa languages (as well as its attribution to NC) is debatable. Today it is assumed that

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Table 4.117: Yungur numerals

1	fini/fandi/pándón (< *ndi?), wunú	7	nbutu
2	raap, fətə/fiici (< *tə/ci?)	8	4 redupl.
3	táákón/(taarón)	9	5+4
4	kurun	10	bú(u), (kutun)
5	wonon/wonun	20	(10*2)
6	mindike	100	(-ru)
		1000	(100*10)

it is an isolated case within Niger-Congo. Comparative study of its numerical terms may shed light on its genealogical relationship (Table 4.118).

Table 4.118: Numerals in Laal

1	ḃìdí (ḃì-dí?)	7	5+2
2	ʔīsī (ʔī-sī?)	8	4 redupl.
3	māā	9	yàṅjáj
4	ḃīsān (ḃī-sān?)	10	tūū
5	sāb, *swa-	20	10*2
6	cìcààn	100	10-'big'
		1000	< Baguirmi < Hausa

As in many other NC languages, the major problem with Laal numerals is the obscurity of their morphological structure. Pascal Boyeldieu established that traces of noun class suffixes are observable in Laal forms as their comparison to SG and PL forms show (see Boyeldieu 1982). However, as I tried to demonstrate elsewhere (Pozdniakov 2010), some traces of noun class prefixes had been preserved in this language as well. At this point, it seems reasonable to set the alternative variants aside for further comparison.

What follows is an attempt to synthesize the Adamawa evidence.

### 4.6.7 Proto-Adamawa

#### 4.6.7.1 'One'

The main forms are given in Table 4.119.

Table 4.119: Adamawa stems for ‘1’

	‘1’	‘1’	‘1’	‘1’	‘1’	‘1’	‘1’	‘1’
Fali								
Kam	b-ii							
Leko								
Duru		dáə						
Leko								
Mumuye		ɓi-nti/ɓi-ni (* < nti/ni?)						
Mbum								
Bua		*de						
Kim								
Mbum								
Day								
Waja								
Jen								
Longuda								
Waja								
Yungur								
Laal								

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In accordance with Boyd's hypotheses discussed above, the forms in the first two columns may be related in view of the reconstruction of the root *\*di* (possibly also *\*-in*), the noun class prefix *\*ku-* and the suffix *\*-n* (*\*ku-di-n* '1')

The last column lists forms that are attested in one of the branches only. The roots that can be tentatively reconstructed as *\*do*, *\*nga/ngɔ*; *\*(g)bunuand* and *\*mon* are noteworthy.

##### 4.6.7.2 'Two'

The main forms of this root are quoted in Table 4.121. The grouping of forms is admittedly not substantiated enough. The variety of forms within this family is striking, even when unrestricted phonetic grouping is applied.

##### 4.6.7.3 'Three'

Comparative evidence for this root points to its reconstruction as *\*taat* (with further alignment by analogy within each of the branches). As in the other NC families, the root is exceptionally stable, in contrast to the roots for 'one' and 'two' that demonstrate a wide variety of forms. A shared innovation in Jen and Waja (attested in Burak, Awak and Waja) is noteworthy.

Table 4.120: Adamawa stems for '3'

Fali-Yingilum	taan (< taaX)		
Kam	cār		
<i>Leko-Duru-Mumuye</i>			
Duru	tāātó/tāāro		
Leko	toorà/toonú		
Mumuye	taat		
<i>Mbum-Day</i>			
Bua	tar/tori/teri		
Kim	tā		hāsī
Mbum	say		
Day	tà		
<i>Waja-Jen</i>			
Jen	bwa-tə	gbunuŋ	
Longuda	tsér		kwái
Waja	taat (bwanbí)	kunuŋ	
Yungur	táákón/(təərən)		
Laal			māā

Table 4.121: Adamawa stems for ‘2’

	‘2’	‘2’	‘2’	‘2’	‘2’	‘2’	‘2’	‘2’	‘2’
Fali-Yingilum									
Kam	yi-raak (i-ra)						gbara	cuk	
<i>Leko-Duru-Mumuye</i>									
Duru		du/ru, to			te/re				
Leko	ra?		ii-/in-?						nnú
Mumuye			ye			ziti			nī
<i>Mbum-Day</i>									
Bua		*ru, (rɔk)	di/ri			(rete)			
Kim					zí	tʃiri			
Mbum					bà-tì	sede/sere			
Day			dii				gwa/bò-gě		
<i>Waja-Jen</i>									
Jen	ráb/*re,								bwə-ng, bwa-yung
Longuda									
Waja	yɔ-					shir	kwé	(su)	
Yungur	rɔb/rɔɔp/yob/yo								
	raap								
					fətə/fici				
					(< *tə/ci?)				
Laal					ʔisi (ʔi-si?)				

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##### 4.6.7.4 ‘Four’

Table 4.122: Adamawa stems for ‘4’

Fali-Yingilum	naan			
Kam	nár			
	(< *naX)			
<i>Leko-Duru-Mumuye</i>				
Duru	nató/naró			
	(< *naX)			
Leko	naarà/nɛɛr-əb			
Mumuye	naat			
<i>Mbum-Day</i>				
Bua	na/nagi/niani		har	
Kim			ndà(y)	
Mbum	nai	nɪŋ		
Day			ndà	*bī-yām
<i>Waja-Jen</i>				
Jen	net	bwa-nyə		
Longuda	nnyɪr/nyɪr			
Waja	naat		gwár	
Yungur				kurun
Laal				ḡisān
				(ḡī-sān?)

The main NC form \*naX is predominant here, its second consonant being subject to alignment by analogy. The same root is likely to be reconstructed at the Proto-Adamawa level as well.



## 4.6.7.5 ‘Five’

The main root (*nun*) may be the same as in the Gur languages and may be etymologically related to the term for ‘hand’. It is likely that the isolated forms quoted in the rightmost column go back to similar terms as well. The Jen root *hmə* could be a borrowing from Chadian Arabic: *xamsa* ‘5’. The Mbum forms *ndēbē/ dūwēe* may be influenced by Fula (*jowi* ‘five’).

Table 4.123: Adamawa stems for ‘5’

Fali-Yingilum		kēřew	
Kam	ŋwún		
<i>Leko-Duru-Mumuye</i>			
Duru	núno/nɔɔnɛ̀,		gbà náárò/gbanáá, sáá
Leko	núúnà/núnn- ub		
Mumuye	nɔng/ghinān		mă:ni
<i>Mbum-Day</i>			
Bua			luni/loni/*lu,tɛ(r), *kɔn?, (tiso)
Kim	nūwēy	ndiyārá	
Mbum		ndifi/dūwēe/dápì	
Day		sēri	
<i>Waja-Jen</i>			
Jen	nóob/*na	-hmə/*hwĩ	
Longuda	nyó		
Waja	nu(ŋ)		fwá:d
Yungur	wo- non/wo- nun		
Laal			sāb, *swa-

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##### 4.6.7.6 ‘Six’

Table 4.124: Adamawa stems and patterns for ‘6’

Fali-Yingilum			yira/yilo
Kam		jù:p	
<i>Leko-Duru-Mumuye</i>			
Duru	5+1	gúú	
Leko			nôŋgôʒs/núŋgôʒs
Mumuye	5+1		
<i>Mbum-Day</i>			
Bua	5+1		tá:r, (nānò), (kaba), tipsi
Kim			māngùl/mènèngāl
Mbum			ze(y)/ye(a), tótókló, bì-gíró
Day	5+1		
<i>Waja-Jen</i>			
Jen	5+1		
Longuda		tsààtòn	2*3?
Waja	nu-kun (<5+1?)		
Yungur			mindike
Laal		cicààn	

The most frequently attested pattern is ‘5+1’. However, there is a great variety of isolated forms (see the last column). The similarity between the Laal and Longuda forms is noteworthy; both may go back to Chadian Arabic *sit:e* ‘six’. The Kim (and also Yungur?) form could be a borrowing from Bagirmi (*miká* ‘6’).

## 4.6.7.7 ‘Seven’

Table 4.125: Adamawa stems and patterns for ‘7’

Fali-Yingilum				jɔɾɔs
Kam			‘second six’	
<i>Leko-Duru-Mumuye</i>				
Duru	5+2	4+3	6+‘odd’	gútambe, dómsàrà
Leko	5+2			
Mumuye	5+2			
<i>Mbum-Day</i>				
Bua	5+2	3+4		lúlú/lòngɔ̃/lur, (tiglen)
Kim			bēálā/bēálār	ḏīyārā
Mbum				10–3, rɪŋ, rēnām, tārɲágà
Day		4+3		
<i>Waja-Jen</i>				
Jen	5+2			
Longuda		4+3		
Waja			ni-bir/-bil/ -bi(y)	
Yungur				nbutu
Laal	5+2			

As in the case of ‘six’, the predominant pattern (‘5+2’) for ‘seven’ is rather plain. It co-exists with a variety of isolated forms of uncertain etymology.

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4.6.7.8 ‘Eight’

Table 4.126: Adamawa stems and patterns for ‘8’

Fali-Yingilum	4 redupl.			
Kam				sâl
<i>Leko-Duru-Mumuye</i>				
Duru	4PL/4+4	5+3		< Hausa
Leko		5+3		< Hausa
Mumuye		5+3		
<i>Mbum-Day</i>				
Bua	4 redupl.	5+3		
Kim	ndāsì (4PL?)		wázìzì (10–2)	tīmāl
Mbum			10–2	nam(m)a/nènmà?ä
Day	4 redupl.?			
<i>Waja-Jen</i>				
Jen	4PL	5+3		
Longuda				nyíthìn
Waja	4*2			
Yungur	4 redupl.			
Laal	4 redupl.			

The pattern ‘8=4 redupl.’ is to be reconstructed at the Proto-Adamawa level.

## 4.6.7.9 ‘Nine’

Table 4.127: Adamawa stems and patterns for ‘9’

Fali-Yingilum		10–1/ηgʌs kàm(kàn) kpòlò ‘rest hand one’	
Kam			nízaa
<i>Leko-Duru-Mumuye</i>			
Duru		‘one finger is left’, níḡsínè, 5+4, 10–1	
Leko	5+4	‘one is left’	
Mumuye-Yandang	5+4		
<i>Mbum-Day</i>			
Bua	5+4	10–X	ti, jar
Kim		10–1	nòmīnā
Mbum		10–1	doraŋ
Day		‘lacking one’	
<i>Waja-Jen</i>			
Jen	5+4		
Longuda	5+4		
Waja		10–1	teer/teet
Yungur	5+4		
Laal			yàŋjǎŋ

A primary term for ‘nine’ was apparently non-existent in Proto-Adamawa. A comparison between Bua *diar* and Kanuri *lɔ́yár* may be suggestive if a borrowing is considered. The same applies to the terms for ‘nine’ in Waja (*tɔ̀rɔ̀*) and Hausa (*tara*).

4.6.7.10 ‘Ten’

Two alternative roots for ‘ten’ (Table 4.128) are distinguishable (\**boo* and \**kob* attested in four and two groups respectively). The root *d(u)o* is observable in two Mbum-Day sub-groups. Finally, the root *kutu(n)* is found in two languages, namely in Tunya (Bua) and Kaan (Yungur). Assuming that *ku-* is a class prefix, this root may prove to be related to *tūū* (Laal).

Table 4.128: Adamawa stems for ‘10’

Fali-Yingilum					ra
Kam	bóò				
Leko-Duru-Mumuye					
Duru	bōʔ,	kob/kop/ fób			
Leko		kób/kóp			
Mumuye		kop/kob			
Mbum-Day					
Bua			do(k)	kùtù	(filo:le), (yíppà), (teba)
Kim				wàl/ wòl/ wàr/ *wèy	
Mbum	boo		dùɔ	hù-wàlě	dʒama/ dʒémà
Day	mò				
Waja-Jen					
Jen		ʃóób			bwa- hywə nôm
Longuda		koo/kù			
Waja		kób/kub/ kwab/ kpop/ kwu			
Yungur	bú(u)			kutun	
Laal				tūū	

#### 4.6.7.11 ‘Twenty’

The term for ‘twenty’ (Table 4.129) in the Duru languages either follows the pattern ‘20=10\*2’ or goes back to the lexical roots for ‘head’ and ‘staff’. The Niellim term *do-ksap* was likely borrowed from Bagirmi *dùq sap* ‘twenty’.

Table 4.129: Adamawa stems and patterns for ‘20’

Fali-Yingilum	10*2		
Kam			*̀̀kpó, kpáímí
<i>Leko-Duru-Mumuye</i>			
Duru	10*2	gbeg/ gbàhsí (‘staff’), *wóóg (‘head’), zul/zur (‘head’)	ráárò, jùgúyọ
Leko		laa-1	nèd níi gbèd
Mumuye			mba-1, kar-1, mim-1
<i>Mbum-Day</i>			
Bua	10*2	fa:lɛ	do-ksap, a-rep, a-hun
Kim	10*2		
Mbum	10*2	‘2 hands’, 10+10	
Day	10*2		
<i>Waja-Jen</i>			
Jen		fa-1	ngwu-1
Longuda	10*2		
Waja	10*2	‘2 hands’	
Yungur	10*2		
Laal	10*2		

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##### 4.6.7.12 ‘Hundred’

Table 4.130: Adamawa stems and patterns for ‘100’

Fali-Yingilum			< Fula
Kam	20*5		
Leko-Duru-Mumuye			
Duru	20*5		< Fula
Leko	20*5		< Fula
Mumuye	20*5		
Mbum-Day			
Bua		ro/ru	
Kim			< Arabic
Mbum		sóɗ/sɔt	< Fula, < Arabic
Day		tù	
Waja-Jen			
Jen	20*5		
Longuda			pùlò(wé)/phulewé
Waja	<10?		wɔn, bwa-tigɛ
Yungur		(-ru)	
Laal	10-’big’		

The fact that this term was massively borrowed (most likely simultaneously) from Fula and Arabic suggests that it was lacking in Proto-Adamawa. It can be assumed that the root *ru* attested in Bua and Yungur is also a borrowing, this time from Bagirmi *àrú* ‘hundred’.



## 4.6.7.13 ‘Thousand’

Table 4.131: Adamawa stems and patterns for ‘1000’

Fali-Yingilum		< Fula
Kam	?	
Leko-Duru-Mumuye		
Duru		< Fula, < Hausa
Leko	20*10?	< Fula
Mumuye	?	
Mbum-Day		
Bua		< Bagirmi
Kim		< Bagirmi
Mbum	‘sack’, bag’	< Fula, < Bagirmi
Day		< Bagirmi
Waja-Jen		
Jen	ʃik-1, 20-fe	
Longuda	?	
Waja	kɔɔl, nèe/kú-néj, 100*10, bi-kate, tedu	
Yungur	(100*10)	
Laal		< Baguirmi, < Hausa

The term for ‘thousand’ was massively borrowed from Fula, Bagirmi and Hausa, which points to its absence in the proto-language.

## 4.7 Ubangi

What follows is a preliminary analysis of the evidence of five separate language groups including Ubangi-Banda, Gbaya-Manza-Ngbaka, Ngbandi, Sere-Ngbaka-Mba (A. Ngbaka-Mba, B.Sere), and Zande.

### 4.7.1 Banda

The form *gba* ‘ten’ is traceable in the Mbanza (Mabandja) terms for tens.

Table 4.132: Numerals in Banda

1	bàlē (bà-lē?)	7	5+2
2	bijī (bi-jī?)	8	5+3, ngebedede
3	vɔ-ta	9	5+4, 8+1
4	và-nā	10	mó-rófō, bu-fu, ‘two hands’, ‘all the fingers’, *gba
5	mī-ndū	20	‘one person’, ‘the whole person’, ‘body-person-all’
6	5+1, gazala	100	ngàmbò/ngbàngbò, ‘five persons’, < Sango, < Lingala?
		1000	< French ‘sack’, < Lingala?

### 4.7.2 Gbaya-Manza-Ngbaka

Table 4.133: Numerals in Gbaya-Manza-Ngbaka

1	*kpók/kpóm ;ndán	7	*5+2
2	*bùà, *lútò; bùwá (bù-wá?)/vàχ, -too	8	*5+3; 4PL
3	*tār(à)	9	*5+4; kùsì
4	*nár(á)	10	*bú/bú-kǔ
5	*mòrò/mòr-kǔ	20	*10*2
6	*5+1, (gàzèlè)	100	*góm-màá ; < Lingala
		1000	< French ‘sack’, < Lingala

Ives Moñino’s reconstructions (Moñino 1995) are quoted in the table under an asterisk. Selected noteworthy forms are also included.

In the diachronical perspective, the forms \*lútò and \*bùà ‘two’ probably included noun class prefixes. They go back to \*-too and \*-wa respectively (cf. vàχ ‘2’ in Gbaya Mbodomo).

In his discussion of *\*mà̀rɔ́* Moñino states that “La variante *\*mà̀rɔ́* semble être une contraction de *\*mà̀r-kɔ́*, dans laquelle on peut reconnaître l’élément *kɔ́* ‘main’ ...” (Moñino 1995: 655). He also makes the following observation regarding the reconstruction of the term for ‘ten’: “*\*bú* ‘dix’ est en relation avec *\*bú* ‘façonner, faire un cercle, joindre les mains’; la série partielle *bú-kɔ́* est encore plus explicite, et décrit le geste qui accompagne l’énonciation du chiffre 10 chez tous les locuteurs” (Moñino 1995: 656).<sup>19</sup> This is an important point, especially in view of the relatively frequent occurrence of *bu* in the NC languages and the possible etymological relationship between *\*bú* and phonetically similar forms attested in other branches. However, such a relationship would be doubtful within Moñino’s etymological hypothesis.

The following etymology is suggested for ‘hundred’ by Thomas Elvis Guenekean: “The word *gɔ́m* means ‘cut’ or ‘gathered’ and *n̄mà:* means ‘things’.”<sup>20</sup> According to Moñino, the form literally means ‘frapper-l’une l’autre (les mains)’ (Moñino 1995: 657).

### 4.7.3 Ngbandi

The Ngbandi and Yakoma evidence points toward the reconstruction outlined in the table below (Table 4.134).

Table 4.134: Numerals in Ngbandi

1	kɔ(i)	7	mbara-mbara
2	sɛ	8	miambe/myòmbè
3	ta	9	gumbaya
4	sio/syɔ	10	sui, bàlé
5	kɔ́/kū	20	10*2
6	mana, m̀èrē	100	ngbangbo
		1000	< Lingala, Arabic

<sup>19</sup>However, in some Gbaya languages, these forms differ by tone: Gbaya (Roulon-Doko) *bú* ‘10’ ~ *fu* ‘to tap; to applaud, to roll’.

<sup>20</sup><https://mpi-lingweb.shh.mpg.de/numeral/Gbaya-Bossangoa.htm>

#### 4.7.4 Sere-Ngbaka-Mba

Since the languages within this group are extremely divergent, it seems reasonable to treat the evidence from its two major sub-groups separately.

Ngbaka-Mba (Table 4.135)

Table 4.135: Numerals in Ngbaka-Mba

1	kpó-/kpáà-, ɓa-wi, ɓi-ni/bi-rì, ú-ma	7	5+2, (mā-nānikà, lè-rèzi, zyálá, sáɓá), sílānā/sélēnā/ǰiēnā (<4?)
2	bǰf-i/ɓi-si, ɓi-né/bí-de, gbwò	8	sénā (2*4?), gba-dzena/ mā-dzénà, (5+3, 10-2)
3	ba-ta/ba-la	9	5+4, 10-1, (me-newá)
4	ba-na/ba-ɗa/ba-la	10	nzò kpā('head-hand')/àngbà, a-busa
5	bu-ruwe/bu-luve/θuwe, ʔeve/ve/vue	20	10*2
6	ǰi-tà/si-ta (2*3), mā-ɗià/ká-zyá, 5+1	100	< Sango, < Lingala, 20*5, (mya, kúló, kpode, ngündāngū)
		1000	gyu, kutu, < Arabic, < French (‘sack’), 100*10

Sere (Table 4.136)

Table 4.136: Numerals in Sere

1	nǰee	7	5+2
2	so	8	5+3
3	táʔò	9	5+4
4	nàʔò	10	ɓĩ-kürü , muʔɓi (‘on hands’)
5	vo	20	‘kill-person-one’
6	5+1	100	‘kill-persons-five’, < Arabic
		1000	100*10

## Sere-Ngbaka-Mba (Table 4.137)

Table 4.137: Sere-Ngbaka-Mba numeral system (\*)

1	kí-lī, sa	7	5+2
2	ī-jō/ī-yō/úé	8	5+3
3	bíá-tá/ā-tā	9	5+4
4	lu, bià-ngì ~ bià-mà	10	ngbḥ/bà-wē
5	ì-sìbē/bī-sùè	20	‘people one’
6	5+1	100	ndḥngbá, ngbàngbù< Sango
		1000	sáki/sākè (< Sango < French)

## 4.7.5 Proto-Ubangi

The evidence pertaining to each of the numerical terms is summarized below.

## 4.7.5.1 ‘One’

Table 4.138: Ubangi stems for ‘1’

Banda	bàlē (bà-lē?)		
Gbaya-Manza-Ngbaka		kpó(k)/(kpém)ḥ	
Ngbandi		kɔ(i)	
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba	ḥī-nì/bì- rì	kpó- /kpáà-	ḥa-wiú-ma
Sere			njēe
Zande	kí-lī		sa

Two competing roots (*\*le/ne* and *\*k(p)o(k)*) are distinguishable here.

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##### 4.7.5.2 ‘Two’

Table 4.139: Ubangi stems for ‘2’

Banda	bifi (bi-fi?)		
Gbaya-Manza-Ngbaka		bùwá (bù-wá?)/vàχ	-too
Ngbandi	sɛ		
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba	bī-fi/bī-sī	gbwò	bi-né/bí-de
Sere			so
Zande			ī-jō/ī-yō/úé

The only root widely attested within this family is \*si/fi.

##### 4.7.5.3 ‘Three’ and ‘four’

Table 4.140: Ubangi stems for ‘3’ and ‘4’

	‘3’	‘4’	‘4’
Banda	vɔ-ta	và-nā	
Gbaya-Manza-Ngbaka	tààr	náár	
Ngbandi	ta		sio/syɔ
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba	ba-ta/ba-la	ba-na/ba-ɗa/ba-la	
Sere	táʔò	nàʔò	
Zande	bíá-tá/ā-tā		lu, bià-ngì ~ bià-mà

The roots for ‘three’ and ‘four’ can be securely reconstructed as \*taar and \*naar respectively (with an alignment by analogy applied).

## 4.7.5.4 ‘Five’

Table 4.141: Ubangi stems for ‘5’

Banda	mī-ndū	
Gbaya-Manza-Ngbaka		mòr-(k)ó
Ngbandi		kǝ/kū
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba	bu-ruwe/-luve/θuwe	ʔeve ~ ve/vue
Sere		vo
Zande		ì-sìbē/bī-sùè

The Proto-Ubangi form is unclear, since the term for ‘five’ is based on the lexical root meaning ‘hand’ (*\*kɔ*) in two groups out of five. The only root whose attestations are not limited to a single group is *\*du(w)/lu(w)*.

## 4.7.5.5 ‘Six’

Table 4.142: Ubangi stems and patterns for ‘6’

Banda	5+1	ga-zala	
Gbaya-Manza-Ngbaka	5+1	gà-zèlè	
Ngbandi			ma-na, mè-rē
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba	5+1	mā-đià/ká-zyá	ǰí-tà/si-ta (2*3)
Sere	5+1		
Zande	5+1		

In addition to forms that follow the common pattern ‘6=5+1’, a number of other forms of uncertain etymology are attested in the first two groups (and possibly in Sere-Ngbaka-Mba as well, assuming that our morphological analysis of pertinent forms is correct).

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##### 4.7.5.6 ‘Seven’

Table 4.143: Ubangi stems and patterns for ‘7’

Banda	5+2	
Gbaya-Manza-Ngbaka	5+2	
Ngbandi		mbara-mbara
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba	5+2	mā-nānìkà, lè-rèzi, zyálá, sáábá, sílànā/sélènā/ǰiēnā (<4?)
Sere	5+2	
Zande	5+2	

The variety of forms attested in Ngbaka-Mba is noteworthy.

##### 4.7.5.7 ‘Eight’

Table 4.144: Ubangi stems and patterns for ‘8’

Banda	5+3		ngebedede
Gbaya-Manza-Ngbaka	5+3	4PL	
Ngbandi			miambe/myòmbè
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba	5+3	sénā (2*4?)	ḡba-dzena/mā-džénà, 10–2
Sere	5+3		
Zande	5+3		

##### 4.7.5.8 ‘Nine’

Apparently, at the family level the common pattern ‘5+’ should be assumed for the terms from ‘six’ to ‘nine’. Isolated forms attested in groups and sub-groups are quoted here (as well as in the cases of other families) in order to collect exhaustive evidence for further etymological analysis. Moreover, a small chance that the Niger-Congo proto-form is traceable within only a single branch should not be ignored.



Table 4.145: Ubangi stems and patterns for ‘9’

Banda	5+4	8+1
Gbaya-Manza-Ngbaka	5+4	kùsì
Ngbandi		gumbaya
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba	5+4	10–1, (me-newá)
Sere	5+4	
Zande	5+4	

## 4.7.5.9 ‘Ten’

Table 4.146: Ubangi stems for ‘10’

Banda	bu-fu	*gba	mó-rófō, ‘two hands’, ‘all the fingers’
Gbaya-Manza-Ngbaka	‘personne’ (‘joindre les mains’)		
Ngbandi			sui, bàlé
<i>Sere-Ngbaka-Mba</i>			
Ngbaka-Mba		nzò-kpā ‘head’- ‘hand’)/à-ngbà	a-busa
Sere			ḡĩ-kürü, ‘on hands’
Zande		ṅgbḡ/bà-wē	

The reconstruction of the term for ‘ten’ is so problematic that it raises doubts as to whether it was present in Proto-Ubangi at all. In view of the convincing internal etymology suggested by Ives Moñino, the root *\*bu* alternating with *\*pu* and *\*fu* in some of the NC families is an unlikely candidate. The reconstruction of *\*gba/ kpa* is worth considering. However, the root may not be primary.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.7.5.10 ‘Twenty’

Table 4.147: Ubangi stems and patterns for ‘20’

Banda	‘one person’, ‘the whole person’, ‘body-person-all’	
Gbaya-Manza-Ngbaka		10*2
Ngbandi		10*2
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba		10*2
Sere	‘kill-person-one’	
Zande	‘people one’	

Two reconstruction possibilities are available here, i.e. the pattern ‘20=10\*2’ commonly attested in NC, and a derivation from the lexical term meaning ‘person’.

##### 4.7.5.11 ‘Hundred’

Table 4.148: Ubangi stems and patterns for ‘100’

Banda	ngàmbò/ngbàngbò	‘five persons’ < Sango, < Bangala (< Lingala?)
Gbaya-Manza-Ngbaka		‘cut/gathered’-‘things’? ‘clap hands’?, < Lingala
Ngbandi	ngbangbo	
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba		< Sango, < Lingala, 20*5, (mya, kúló, kpode, ngündāngū)
Sere		‘kill-persons-five’, < Arabic
Zande	ngbàngbù < Sango	‘ndṣṅṅṓú

Most of the forms are apparent borrowings which suggests that the term for ‘hundred’ was absent in Proto-Ubangi.

## 4.7.5.12 ‘Thousand’

The absence of the term for ‘thousand’ in Proto-Ubangi is even more evident than the absence of the term for ‘hundred.’

Table 4.149: Ubangi stems and patterns for ‘1000’

Banda	< French, < Lingala?	
Gbaya-Manza-Ngbaka	< French, < Lingala, tómay	
Ngbandi	< Lingala, < Arabic	
<i>Sere-Ngbaka-Mba</i>		
Ngbaka-Mba	< Lingala, < Arabic, < French, 100*10	gyu
Sere	1000*10	
Zande	< Sango < French	

## 4.8 Dogon and Bangime

A step-by-step reconstruction of Dogon numerals does not seem reasonable because the family is relatively homogeneous. In addition, the formal differences between the numerical terms do not seem to correlate with the internal genealogical classification of the Dogon languages. The table below offers an overview of the pertinent data (Table 4.150) and is followed by a brief commentary.

Table 4.150: Dogon numerals

1	túru/tumɔ, ti(i)	7	suli/soli/soye
2	lé(y)/ló(y)/né(y)/nó(y)	8	gá(a)rà, sagi, sele (< Mande?)
3	taan	9	túwó
4	nay(n), keeso	10	péru/pélú
5	núnéé(n)/nũ:(yn)/nûm	20	10*2
6	kuro/kule	100	80 (sîŋ/súŋ) +20, < Fula
		1000	800 (mújú) +200

‘One’: Najamba-Kindige: *kúndé* ‘1’, Mombo *yê:tá:ngù* ‘1’.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

‘Two’: The forms with the nasal *n*- attested in several dialects are variants of the basic form with \**l*-. It should be noted that the final palatal element is systematically attested in other numerical terms, e.g. in Ben Tey (Table 4.151).

Table 4.151: Final palatal in ‘2’

2	yěy	6	kúròy
4	nĩ:y <sup>n</sup>	7	súy <sup>n</sup> ỳy <sup>n</sup>
5	nùmũy <sup>n</sup>	8	gá:rày

Regardless of whether this element is a morpheme or not, we are certainly dealing with a phonetic alignment by the final segment. Thus the final -y should not be reconstructed even in those forms that show its presence in the majority of languages.

‘Three’: This is a persistent form with only minor modifications applied to it (e.g. *taandu*, *taali*).

‘Four’: This is the only term for which the final palatal (probably nasalized) is potentially reconstructable. If so, systematic alignments by analogy attested in final segments of other numerals are probably based on the form of ‘four’. The root *kéeso*/ *ké:jó*/ *ké:jèy*/ *cézò*/ *yè-cézó* is probably an innovation (see, however, Jeff Heath who argues for its archaic nature.<sup>21</sup>) The term may be etymologically connected to the term for ‘eighty’, cf. Najamba-Kindige *sîm*, *kè:sûm*, Tommo So *kèèsûm* and a number of other related forms (Yorno So *dògò-sûm* ‘80’, “Dogon hundred”, Valentin Vydrin, p.c., Perge Tegu *dògò-sũŋ* ‘80’, Yanda Dom *sĩŋ* ‘80’ etc.).

‘Five’: The etymological connection of this term with the lexical root meaning ‘hand’ *nùmà*/ *nùmó*/ *nùmó*/ *nõy* is immediately apparent.

‘Six’ and ‘seven’: These are probably primary terms.

‘Eight’: The root *sagi* attested in Najamba and Yanda Dom was probably borrowed from Mande. The forms *sila*, *seele* observable in a number of dialects may

<sup>21</sup><http://dogonlanguages.org>

be related to it. The root *gá(a)rà* is commonly attested in the majority of languages of this group, sometimes with a partial reduplication (Donno So/Yorno So/Toro So *ga-gara/ga-gira*). Partial reduplication is a popular means of deriving ‘eight’ from ‘four’ commonly attested throughout NC. In view of the fact that the Dogon counting system is based on 8, this root should probably be compared to *gàrá*, meaning ‘big, large, a large quantity, a lot, go beyond (limit), more, to a greater extent’. Tonal differences may be neglected in this case, especially since the derived forms tend to be formally marked, e.g. tonally.

**‘Hundred’:** The basic ‘large number’ in Dogon is ‘eighty’ rather than ‘hundred’, so this meaning should probably be reconstructed for *siɪŋ/suŋ*. In view of this, the fact that the term for ‘hundred’ was borrowed from Fula in nearly all Dogon languages is not a coincidence.

**‘Thousand’:** Similarly, the root *mupu* (var. *mùsú* / *mùdžú*) ‘800’ incorporated into the pattern ‘1000=800+200’ is reconstructed in Dogon.

The Bangime numeral system should also be considered here, since most of the numerical terms attested in this isolated language are comparable to those found in Dogon (Table 4.152).

Table 4.152: Bangime numerals

1	tòré/tiyé (in counting)	7	kǐjé
2	jíndò	8	sàágín (< Mande?)
3	táárù	9	tégò
4	nǐjé	10	kúré
5	nǔndí	20	tàáwá
6	kěré	100	tèèmèdéré (< Fula )
		1000	mǔžú

As in Dogon, the terms covering the sequence from ‘six’ to ‘nine’ are primary. An isolated root for ‘forty’ (also represented in some of the Dogon languages) is attested in Bangime. Interestingly, the root is the same as the one found in some of the Mande languages, cf. Bangime *děvé*, Dogulu Dom (Dogon) *děé*, Mombo (Dogon) *dē*·, Marka Dafing *dēbe*, Bozo *dèbè/ léwè*, Bamana *dèbè*.

The root for ‘ten’ does not correspond to the one attested in Dogon. The latter finds a direct parallel in Boko (East Mande *kuri* ‘ten’.

## 4.9 Gur

It should be noted that the Gur languages are extremely divergent in the majority of their numerical terms (including those that prove to be fairly persistent in other families). The approach we took for the evidence studied above (i.e. the establishing of the most common forms and their further comparison to the data from other branches) may not appear fruitful in the case of the Gur languages.

To deal with the problem, we are going to use the classification of the Gur languages found in *Ethnolog*, namely A. Bariba, B. Central, C. Kulango, D. Lobi, E. Senufo, F. Teen, G. Tiefo, H. Tusia, I. Viemo, J. Wara-Natoro.<sup>22</sup> The Gur family comprises nearly a hundred languages. In terms of the classification outlined above, their distribution is uneven. Seven groups (Bariba, Kulango, Lobi, Teen, Tiefo, Tusia, Viemo) have an isolated language as their only member. Similarly, Wara-Natoro is represented by only three idioms. This means that the majority of the Gur languages are split between the two remaining groups, i.e. Senufo and Central. The former is comprised of about fifteen languages and is relatively homogenous. Its affiliation to Gur is often considered doubtful. Compared to Central, which embraces the majority of the Gur languages (nearly seventy), this group is relatively small. Two major sub-groups are identifiable within Central, i.e. Northern (38 languages) with Oti-Volta (33 languages) as the dominant branch and Southern (31 languages) with its dominant branch of Grusi (23 languages). In other words, 71 of the Gur languages (out of a total of 91) belong to either Oti-Volta, Grusi or Senufo. In addition to that, there are more than ten branches represented by a single isolated language each. No evidence points to their possible affiliation with the major branches or to their inter-relationship. The same can probably be said about several isolated languages affiliated (often uncritically) with the Central group (the Bwamu, Kurumfe, Dogoso-Khe, Gan-Dogosé, and Kirma-Tyurama branches). This already complex picture gets even more sophisticated in view of the following:

1. Branches represented by one or two languages (e.g. Buli-Konni, Notre, Yom-Nawdm) are distinguishable even within the most reliably established bodies of genetically related languages of this family.
2. According to Ulrich Kleinewillinghöfer (p.c.), who is a renowned expert in both Gur and Adamawa comparative linguistics, a border between these

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<sup>22</sup>This classification is accepted here with slight modifications based on recent studies. For instance, Dyan and Lobi are treated as members of the same branch.

two families is not clear at all. This means that some of the Gur branches may prove to be more closely related to Adamawa.

Our reconstruction of the Gur numeral system is based on nearly 120 sources that vary in regards to the evidence they offer (cf. our considerations above). By addressing one of the most problematic cases (i.e. the reconstruction of the Gur term for ‘one’) we hope to work out a general approach that will eventually allow further comparison of the Gur evidence to that of other NC families.

#### 4.9.1 ‘One’

The table below lists several forms of the term for ‘one’ in smaller Gur branches (Table 4.153).

Table 4.153: Diversity of stems for ‘1’ in Gur

Gurma	Grusi-Eastern	Grusi-Western
Akaselem: m-bá	Bago-Kusuntu: ɲʊrʊkpákpá	Chakali: dígímáná
Bimoba: yènn	Chala: -re-, -dóndʊlʊŋ	Deg: beŋ-kpaŋ/kpee
Miyobe: n-ni (-se)	Delo: daale	Phuie: déò/dùdúmí
Nateni: -cɔ̃, dèn	Kabiye: kɔ̃-yóm	Sisaala: kò-bàlá/dián
Ngangam: mi-kpìekm	Lama: kó-dám	Winyé: n-do

A brief study of these examples raises doubts as to whether the Gur numeral system is reconstructable at all (not to mention the Grusi-Northern system or those of the more isolated Gur branches).

Even if we consider one syllable roots of the CV(C)-type only, the impression will remain that every conceivable root for ‘one’ is attested in the Gur languages. However, none of these roots is traceable in at least half of the Gur groups. This situation is reflected in the matrix below (Table 4.154).

The first figure refers to the number of groups where a form is attested (with a maximum of 10 groups), whereas the second one refers to the number of languages. Thus, **B-I** denotes a form comprising a voiced labial consonant (b, w or m) and a front vowel that is attested in five languages within three groups (Central, Lobi-Dyan and Senufo) (Table 4.155).

The remaining forms are quoted below as an illustration of their extreme divergency.

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Table 4.154: Distribution of the CV(C)- forms for ‘1’ in the Gur languages

	I	A	U
P (p/f)	–	–	–
B (b/w/m)	3/5	1/4	1/1?
T (t)	1/1	2/2	–
D (d/l/r/n)	3/16	–	3/13
C (c/s)	–	–	1/1
J (j/y/ny)	1/18	1/1	1/1
K (k/h/x)	2/5	1/2	2/4
G (g/ŋ)	1/5	1/1	1/1

Table 4.155: BI- forms for ‘1’ in Gur (3 groups, 5 languages)

bée	Ditammari	B. Central	1. Northern	C. Oti-Volta	ii. Eastern
biè-	Lobi	D. Lobi-Dyan			
bèg	Dyan	D. Lobi-Dyan			
nì-bín	Cebaara	E. Senufo			
nan-bin	Shempire	E. Senufo			

- (1) a. BA (1/4) (Table 4.156).

Table 4.156: BA- forms for ‘1’ in Gur (1 group, 4 languages)

Ṁ-bá	Akaselem	B. Central	1. Northern	C. Oti-Volta	Gurma
bàa	Konkomba	B. Central	1. Northern	C. Oti-Volta	Gurma
mi-ba	Ngangam	B. Central	1. Northern	C. Oti-Volta	Gurma
ṇ.-bá/-bó	Ntcham	B. Central	1. Northern	C. Oti-Volta	Gurma

- b. BU (1/1): only *pú-wò* (possibly *púw-ò*, PU?) in Wara (J.Wara-Natioro)  
c. TI (1/1): only *tía* in Baatonum (A.Bariba)  
d. TA (2/2) (Table 4.157).

Table 4.157: TA- forms for ‘1’ in Gur

ta, taà, tãà	Kulango (dial.)	C.Kulango
tani	Teen (dial.)	F.Teen



## e. DI (3/15) (Table 4.158).

Table 4.158: DI- forms for '1' in Gur

dè	Bwamu (Boore)	B. Central	1. Northern	A. Bwamu	
nni	Miyobe	B. Central	1. Northern	C. Oti-Volta	iii. Gurma
dèn	Nateni	B. Central	1. Northern	C. Oti-Volta	iii. Gurma
lé	Khe Southern	B. Central	2. Southern	A. Dogoso-Khe	
í-lèn	Khisa	B. Central	2. Southern	C. Gan-Dogose	
re-	Chala	B. Central	2. Southern	D. Grusi	i. Eastern
díŋ	Paasaal	B. Central	2. Southern	D. Grusi	iii. Western
déò	Phuie	B. Central	2. Southern	D. Grusi	iii. Western
dián	Sisaala (dial.)	B. Central	2. Southern	D. Grusi	iii. Western
dién	Sisaala (dial.)	B. Central	2. Southern	D. Grusi	iii. Western
diige	Tampulma	B. Central	2. Southern	D. Grusi	iii. Western
deín	Kirma	B. Central	2. Southern	E. Kirma-Tyurama	
dēen-	Turka	B. Central	2. Southern	E. Kirma-Tyurama	
nò-ni	Karaboro (dial.)	E. Senufo			
dè	Tiefo (dial.)	G. Tiefo			

## f. DU (3/13) (Table 4.159)

Table 4.159: DU- forms for '1' in Gur

dòù	Bwamu	B. Central	1. Northern	A. Bwamu	
dòòn	Bwamu	B. Central	1. Northern	A. Bwamu	
dò	Láá Láá	B. Central	1. Northern	A. Bwamu	
rɔ	Chala	B. Central	2. Southern	D. Grusi	i. Eastern
kà-lò	Kasem (dial.)1	B. Central	2. Southern	D. Grusi	ii. Northern
kà-lɔ	Kasem (dial.)2	B. Central	2. Southern	D. Grusi	ii. Northern
è-dù	Lyele	B. Central	2. Southern	D. Grusi	ii. Northern
ù-dù	Northern Nuni	B. Central	2. Southern	D. Grusi	ii. Northern
nè-dò	Southern Nuni	B. Central	2. Southern	D. Grusi	ii. Northern
n-do	Winyé	B. Central	2. Southern	D. Grusi	iii. Western
nú-nu	Nafaanra	E. Senufo			
dūde	Viamo	I.Viamo			

g. CU (1/2): only *mà-cʃ* in Nateni (Central: 1. Northern: C.Oti-Volta: iii. Gurma

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h. **JI** (1/19) (Table 4.160)

Table 4.160: CI- forms for ‘1’ in Gur

<b>yén/ wà-pī</b>	Buli	B. Central	1. Northern	C. Oti-Volta	i. Buli-Koma
<b>yēn</b>	Mbelime	B. Central	1. Northern	C. Oti-Volta	ii. Eastern
<b>yènn</b>	Bimoba	B. Central	1. Northern	C. Oti-Volta	iii. Gurma
<b>yèn-</b>	Gurma	B. Central	1. Northern	C. Oti-Volta	iii. Gurma
<b>jènnè</b>	Moba	B. Central	1. Northern	C. Oti-Volta	iii. Gurma
<b>bō-yén</b>	Birifor (dial.)	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>bo-yæn</b>	Birifor (dial.)	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>bō-yen</b>	Dagaara (dial.)	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yén-</b>	Dagaara (dial.)	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yén</b>	Farefare	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yé</b>	Moore	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>bō-ŋj̄ŋ</b>	Wali	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yín</b>	Dagbani (Dagomba)	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yim-</b>	Hangá	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yín</b>	Kamara	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yén-</b>	Kantosi	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>yín</b>	Mampruli	B. Central	1. Northern	C. Oti-Volta	iv. Western
<b>nyəŋ</b>	Yom (Pila)	B. Central	1. Northern	C. Oti-Volta	v. Yom-Nawdm

i. **JA** (1/1) – only à-yà? in Safaliba (B. Central: 1. Northern: C.Oti-Volta: iv. Western)

j. **JU** (1/1) – only yòn in Waama (B. Central: 1. Northern: C.Oti-Volta: ii. Eastern)

k. **KI** (2/5) (Table 4.161)

Table 4.161: KI- forms for ‘1’ in Gur

<b>ñ-hén</b>	Nawdm	B. Central	1. Northern	C. Oti-Volta	v. Yom-Nawdm
<b>kpee</b>	Deg	B. Central	2. Southern	D. Grusi	iii. Western
<b>kpéé</b>	Vagla	B. Central	2. Southern	D. Grusi	iii. Western
<b>nì-kĩ</b>	Sicité Senufo	E. Senufo			
<b>nìŋ-kìn</b>	Supyire	E. Senufo			
	Senufo				

## l. KA (1/2) (Table 4.162)

Table 4.162: KA- forms for ‘1’ in Gur

<b>beŋ-kpaŋ</b>	Deg	B. Central	2. Southern	D. Grusi	iii. Western
<b>kpáŋ</b>	Vagla	B. Central	2. Southern	D. Grusi	iii. Western

## m. KU (2/3) (Table 4.163)

Table 4.163: KU- forms for ‘1’ in Gur

<b>kpò</b>	Khe (dial.)	B. Central	2. Southern	A. Dogoso-Khe
<b>tì-kpóʔ</b>	Dogose	B. Central	2. Southern	C. Gan-Dogose
<b>t<sup>h</sup>i-kpo</b>	Kaansá	B. Central	2. Southern	C. Gan-Dogose
<b>nú-kú</b>	Toussian (dial.)	H. Tusia		

## n. GI (1/5) (Table 4.164)

Table 4.164: GI- forms for ‘1’ in Gur

<b>niŋ-gbe</b>	Palaka Senufo	E. Senufo
<b>nī-gbe</b>	Nyarafolo Senufo	E. Senufo
<b>ni-gĩ/ni-gĩ</b>	Mamara Senufo (Minyanka)	E. Senufo
<b>nin-gin</b>	Shempire Senufo	E. Senufo
<b>nu-gbe</b>	Tagwana Senufo	E. Senufo

o. GA (1/1) – only *nuŋ-gba* in Djimini Senufo (E. Senufo).

p. GU (1/1) – only *gbú* in Northern Khe (B. Central: 2. Southern: A. Dogoso-Khe).

The only lacuna in this presentation is due to the lack of forms with voiceless labial consonants (this, however, may not prove true in the case of Wara-Natioro, as we hope to demonstrate below). It should be noted that the general distribution pattern is that a single form is attested in one branch out of ten, three forms are found in both two and three branches, and none of the forms is recorded in four or more branches. This makes an attempt at tracing them down to a source form (with its further comparison to the evidence of the other families) unreasonable.

#### *4 Step-by-step reconstruction of numerals in the branches of Niger-Congo*

In view of the genetic classification of the Gur languages and the considerations presented above, the optimum solution to the problem probably lies within separate reconstructions of numerals in the following sixteen Gur branches that belong to ten major language groups of this family, assuming that each of them may shed some new light on the reconstruction of the Niger-Congo numeral system:

1. Bariba
2. Central: 1. Northern: A. Bwamu
2. Central: 1. Northern: B. Kurumfe
2. Central: 1. Northern: C. Oti-Volta
2. Central: 2. Southern: A. Dogoso-Khe
2. Central: 2. Southern: C. Gan-Dogose
2. Central: 2. Southern: D. Grusi
2. Central: 2. Southern: E. Kirma-Tyurama
3. Kulango
4. Lobi-Dyan
5. Senufo
6. Teen
7. Tiefo
8. Tusia
9. Viemo
10. Wara-Natioro.

Numerical terms as attested in each of these branches will be examined below.

Table 4.165: Bariba numerals

1	tiā	7	5+2
2	ru	8	5+3
3	i-ta	9	5+4
4	ṇ-nε	10	wɔ-kuru
5	nɔɔbù	20	yendu
6	5+1	100	20*5
		1000	fɛrɔtɔ?

## 4.9.2 Bariba

## 4.9.3 Central Gur

### 4.9.3.1 Northern Central Gur

#### 4.9.3.1.1 Bwamu

Table 4.166: Bwamu numerals

1	do	7	5+2
2	pū	8	5+3
3	tĩ	9	dĩini/dènú
4	náa	10	pílú/píru/ʔbúruù
5	hò-nú	20	bóní/bénle/kēwēnī
6	5+1	100	kʰiminù (< Mande keme )
		1000	100*10, muaseé

#### 4.9.3.1.2 Kurumfe

#### 4.9.3.1.3 Oti-Volta

##### i. Buli-Koma (Table 4.168)

##### ii. Eastern (Table 4.169)

Please note the extreme divergency of languages within this branch: the variety of forms presented in the table above are attested in only four languages, i.e. Biali, Ditammari, Mbelime and Waama.

4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.167: Kurumfe numerals

1	dom	7	pěě
2	hĩĩ	8	tɔɔ
3	tãã	9	fa
4	nãã	10	fi
5	nom	20	sofe (<10? )
6	hɔɔ	100	bɛɔ
		1000	tɔsrɪ < from Moore

Table 4.168: Buli-Koma numerals

1	yɛŋ (adj.), ní (count)	7	yòpɔ̃āĩ, pɔ̃ĩ
2	yɛ, li	8	nāāniŋ/à-nĩ (<* 4 redupl., 4PL?)
3	tà	9	nèũk/ĩwɛ
4	nààsi/nísà	10	pĩ/bāŋ
5	nù	20	10*2
6	yùèbì/óbìŋ	100	kòòk, kobiga/bórà
		1000	< Engl.

Table 4.169: Eastern Oti-Volta numerals

1	cārā, béé, dènnì (counting), yẽnde/yòn, *de	7	pèléĩ/bérén, yīkà/nyiekɛ, doodɛ (6+1)
2	dyā, déé, díání/dɛɛni, yēdē/yéndí	8	nēĩ/něĩ/ni/ninyě
3	tâati/tâadi/tāārĩ	9	wái/wɛi/wē
4	naa(si)	10	pwígā/pííkà/piíkɛ/piite , *pi
5	num(mu)/nun	20	10*2
6	kūà/kuɔ, dūo, hădwàm, kpàrùn	100	kòyā/kooke/kóúkpà/kòòtà
		1000	túsirè

## iii. Gurma (Table 4.170)

Table 4.170: Gurma numerals

1	bá, yènn(do), den (isol.: ni, c5)	7	lòlé/lèlé (isol.: sééi, yehi)
2	le/dé/té	8	ni(n)
3	tà	9	wèʔ/wéé/wóì/wáì
4	nà(hi)	10	píík/p <sup>w</sup> íʔ/fi/pita
5	mù/nùh/nu(pū)/nùn	20	10*2 (isol.: kòó, mùhíkú < mande?)
6	loòb/luu, kòdì/kouulú	100	kúb (isol.: píle, kòta)
		1000	< kùtùkú 'sack', borrowing

## iv. Western (Table 4.171)

Table 4.171: Western Oti-Volta numerals

1	yen/yin, dam?, (dàkóʔ)	7	yopoi (< yo-poi?)
2	yi(?)	8	nii(n)
3	ta	9	way/wey
4	naasi/naar/nāan	10	pia/pie
5	nú	20	10*2
6	yobu	100	kob/kɔɔ
		1000	tur/tudi (borrowed?)

## v. Yom-Nawdm (Table 4.172)

Table 4.172: Yom-Nawdm numerals

1	hén, nyǎŋ-/nyǎŋə-	7	lèbléʔ (<6?), 5+2
2	li/réʔ/*ryaʔ	8	nì:ndí; 10-2
3	ta/tâʔ	9	wéʔ, 10-1
4	naa/nèèsə	10	?ríʔ, fɛya
5	nu	20	2PL
6	ṁrò:ndí (X+1?), lèèwər	100	lémú, wɔr-

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

**Proto-Oti-Volta** The evidence of five Oti-Volta branches (isolated forms excluded) is summarized in Table 4.173.

Table 4.173: Numerals in Proto-Oti-Volta

	i. Buli-Koma	ii. Eastern	iii. Gurma	iv. Western	v. Yom-Nawdm	*Proto-Oti-Volta
1	yén, ní	dènnì, yènde/yòn, *de	yènn(do), den, ni	yen/yin, dam	hén, nyəŋ	den/yen, ni, de?
2	yè, li	déé(ni), yēdē	le/dé	yi(?)	li/réʔ/*rɣa?	li/yi
3	tà	tâati	tà	ta	ta	ta(t)
4	nààsì	naa(si)	nà(hì)	naasi	naa/nèèsè	naa(si)
5	nù	nun	nùm/nu/ ɲùn	nú	nu	nu
6	yùèbì/óbìŋ	dūo	loòb/luu	yobu	lèèw-ər	lob/ yob
7	yòpṣāī, pṣī	doodē (6+1)	lòlé/lèlé	yopoi	lèblé?	*lob-le (6+1)? poi(n)? ni
8	nāāniŋ/ à-nū	nēí/ni/ ninyē	ni(n)	nii(n)	nì:ndí	ni
9	nèūk/ŋwé	wái/wei/ wē	wèʔ/wéé/ wái	way/wey	wéʔ	wey/ weʔ
10	pī	pwígā/ pííkà/*pi	píík/p <sup>w</sup> íʔ/ fi	pia/pie	fɛɣa	pi(k)
20	10*2	10*2	10*2	10*2	2PL	10*2
100	kòòk, kobɪga	kòγā/ kooke/ kóúkpà	kúb	kob/kɔɔ	lé mú, wɔr-	kob, kook

The reconstruction of the Oti-Volta numeral system is surprisingly unproblematic. In addition to the expectedly persistent reflexes of ‘three’ and ‘four’, homogeneous forms for ‘two’, ‘five’, and ‘ten’ are noteworthy. The term for ‘eight’ seems to be based on ‘four’ (either via the partial reduplication or according to the ‘4PL’ pattern). In addition to that, Oti-Volta is characterized by the presence of the primary (homogeneous) forms of ‘six’, ‘eight’, and ‘nine’. The forms of ‘seven’ are probably derived and follow the pattern ‘6+1’. It appears that the derivative form \*lob-le > lole is already reconstructable at the Proto-Oti-Volta level.



## 4.9.3.2 Southern Central Gur

## 4.9.3.2.1 Dogoso-Khe

Table 4.174: Dogoso-Khe numerals

1	kpò, lé	7	5+2
2	jɔ(n)	8	5+3
3	thɔ	9	5+4
4	dáa	10	kpélé
5	nɔ(n)	20	cúkúri/gɔ̀ɔ̀si
6	5+1	100	20*5
		1000	kpé

The forms pertaining to these languages that are not present in the main databases are quoted according to Kerstin Winkellmann in (Miehe; Reineke; Winkellmann 2007b: 181–210). Although the numerals attested within the two languages of this group are quite persistent, Kerstin Winkellmann stresses their grammatical difference: “... while Dɔ̀gɔ̀-sɔ̀ uses noun suffixes, sɔ̀-Khe is a prefixing language” (Winkellmann 2007d: 209).

## 4.9.3.2.2 Gan-Dogose

Table 4.175: Gan-Dogose numerals

1	kpo/po, (lèn)	7	5+2
2	yɔ́/nɔ́/dʒɔ́	8	5+3
3	sáa/tʰɔ́	9	5+4, 10–1
4	jee/i-yì, (á-dàa)	10	(kpoogo, gbùnè, kpélé, sí-nɔ̀y - 5PL)
5	mwã/wàa, nɔ̀n	20	gbeere, (tfúkúri)
6	5+1	100	20*5
		1000	kpíe ‘a goat’

Three of the languages belonging to this branch show too many forms, suggesting that we are dealing with a heterogeneous branch. In view of its numerical terms, it is not immediately apparent why this branch has been singled out.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.9.3.2.3 Grusi

###### i. \*Eastern Grusi (Table 4.176)

Table 4.176: Eastern Grusi numerals (\*)

1	dám/lòm/yóm, re/ódé	7	lɔbɛ, 6+1, 4+3, 10-3
2	la/lè	8	4 redupl., 4PL, 10-2, toozo, (kɔ̀pèèrè)
3	tòòsó/tooro	9	10-1, isolated forms
4	násá/naara	10	fu, (nóá - 5PL, sàlá)
5	nó/nón, kpási/gbáanzi	20	ko/kuo/koowu, (sao, neélè, 10*2)
6	loḍò/looro/lèèjò, (3PL)	100	20*5, < Ewe, ('guinea fowl')
		1000	kòtòkó, kpon

###### ii. \*Northern Grusi (Table 4.177)

Table 4.177: Northern Grusi numerals (\*)

1	du/lu, (téngí)	7	pè, (4+3, 5+2)
2	le/lə/(nii)	8	nānā (4 redupl.), (lyele, bàndá)
3	tò/twà/cóò	9	nògɔ, nibu, (10-X)
4	na/nīān/nàas	10	fúgá, (fo)
5	nu	20	10*2, (sāpōā, 10+10, swéní)
6	dò, (5+pi)	100	bì, (zóm)
		1000	mòrò

###### iii. \*Western Grusi (Table 4.178)

Table 4.178: Western Grusi numerals (\*)

1	kpán/kpee, bala, do/deo/díín/digi	7	lɔp,péé/pie , 5+2
2	le/nɛ/lè	8	córi/kyóri, 5+3, (pɔɔ)
3	toro	9	némé/nibí, 10-1, 5+4
4	naa/naasi/naare	10	fi
5	nue/nwǎ́/nòŋ	20	méré, mɔgɔ (< Mande?), (máágí, toko, ma-cu?)
6	lòrò/*lug/dò, 5+1, (go)	100	kòwá/kóó, zóló, lafa
		1000	gboŋ/bóí

The most probable \*Proto-Grusi reconstructions based on the roots attested in at least two Grusi branches are summarized in the table below (Table 4.179).

Table 4.179: Proto-Grusi numeral system (\*)

1	do/du/lu, de/re	7	pɛ/lʊ-pɛ/lʊ-bɛ, 5+2
2	lɛ/lɛ/ne/ni	8	4 redupl.
3	toro/toso/tɔ	9	10-1, nibi/nibu (ni-bi/bu?)
4	naare/naasi/na	10	fʊ/fi
5	nu/nʊ	20	10*2?
6	dʊ/lo-ɖo/lo-ro, 5+1	100	20*5? bi? kɔwa/kɔɔ?
		1000	kpoŋ/gboŋ

#### 4.9.3.2.4 Kirma-Tyurama

Table 4.180: Kirma-Tyurama numerals

1	déiŋ/děēná	7	5+2
2	hǎĩ/hǎl	8	5+3
3	síei/siel	9	5+4, 10-1
4	na(a)	10	nǔśśǎ/cǐŋciélùó
5	dí	20	kómòrré/guř
6	5+1	100	gundi, 20*5
		1000	200*5, 800+200

#### 4.9.4 Kulango

The source form of the term for ‘one’ with a nasalized vowel is reconstructed on the basis of the evidence presented by Stefan Elders (2007: 323). As we have seen, the Gur term for ‘five’ is reconstructed as \**nu* on the basis of the evidence provided by the groups discussed above. It should be noted that this form goes back to the lexical root meaning ‘hand’ (Kulango *nu-gò*). The term for ‘ten’ in Kulango is a reduplicated \**nu*, whereas a different root is attested for ‘five’. It is also noteworthy that the terms for ‘two’, ‘three’, ‘hundred’ and ‘thousand’ are borrowed from Mande.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Table 4.181: Kulango numeral system

1	ta(a) < *taà	7	5+2
2	bila( < Mande), nyɔ̀ɔ̀	8	5+3
3	sããbe (< Mande)	9	5+4
4	na	10	nuunu (< *5redupl.), *ji/yi
5	tɔ	20	yipi-/dzipi-
6	5+1	100	kemè (< Mande)
		1000	wulo (< Mande)

#### 4.9.5 Lobi-Dyan

According to Anthony Naden's classification (Naden 1989), these languages belong to different groups of the Gur languages, so their evidence will be presented separately.

"More recent classifications (Labouret and Manessy) regarded Lobi (Lobiri) and Jaane as closely related" (Miehe & Tham 2007: 212) (Table 4.182).

Table 4.182: Lobi-Dyan numerals

	Lobi	Dyan	*Lobi-Dyan
1	bièl, *do	bɛg/ɓɛ̀(ŋ)kù/biɛle, *dù	bièl, *dò
2	nyò/nò	nyɔ̀	nyò(n)
3	tʰɛr	thɛ̀s(i)	thɛ̀s(i)/tʰɛr
4	ná	nàà	ná
5	mòl/*mà	dièmà, *mòlò	mòl/*mà/*mòlò, dièmà,
6	5+1	5+1	5+1
7	5+2	5+2	5+2
8	5+3	5+3	5+3
9	10-1	10-1	10-1
10	nyòór	ni-kpo	ni-kpo, nyòór
20	kpèle	ceeru	kpèle, ceeru
100	tàmâ	tàmúgú	tàmâ
1000	gbòlanɪ	100*10	gbòlanɪ, 100*10

## 4.9.6 Senufo

Table 4.183: Senufo numerals

1	nòn-, ni-ŋbe/nunɕba, nìkì/ningin	7	5+2, 6+1
2	sin/soin/sun/syen	8	5+3, 6+2
3	tǎǎ/taàr	9	5+4, 10-1, 6+3
4	tésyàr/sícērē/tityere	10	kɛ
5	bwa/bwɔ, guru/kuru (<‘fist’), guno, (nɔ)	20	gbèɲ/ḡbēy, fulo, toko/togo, nafa, isolated forms
6	kwaj̄/kwāy, gbaara, ɔɔlɔŋ, 5+1, (nōli)	100	20*5, lafa (< Kwa)
		1000	200*5, (gben-, bɔlɔ, pwoo, sakere)

Many of the forms are quoted in brackets, i.e. they are isolated forms attested within the Senufo group comprising about fifteen idioms. As in a number of other Gur branches, the last syllable/segment of a numerical term often represents a coordinating noun class suffix. Below is an excerpt from the table showing the inflection of numerals by class in Tenyer (Syer variety), as published by Klaudia Dombrowsky-Hahn in (Miehe; Reineke; Winkelmann 2007a:420) (Table 4.184).

Table 4.184: Tenyer numerals (a fragment)

Class SG	u	li	ke	te dim.
‘one’	nun	nuni	nunɕ	nunge
Class PL	pi	ki	yi	te dim.
‘two’	syob ~ syou	syã	syii	syimbi
‘three’	trab	tar	tar	tarbi
‘four’	tikyireb	tihyɛr	tihyɛr	tihyerbi

This presentation illustrates how problematic defining the numerical roots can be.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

##### 4.9.7 Teen

Table 4.185: Teen numerals

1	tani	7	5+2
2	nyor	8	5+3
3	sanr	9	10-1
4	nan	10	pərwo
5	tɔ	20	toko
6	5+1	100	20*5
		1000	danyɛ

##### 4.9.8 Tiefo

Table 4.186: Tiefo numerals

1	dě	7	5+2
2	jõ	8	5+3
3	sá	9	5+4
4	ʔuʔɔ́/ɲɔɔ	10	támú, kě
5	kà	20	kpã
6	5+1	100	20*5
		1000	waga (< Mande)

##### 4.9.9 Tusia

Table 4.187: Tusia numerals

1	nónkì, *nõŋ	7	5+2
2	nínó, *nĩŋ	8	5+3
3	tónó	9	5+4
4	nyáh/jǎ	10	gbām/*gbɔ́/bwɔ́
5	k(w)lɔ́	20	túkúrí, *tiki
6	5+1	100	20*5, kwě
		1000	< páy ‘goat’, náʔ ‘cow’

## 4.9.10 Viemo

Table 4.188: Viemo numerals

1	dūde, *dun-	7	5+2?
2	niinĩ	8	4*2, 5+3
3	sāsi	9	10-1
4	jumĩ	10	kwomũ
5	kuεge, *kɔ	20	ferεɔ
6	5+1	100	tāmō
		1000	vie-?

## 4.9.11 Wara-Natorio

It should be noted that the most important evidence pertaining to this group is relatively recent. In his publication of the comparative lexical list Tasséré Sawadogo noted that Faniagara is radically different from both Wara and Natorio (Sawadogo 2002). Its similarity index with the Natorio and Wara dialects is 12 and 30 percent respectively (the SIL list? idem., p. 15). Thus he had every reason to postulate the existence of an isolated language (Palen) in the Wara-Natorio group.

Since the data collected by Tasséré Sawadogo is absent from the major databases that are now incorporated into the RefLex database by Guillaume Segerer, it seems reasonable to present it below for each Wara-Natorio-Paleni idiom in order to suggest the reconstruction of numerical terms within each of the three sub-groups and within the group as a whole (Table 4.189).

According to other sources, the forms *wá/ nwō, sɔ* are attested in Wara-Natorio for ‘twenty’. The patterns ‘20\*5’ and ‘400\*2+200’ are attested for ‘hundred’ and ‘thousand’ respectively.

<sup>23</sup>Regarding the Natorio forms for ‘one’ André Prost remarks: ‘*puwolo* (après un substantif: *kaaba*)’ (Prost 1968: 78). Thus, the opposition between the Wara and Natorio forms of ‘one’ reflected in the table may be purely functional (for Wara Prost quotes the *puwo* and *kapo* forms).

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Table 4.189: Wara-Natioro-Paleni numerals

		‘1’	‘2’	‘3’	‘4’	‘5’
Natioro	Dinaoro	ká:bà	jíndí	táe	ɲnàe	sùsù
Natioro	Timba	ká:bà	jíndí	tá	ná	sùsù
Natioro	Kawara	kābà	jìdí	tá	ná	sùsù
*Natioro		ká:bà	jíndí	tá(é)	ná (é)	sùsù
		(ka-ba?) <sup>23</sup>				
Wara?	Sourani	pó	bǒ	tá	nàsá	sùsù
Wara	Negeni	kàpó	bǒ	tí:	ná:sú	sùsù
Wara	Niansogoni	pó:wò	bǒ	tí:	ná:só	sùsù
*Wara		pó	bǒ, *nǐntó	tá(i)	naaso	sùsù,
Palen	Faniagara	káfā	bá	tá:ré	ná:ré	sùsù
*Palen	Faniagara	kā-fā	bá, *nǐnté	tá:ré	ná:ré	sùsù,
						*si/sɔ
<b>*Wara-</b>		<b>ba/fa,</b>	<b>nǐnté, bǒ</b>	<b>ta(r)i</b>	<b>na(r)i</b>	<b>sùsù,</b>
<b>Natioro-</b>		<b>pɔ</b>				<b>sV</b>
<b>Paleni</b>						
		‘6’	‘7’	‘8’	‘9’	‘10’
Natioro	Dinaoro	ɲzàbǒ	té:ndé	nǎngànángàni	kāwó	pwò:
Natioro	Timba	ɲzà:bǒ	dé:ndí	nángánángàni	kāwòmú	pwó:
Natioro	Kawara	nsàbǒ	tèndí	nàngānàngádí	kāwūmò	pó
*Natioro		nsàbǒ	téndí	4+4	kawo	p(w)ó
		(sa-1?)				
Wara?	Sourani	sùrpó	sūrùdó	sìntá	sìn:á	kàn:sú
Wara	Negeni	sírípò	sínǐntó	sǐntí	sìn:á:sú	kà:sá
Wara	Niansogoni	sírípò	sùrùntó	sì:ntí:	sìn:á:sú	kà:sá
*Wara		si-1	si-2	si-3	si-4	kà:sá
Palen	Faniagara	sínífā	sínǐnté	sǔtá:ré	sōn:á:ré	fó
*Palen	Faniagara	si-1	si-2	sǔ-3	sǔ-4	fó
<b>*Wara-</b>		<b>5+1</b>	<b>5+2, téndí?</b>	<b>5+3, 4+4</b>	<b>5+4, kawo?</b>	<b>p(w)ɔ/</b>
<b>Natioro-</b>						<b>fɔ,</b>
<b>Paleni</b>						<b>kà:sá?</b>



## 4.9.12 Proto-Gur

## 4.9.12.1 ‘One’

The main forms of ‘one’ reconstructable in sixteen branches of Gur are as follows (Table 4.190).

Table 4.190: Stems for ‘1’ in Gur

A. Bariba				tiā
B. Central:	do			
1. Northern				
A. Bwamu				
B. Kurumfe	dom			
C. *Proto-Oti-Volta		den/yen, de?		ni
Southern		le	kpò	
A. Dogoso-Khe				
C. Gan-Dogose		lèn	kpo/po	
D. *Proto-Grusi	do/du/lu	de/re		
E. Kirma-Tyurama		déiŋ/děēná		
C. Kulango				ta(a) < *taà
D. Lobi-Dyan	*dò			
E. Senufo			ni- ŋgbe/ nu- ŋgba	nìkǐ/ ningin
F. Teen				
G. Tiefo		dě		
H. Tusia				nónkì
I. Viemo	dūde, *dun-			
J. Wara-Natoro-Paleni			pɔ	

An attempt to reconstruct a Proto-Gur form is probably not reasonable at this point, since all the forms quoted above are important for comparative purposes.

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4.9.12.2 ‘Two’

Table 4.191: Stems for ‘2’ in Gur

	‘2’	‘2’	‘2’	‘2’	‘2’
A. Bariba	ru				
B. Central:					
1. Northern					
A. Bwamu	ɲũ				
B. Kurumfe				hĩĩ	
C. *Proto-Oti-Volta		li/yi			
Southern					
A. Dogoso-Khe	jɔ(n)				
C. Gan-Dogose	yɔ̃/ɲɔ̃/dʒɔ̃ŋ				
D. *Proto-Grusi		le/le	ne/ni		
E. Kirma-Tyurama				hãĩ/hãl	
C. Kulango	nyʊ̃				bila (< Mande)
D. Lobi-Dyan	nyɔ̃(n)				
E. Senufo					sin/soin/ sun/syen
F. Teen	nyor				
G. Tiefo	jɔ̃				
H. Tusia			nínó, *nĩŋ		
I. Viemo			niinĩ		
J. Wara-Natorio-Paleni			nínté		bõ

Apparent isolates and obvious borrowings are presented in the rightmost column.

## 4.9.12.3 ‘Three’ and ‘Four’

Table 4.192: Stems for ‘3’ and ‘4’ in Gur

	3	3	4	4
A. Bariba	i-ta		ñ-ne	
B. Central:				
1. Northern				
A. Bwamu	tĩ		náa	
B. Kurumfe	tãã		nãã	
C. *Proto-Oti-Volta	ta(t)		naa(si)	
Southern				
A. Dogoso-Khe	tho		dáa	
C. Gan-Dogose	sáa/tʰɔʔ		ɲee/i-yìi, (á-dàa)	
D. *Proto-Grusi	toro/toso/tɔ		naare/naasi/na	
E. Kirma-Tyurama	síei/siɛl		na(a)	
C. Kulango		sããbe (< Mande)	na	
D. Lobi-Dyan	thès(i)/tʰər		ná	
E. Senufo	tãã/taàr			tésyàr/sicērē/ tityere
F. Teen	sanr		nan	
G. Tiefo	sá			ʔuʔʔ/ɲɔɔ
H. Tusia	tónó		nyáh/jã	
I. Viemo	sãsi			jumĩ
J. Wara-Natioro-Paleni	ta(r)i		na(r)i	

The reflexes of the most persistent NC roots are observable in the majority of the branches.

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##### 4.9.12.4 ‘Five’

Table 4.193: Stems for ‘5’ in Gur

	‘5’	‘5’	‘5’	‘5’	‘5’
A. Bariba	nòɔ̀bù				
B. Central:					
1. Northern					
A. Bwamu	hò-nú				
B. Kurumfe	nɔ̃m				
C. *Proto-Oti-Volta	nu				
Southern					
A. Dogoso-Khe	nɔ̃(n)				
C. Gan-Dogose	nɔ̃n	mwã/ wàa			
D. *Proto-Grusi	nu/nɔ̃				
E. Kirma-Tyurama				di	
C. Kulango			tɔ		
D. Lobi-Dyan		mòlì/*mà/ *mòlò		dièmà	
E. Senufo	guno, (nɔ̃)	bwa/ bwɔ			
F. Teen			tɔ		
G. Tiefo					kà
H. Tusia					k(w)lɔ̃
I. Viemo					kuege, *kɔ̃
J. Wara-Natioro-Paleni			sùsú, sV		

The etymological relationship of \**nu* ‘5’ and ‘hand’, is attested in Central Gur and possibly in Bariba and Senufo. Isolated bases may go back to this meaning as well. At the same time, the base preserved in Kulango, Teen and possibly Wara-Natioro-Paleni is comparable to \**tan* found in BC and some other families.

## 4.9.12.5 ‘Six’ and ‘Seven’

Table 4.194: Stems and patterns for ‘6’ and ‘7’ in Gur

	‘6’	‘6’	‘7’	‘7’	‘7’
A. Bariba	5+1		5+2		
B. Central:					
1. Northern					
A. Bwamu	5+1		5+2		
B. Kurumfe		hɔrɔ		pěě	
C. *Proto-Oti-Volta		lob/yob		poi(n)?	*lob-le (6+1)?
Southern					
A. Dogoso-Khe	5+1		5+2		
C. Gan-Dogose	5+1		5+2		
D. *Proto-Grusi	5+1	dɔ/lo- dɔ/lo-ro	5+2	pɛ/lɔ- pɛ/lɔ-bɛ	
E. Kirma-Tyurama	5+1		5+2		
C. Kulango	5+1		5+2		
D. Lobi-Dyan	5+1		5+2		
E. Senufo	5+1,	kwaj̃/ kwāy, gbaara, nōli	5+2		6+1
F. Teen	5+1		5+2		
G. Tiefo	5+1		5+2		
H. Tusia	5+1		5+2		
I. Viemo	5+1		5+2?		
J. Wara-Natorio-Paleni	5+1		5+2		téndí?

The patterns \*‘6=5+1’ and \*‘7=5+2’ can be safely reconstructed at the Proto-Gur level. The exceptionally wide range of forms for ‘six’ attested in Senufo is noteworthy.

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##### 4.9.12.6 ‘Eight’ and ‘Nine’

Table 4.195: Stems and patterns for ‘8’ and ‘9’ in Gur

	‘8’	‘8’	‘8’	‘9’	‘9’	‘9’
A. Bariba	5+3			5+4		
B. Central:						
1. Northern						
A. Bwamu	5+3					d̥iini/d̥enu
B. Kurumfe			tɔɔ			fa
C. *Proto-Oti-Volta			ni			wey/weʔ
Southern						
A. Dogoso-Khe	5+3			5+4		
C. Gan-Dogose	5+3			5+4	10-1	
D. *Proto-Grusi		4 redupl.			10-1	nibi/nibu (ni-bi/bu?)
E. Kirma-Tyurama	5+3			5+4	10-1	
C. Kulango	5+3			5+4		
D. Lobi-Dyan	5+3				10-1	
E. Senufo	5+3		6+2	5+4	10-1	6+3
F. Teen	5+3				10-1	
G. Tiefo	5+3			5+4		
H. Tusia	5+3			5+4		
I. Viemo	5+3	4*2			10-1	
J. Wara-Natorio-Paleni	5+3	4+4		5+4		kawo?

In addition to the common patterns ‘8=5+3’ and ‘9=5+4’, alternative ones are attested for ‘eight’ and ‘nine’ (‘8=4 redupl.’ and ‘9=10-1’ respectively).

## 4.9.12.7 ‘Ten’

Table 4.196: Stems for ‘10’ in Gur

A. Bariba		wɔ-kuru		
B. Central:				
1. Northern				
A. Bwamu	pílú/píru/ ’búrúù			
B. Kurumfe	fɪ			
C. *Proto-Oti-Volta	pi(k)			
Southern				
A. Dogoso-Khe	kpélé			
C. Gan-Dogose		kpoogo	nõy - 5PL	gbùnè, kpélé, sí-
D. *Proto-Grusi	fu/fi			
E. Kirma-Tyurama			núśś	cíŋciélùó nuunu (< *5 redupl.), *ji/yi
C. Kulango				
D. Lobi-Dyan		ni-kpo	nyòór	
E. Senufo				kɛ
F. Teen	pɔrwɔ			
G. Tiefo				kɛ
H. Tusia				támú gbām/ *gbǎ/ bwò
I. Viemo		kwɔmũ		
J. Wara-Natioro-Paleni	p(w)ɔ/fɔ			kǎ:sǎ?

This term exhibits a variety of isolated (and possibly non-primary) forms. The main form has a voiceless labial as its initial consonant.

4.9.12.8 ‘Twenty’

Table 4.197: Stems and patterns for ‘20’ in Gur

	‘20’	‘20’	‘20’	‘20’	‘20’
A. Bariba					yendu
B. Central:					
1. Northern					
A. Bwamu		ḡóní/ ḡénle/ kēwēnî			
B. Kurumfe	sofe (<10?)				
C. *Proto-Oti-Volta	10*2				
Southern					
A. Dogoso-Khe		gòʊsì	cúkúrí		
C. Gan-Dogose		gbeere	ṭfúkúrí		
D. *Proto-Grusi	10*2?				
E. Kirma-Tyurama		guř			kómòrré
C. Kulango					yipì-/ dzipi-
D. Lobi-Dyan		kpèle	ceeru		
E. Senufo		gbèɲ/ gbēy,		toko/ togo toko	fulo, nafa
F. Teen					kpā
G. Tiefo					*tiki
H. Tusia			túkúrí		fereyɔ
I. Viemo					wá/nwǒ,
J. Wara-Natioro-Palení					sɔ

In view of the great variety of forms and patterns attested for this term, the existence of the term for ‘twenty’ in Proto-Gur is uncertain.



## 4.9.12.9 ‘Hundred’

Table 4.198: Stems and patterns for ‘100’ in Gur

A. Bariba	20*5			
B. Central:				
1. Northern				
A. Bwamu				k <sup>h</sup> iminù (< Mande keme)
B. Kurumfe			berɔ	
C. *Proto-Oti-Volta		kob, kook		
Southern				
A. Dogoso-Khe	20*5			
C. Gan-Dogose	20*5			
D. *Proto-Grusi	20*5?	kɔwa/kɔɔ?	bi?	
E. Kirma-Tyurama	20*5		gundi	
C. Kulango				kemè (< Mande)
D. Lobi-Dyan		tâmâ		
E. Senufo	20*5			lafa (< Kwa)
F. Teen	20*5			
G. Tiefo	20*5			
H. Tusia	20*5	kwě		
I. Viemo		tãmõ		
J. Wara-Natioro-Paleni	20*5			

## 4.9.12.10 ‘Thousand’

No evidence supports the reconstruction of the term for ‘thousand’ in this family.

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Table 4.199: Stems and patterns for '1000' in Gur

A. Bariba			fɔ̀rɔ̀tɔ̀?	
B. Central:				
1. Northern				
A. Bwamu		100*10	muaseé	
B. Kurumfe				tɔ̀srɪ (< Moore)
C. *Proto-Oti-Volta				
Southern				
A. Dogoso-Khe	kpé			
C. Gan-Dogose	kpíɛ 'a goat'			
D. *Proto-Grusi			kpoŋ/ gboŋ	
E. Kirma-Tyurama		200*5, 800+200		
C. Kulango				wulo (< Mande)
D. Lobi-Dyan		100*10	gbòlanɪ	
E. Senufo		200*5	gben-, bɔ̀bɔ̀, pwoo, sakere danyɛ	
F. Teen				
G. Tiefo				waga (< Mande)
H. Tusia	< píy 'goat', náʔ 'cow'			
I. Viemo	vie-?			
J. Wara-Natioro-Paleni		400*2+20		

## 4.10 Mande

The intermediate step-by-step reconstructions available for the Mande languages in Vydrin's Mande Etymological Dictionary and in Vydrin 2007<sup>24</sup> has made treatment of the data easier.

The genetic classification of Mande, outlined in the latter work, will serve as the basis for our analysis. This classification differs from the one suggested by Kastenholz and is accessible via *Ethnologue* (SimonsFenning2018). According to V. Vydrin,

Its major innovations, in comparison with that of Kastenholz, are the following:

- the Susu–Jalonke group is put together with the Southwestern group, rather than with Kastenholz's "Central Mande" (in fact, it is a return to the proposal of André Prost 1958);
- Soninke–Bozo, Samogho and Bobo are no longer considered as branches of the same genetic unit (Kastenholz's "Northwestern Mande"), but rather as independent groups inside Western Mande;
- the Mokole group is put together with Vai–Kono, rather than with Manding;
- in the Southern Mande group, Mwan is separated from Wan and put together with the Guro–Yaure subgroup;
- San (Samo) is put together with Bisa, rather than with Busa-Boko' (Vydrin 2016: 110).

Let us note an important fact: the numeral system of Jowulu differs considerably in certain points both from other Samogho languages and from Mande languages in general. It is interesting to outline that in R. Kastenholz's classification (based on the method of shared innovations, rather than on lexicostatistics) Jowulu is given a special status, more precisely, the first split in his Northwestern Mande branch (Bozo-Soninke + Bobo + Samogo + Jowulu).

Our further analysis will be based on the evidence from twelve branches of Mande represented in Figure 4.1.

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<sup>24</sup>I would like to thank V. Vydrin for his suggestions and comments on the preliminary draft of this chapter.

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

1. Manding		7. Bozo-Soninke	
2. Jogo-Jeri		8. Bobo	
3. Mokole	5. Susu	9. Samogo	11. Eastern
4. Vai-Kono	6. SWM	10. Jowulu	12. Southern

Figure 4.1: Mande languages

##### 4.10.1 ‘One’

Table 4.200: Mande stems for ‘1’

Manding	*dó	*kélén			
Jogo-Jeri	*do	*kéle (?)			dié(n)/dúli
Mokole	*dóndò	*kéle			
Vai-Kono	*dóndò	*N-kélén			
Susu		*kédén	nde/ndá		
SWM		*giláan	*tà		
Bozo-Soninke		kuɔn/ kɛɛ/ ke/ko		sana	bane, fie
Bobo			tàlá/télé		
Dzuun (Samogo)		*ké		*so/sɔʔi/ swě	
Jowulu			těěna/ tenɲ		
SE-Eastern	*do	gòró/ gôon?			
SE-Southern	*dô				

Vydrin’s preliminary reconstructions, as well as isolated forms resulting from the analysis of the numerical terms, are marked with an asterisk [\*].

The isoglosses for ‘one’ suggest the existence of two alternative roots (\*dô and \*kelen) attested in both major Mande groups. The latter root is distinguishable under the assumption that the forms with a voiced velar attested in the Eastern branch of the South-Eastern group (Matya Samo gòró, Southern Samo (Maka) gôon) are related to the k-forms found in Western Mande.

The next two roots, if related, may be suggestive with regard to the classification of Western Mande (otherwise, they probably represent similar unrelated forms). It should be noted that the root *ndá* (Susu *nde* ‘one, certain’, *ndende* ‘anybody, whoever; nobody’, Jalonke *ndá* ‘certain’) attested, according to Vydrin, in Susu-Jalonke may be related to *\*dɔ*. The determiner *\*dɔ*, which can be reconstructed at the Proto-Mande level, goes back to the root *\*do*.

The rightmost column of the table embraces the isolated forms.

#### 4.10.2 ‘Two’

Table 4.201: Mande stems for ‘2’

<b>Manding</b>	<i>*filá</i>
<b>Jogo-Jeri</b>	<i>*fálá</i>
<b>Mokole</b>	<i>*fila</i>
<b>Vai-Kono</b>	<i>*fèLá</i>
Susu	<i>*fidín</i>
SWM	<i>*fèelé</i>
Bozo-Soninke	<i>pě:ndé, fillò</i>
Bobo	<i>pálà</i>
Dzuun (Samogo)	<i>fí:(kí)</i>
Jowulu	<i>fúúli</i>
SE-Eastern	<i>*pela</i>
SE-Southern	<i>*pù-lāŋ</i>

A common root for ‘two’ that may be tentatively recorded as *\*pila* / *fila* is attested in all Mande branches. Its precise phonetic reconstruction is beyond the scope of our investigation. The reader can refer to the works of specialists in the historical phonetics of Mande. A reference designation that will enable us to compare this root to the evidence of the other NC families is sufficient for our reconstruction purposes.

#### 4.10.3 ‘Three’

The common root *\*sakpa/ sagba/ sawa* is represented in all Western branches. The relationship between some of the forms attested in the Eastern group (Southern Samo (Maka) *sɔ̃ɔ̃*, Matya Samo *tjɔwɔ*) remains uncertain. The Jowulu form is especially peculiar. It should be noted that the forms of some numerical terms

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Table 4.202: Mande stems for ‘3’

Manding	sàbá	
Jogo-Jeri	sègbá/sigbù	
Mokole	sàwa/saba	
Vai-Kono	sàkpá/sagba/sáwa	
Susu	sàxán/sàqán/sawa	
SWM	sàwá/sāafā	
Bozo-Soninke	síkkò, sike	
Bobo	sàà (?)	
Dzuun (Samogo)	ʒiʔi/ʒi:ɡī /fwe/yei	
Jowulu	bzei < *jɔŋɪ/i?	
SE-Eastern	sɔɔ/cɔw?	ʔààkɔ
SE-Southern		*yààká

Table 4.203: Jowulu numerals

Source	‘1’	‘2’	‘3’	‘4’	‘5’
Hochstetler (1996)	těēna	fuuli	bzei, *dʒɔ̃	pʃire¹	tāā
Djilla et al. (2004)	tenɲ	fúúli	byàŋ, *jòn	pyiiranɲ	táánɲ
Carlson (1993)	tě̀èni	fu'u'li	byāī, *jɔ̃ɔ̃	pi'i rēi	ta' a'¹
Prost (1958)	tēna	fole	dyue, *dyô	piee	tā
Source	‘6’	‘7’	‘8’	‘9’	‘10’
Hochstetler (1996)	tāmāni	dʒɔ̃m-pɔn	ful-pɔn	tēm-pɔn	bʒiī
Djilla et al. (2004)	táán-mání	jòn-pɔnni	fuuli-pɔnni	ten-pɔnni	byinɲ
Carlson (1993)	ta' a'¹-mānī	jɔ̃ɔ̃-po'ni	fu'l-po'ni	tèè-po'ni	byi
Prost (1958)	ton-te	dyômpônô	filepônô	tépônô	bī

differ significantly depending on the source. Our study is based on four Jowulu sources that provide the following evidence<sup>25</sup> (Table 4.203).

The terms for ‘seven’, ‘eight’ and ‘nine’ follow the pattern ‘3,2,1+‘to lose’’ respectively (cf. their inaccurate interpretation in Hochstetler, see §4.10.9), hence the reconstruction of the term for ‘three’ with the initial palatal (\*jòn). The forms quoted in Jowulu for ‘three’, ‘four’, and ‘ten’ are uncommon. If we were dealing

<sup>25</sup>Hochstetler (1996); Djilla et al. (2004); Carlson (1993); Prost (1958).

with a language with a noun class system, we would have to conclude that a noun class marker (CL19?) with two allomorphs (**p**- and **b**- before voiced and voiceless respectively) is traceable in the pertinent forms. However, we are dealing with a language that undoubtedly belongs to Mande, so no class-related morphemes can be involved. This leaves the presence of the initial labial in the term for ‘three’ unexplained. A borrowing from Gur or Kru cannot be assumed since these languages lack the comparable forms. The only plausible solution is the alignment of ‘three’ and ‘four’ by analogy with ‘ten’ where it must have been originally present.

A special term for ‘three’ appears in South-Eastern. In Eastern it can be reconstructed as *\*ʔààk̄* or possibly *\*ʔàà-(k̄)*, cf. Bisa *kakó*, Boko *ʔàà̄* (in Koelle 1963[1854] *ááyó*), Bokobaru (Zogbē) *ʔààḡ*, Busa *ʔààk̄*, Maya Samo *kàakú*, Kyanga *ʔàà*, and Shanga *ʔà*. The latter reconstruction is supported by the fact that the terms for ‘three’ and ‘four’ share the ultima, cf. the data are presented in Table 4.204.

Table 4.204: Final morphemes in the Boko-Busa numerals

	Boko	Boko (Koelle 1963[1854])	Bokobaru	Busa
‘3’	ʔàà-ṣ	áá-yó	ʔàà-ḡ	ʔàà-k̄
‘4’	síí-ṣ	síí-yó	síí-ḡ	ʃíí-k̄

It should be noted that in these languages, the syllable in question is also present in the terms for ‘eight’ that are built according to the pattern ‘5+3’ (cf. e.g. Bobo Karu *sír-ààḡ*). Here we may be dealing with alignment by analogy, possibly with an additional final morpheme of uncertain meaning. It should be stressed that the ultima in ‘three’ and ‘four’ is never the same in the Eastern subgroup of the South-Eastern languages, whereas the medial velar is only attested in ‘three’ but not in ‘four’. Assuming that the forms of the two Eastern branches are related, the term for ‘three’ can be reconstructed as *\*ʔààk̄/ʔààká*, whereas the term for ‘four’ may be interpreted as resulting from the alignment by analogy with the forms of ‘three’ attested in the Eastern branch of South-Eastern Mande. The evidence in favor of its etymological connection with *\*sákpa* is inconclusive.

#### 4.10.4 ‘Four’

An easily recognizable NC form (*\*náání/ nãñi*) can be reconstructed in Western Mande, whereas in South-Eastern Mande it is replaced with an innovation

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Table 4.205: Mande stems for ‘4’

Manding	*náani	
Jogo-Jeri	náani	
Mokole	náani	
Vai-Kono	náani	
Susu	náani	
SWM	*náani	
Bozo-Soninke	na:na/nàtá/nà:rà/naxat-	
Bobo	nàà/niã	
Dzuun (Samogo)	nãui/naai/nà:lě	
Jowulu		pʃirɛ! <ʃirɛ!?
SE-Eastern		sì/síikɔ̃
SE-Southern		*yìi-sìyá: zǐě/yũ-siě

(*\*sìyá*). This innovation may also be attested in Jowulu.

#### 4.10.5 ‘Five’

Table 4.206: Mande stems for ‘5’

Manding	dúuru/loolu	*wo (cf. ‘7’)	
Jogo-Jeri	sóólò/sóolo		
Mokole	lɔ̃lu	*wo (cf. ‘7’)	
Vai-Kono	dúʔu/sóó(?)ú		
Susu	suuli/sùlù	*fò (cf. ‘7’)	
SWM	dóólú/lóólú	*wɔ/ngò	
Bozo-Soninke		kólóhò/káragò	
Bobo		kō/kóò	
Dzuun (Samogo)			nũ
Jowulu			tãã
SE-Eastern	*sodu: sósro/sóò		
SE-Southern	sósódú/sólú		

There is a correspondence between *d-/l-/s-* within Western Mande, hence the Eastern forms with the initial *s-* should not necessarily be treated separately. A discussion of the exact phonetic reconstruction is better left to specialists in the



field. For our purposes, it is sufficient to record that the Proto-Mande root for ‘five’ is reconstructed as *dúuru/ sóóru*.

However, the root(s) *\*wo*, *\*ko* are traceable in the compound numerical terms attested in Western Mande. They may be etymologically related to the lexical root meaning ‘hand’ (Vydrin, p.c.; cf. Proto-South-Mande *\*kɔ* ‘hand’). The latter may be a NC root, cf. e.g. the term for ‘hand’ in Proto-Gbaya (*kɔ*), Dida (Kru) (*kɔ*) and in other languages.

The Jowulu and Samogo forms are peculiar. As we hope to demonstrate in the next chapter, two alternative roots for ‘five’ can be reconstructed for NC, namely *\*tan/ ton* and *\*nu(n)*. Both roots are directly attested in these marginal groups. Is this enough to reconstruct the terms for ‘five’ traceable in NC for the Mande languages? We will return to this question in the last chapter of the book.

#### 4.10.6 ‘Six’

Table 4.207: Mande stems and patterns for ‘6’

Manding	wóɾɔ (5+1)	
Jogo-Jeri	mɔ̀ɔ̀dɔ̀ (5+1?)/mì:lù	
Mokole	wóɾɛ/wɔɣɔ (5+1)	
Vai-Kono	wóɔɔɔ/wɔɔɔɔ (5+1)	
Susu	sénní (5+1?)	
SWM	*5+1	
Bozo-Soninke	goro? (5+1?)	túmù/tūmi
Bobo	5+1	
Dzuun (Samogo)		t(s)ùmě́ /tsìì
Jowulu	5+1	
SE-Eastern	5+1	
SE-Southern	5+1, wáń?	

The reconstruction of the Mande term for ‘six’ is problematic. The root *t(s)um* is worth considering, since it is attested in both Bozo-Soninke and Samogo (the root found in Susu is probably isolated). Its reconstruction at the Proto-Mande level is, however, unlikely. The common pattern ‘6=5+1’ is attested in both major branches. The root *wɔɔɔ* is non-primary and eventually goes back to the aforementioned pattern (or to the pattern ‘6’=‘hand’+1’ to be precise). This hypothesis is supported by the forms of ‘seven’ as well.

#### 4.10.7 ‘Seven’

Table 4.208: Mande stems and patterns for ‘7’

Manding	x+2	
Jogo-Jeri	ma+2	
Mokole	x+2	
Vai-Kono	5+2	
Susu	5+2	
SWM	5+2	
Bozo-Soninke	ɲérù/jeeni	
Bobo	5+2	
Dzuun (Samogo)	ɲɛ̃:nú (<5?)/ɲɛ̃ɛ	
Jowulu		3+ ‘to lose’
SE-Eastern	5+2	
SE-Southern	5+2	

A few remarks are in order before we turn to the discussion of the term for ‘seven’. In the majority of the Mande branches, the term represents a compound. Its second element goes back to the term for ‘two’, cf. e.g. Jula *wólonfilà* ‘7’, *filà* ‘2’.

The relationship between the terms for ‘six’ and ‘seven’ is based on alignment by analogy. This bond sometimes results in unification of the terms, so that sources may explain ‘seven’ as ‘6+1’ (despite the fact that ‘two’, not ‘one’, is manifestly present in ‘seven’). This interpretation has become recurrent for the Mokole languages. According to Phillip Logan,<sup>26</sup> the Kuranko evidence is as follows: *wɔɔɔnfilà* (‘6+1’) (?! –K.P.), *wɔɔ* ‘6’, *filà* ‘2’, *kelen* ‘1’. The same idea is applied to Lele (cf. Marc Gebhard:<sup>27</sup> *wɔɔɔ kela* (‘6+1’),<sup>28</sup> *wɔɔ* ‘6’, *fela* ‘2’, *kelen* ‘1’) and Kakabe (cf. Daria Mishchenko:<sup>29</sup> *wɔɔwila* (‘6+1’), *wɔɔ* ‘6’, *filà* ‘2’, *kélen* ‘1’). Other scholars are more reserved, stating that ‘Kono has a decimal system with special construction for 7’.<sup>30</sup> It is, however, quite evident that the forms in

<sup>26</sup><https://mpi-lingweb.shh.mpg.de/numeral/Kuranko.htm>

<sup>27</sup><https://mpi-lingweb.shh.mpg.de/numeral/Lele-Mande.htm>

<sup>28</sup>According to Vydrine (2009), the Lele term for ‘seven’ is *wɔɔɔncela* (or *wɔɔɔnkela* in the Southern dialect, <https://mpi-lingweb.shh.mpg.de/numeral/Jowulu.htm>) *núú gbɔyɔ́ngo* ‘20’ (‘person finished’, <https://mpi-lingweb.shh.mpg.de/numeral/Mende.htm>)

<sup>29</sup><https://mpi-lingweb.shh.mpg.de/numeral/Kakabe.htm>

<sup>30</sup>Raimund Kastenholz, <https://mpi-lingweb.shh.mpg.de/numeral/Kono.htm>

question follow the pattern ‘5+2’ (or at least ‘X+2’ with X being an unidentified component).

It is not a mere coincidence that the interpretation outlined above is recurrent in the Mokole languages, where the forms of ‘six’ and ‘seven’ have become partially unified. In a number of languages from other groups that have etymologically related terms for ‘six’ and ‘seven’, these terms differ in their second consonant, cf. Bamana (Manding): *wólonwula* ‘7’, *wóɔrɔ* ‘6’.

In both groups of South-Eastern Mande the patterns ‘5+1’ and ‘5+2’ for ‘six’ and ‘seven’ respectively are still clearly recognizable (Table 4.209).

Table 4.209: Stems for ‘6’ and ‘7’ in South-Eastern Mande

	‘5’	‘1’	‘6’	‘2’	‘7’
SE: Eastern: Busa	sóo	do	sóo-do	pia	soo-pia
SE: Southern: Beng	só-ŋ	do	só-do	pla-ŋ	só-pla

Taking all of this into consideration, the most likely evolution scenario for ‘six’ and ‘seven’ is as follows:

- At the most archaic Proto-Mande level the terms for ‘six’, ‘seven’ (and also ‘eight’ as we hope to demonstrate below) followed the pattern ‘X+1,2,3’ respectively. The X-element in this pattern possibly represented an archaic root with the meaning ‘hand’ (?) *\*ko* (*\*N-ko* > *\*go/wo*?).
- Proto-Mande developed the root *\*dúuru/ sóru* ‘5’.
- This new root served as the basis for the South-Eastern Mande terms for ‘six’, ‘seven’ and ‘eight’.
- In Western Mande this process is only attested in single languages, e.g. in Vai (*sóóʔú* ‘5’, *sŋ lëndó* ‘6’ (*lëndó* ‘1’), *sŋ fɛʔá* ‘7’ (*fɛʔá* ‘2’)) and Looma (*dooluo* ‘5’, *dɔzita* ‘6’, *dɔfela* ‘7’, *dóśáwà* ‘8’).
- The majority of the Western Mande languages retained the inherent forms for ‘six’ and ‘seven’, but their derivational motivation became unapparent (at least in the case of the first component, cf. Bandi *ndǎǎlú(ŋ)* ‘5’, but *ngòhítàŋ* ‘6’ (*hítàŋ* ‘1’) and *ngòfɛlàn* ‘7’ (*fɛlé* ‘2’) in contrast to Looma).
- This factor conditioned the partial unification of the terms for ‘six’ and ‘seven’ (by analogy) in some of the Western Mande languages (Mokole in particular).

#### 4.10.8 ‘Eight’

Table 4.210: Mande stems and patterns for ‘8’

Manding	séegi/séki/séyi		
Jogo-Jeri		ma+3	
Mokole	séen/saen/seyi		
Vai-Kono	séi/séin	5+3	
Susu		5+3	
SWM		wá-yákpá/ wɔ̄-yaagba/ ngòsákbá(n) (5+3)	
Bozo-Soninke	segi-/seegu		
Bobo	sékì/tfèkí		
Dzuun (Samogo)			kàà, 4pl
Jowulu			2+ ‘to lose’
SE-Eastern		*5+3	síje, kíwísí (<4)
SE-Southern		sǎǎ-gǎ/sálààkǎ/ sòlàá/sé-yǎ (5+3?)	

The pattern ‘8=4\*2’/‘4PL’ commonly found in the majority of the families discussed above is barely attested in Mande. Meanwhile, the phonetic similarity between *naai* ‘4’ ~ *ɲaai(n)* ‘8’ (attested in the majority of the Samogo dialects) is hardly an accident.

The etymology of *kàà* (not found outside Seenku) is unknown.

The pattern ‘5+3’ is inconclusive, because it often develops independently in various languages. The interpretation of the main Mande root (tentatively described as *seki/ segi*) is uncertain. On the one hand, its current forms suggest that this root can be reconstructed not only for Proto-Western Mande, but for Proto-Mande as well (cf. South-Eastern forms, in particular *sǎǎgǎ* ‘8’). On the other hand, such reconstruction is hindered by at least two issues.

Firstly, the second velar in the South-Eastern Mande forms does not belong to the root. It is part of a reduced segment that goes back to the term for ‘three’ (cf. Tura *yǎká* ‘3’), whereas the first segment goes back to the term for ‘five’ (cf. Tura *sólú, sǒólú, sǔlú*). The comparative analysis of the forms of ‘eight’ attested in

the South-Eastern Mande languages (not quoted here in detail) strongly suggests that the South-Eastern Mande pattern for ‘eight’ is ‘5+3’.

Secondly, this reconstruction is problematic from a typological point of view. As has been demonstrated above, our evidence prevents us from reconstructing primary roots for ‘six’ and ‘seven’. In terms of typology, a primary root for ‘eight’ would look highly unusual in this context. Such a root could be expected in those few numeral systems where ‘eight’ is a basic numeral (just like ‘twelve’ is a basic numeral in some of the Benue-Congo numeral systems described above, hence ‘100=12\*8+4’). However, ‘eight’ has never been a basic unit of counting in Mande systems. The existence of a primary term for ‘forty’ (assuming that ‘forty’ is ‘8\*5’) in some of the Mande languages could be interpreted as a hint at a special status of ‘eight’. However, this is not supported by any real evidence.

This raises a question about the etymology of the Western Mande term for ‘eight’ (*seki/ segi*). Its resemblance to the term for ‘three’ (especially in Bozo and Soninke, cf. Jenaama Bozo *síkěũ* ‘3’ ~ *sèk:i* ‘8’) may be suggestive here. Is there enough evidence to reject the hypothesis that ‘eight’ in the Proto-Western Mande was built according to the pattern ‘8=plus 3’ (this would assume a counting reference to ‘five’)?

Despite the doubts expressed above, these forms are worth comparing to other forms of ‘eight’ attested in other NC families.

#### 4.10.9 ‘Nine’

Table 4.211: Mande stems and patterns for ‘9’

Manding		kòṇòntò (10–1?)	
Jogo-Jeri	ma+4		
Mokole		kòṇòndòn (10–1?)	
Vai-Kono	5+4	kòṇóntòn	
Susu	5+4		
SWM	5+4	10–1	
Bozo-Soninke			kàp:i/káfi/kabi
Bobo		kòrònòŋ	
Dzuun (Samogo)			kjè:rǒ/kle:lo/kùòmè
Jowulu		1+‘lose’	
SE-Eastern	5+4	10–1	
SE-Southern	5+4		

Two competitive patterns are distinguishable here ('9=5+4' and '9=10-1'). In some of the branches (e.g. SWM, Vai-Kono) they are attested side-by-side.

At the same time, these patterns cannot be postulated for some of the languages without additional support. The pattern '9=10-1' seems to be apparent in South-Eastern Mande and some of the SWM languages only, cf. Boko '9': *kě̀okwi* (lit: 'tear away 1 (from) 10'), *kwi* '10'; in Busa '9': *kě̀ndo/kí̀ndokwi* (lit: 'tear away 1 (from) 10'), *kwi* '10', *do* '1'; in Bandi (SWM) *taá-vu* '9', *itá(η)* '1', *púu* '10'. According to Robert Carlson (Carlson 1993: 30), the terms from 'seven' to 'nine' in Jowulu follow the pattern '1-3' + 'lose' (*fóni*), i.e. *jǎǎ-póni* '7', *fúl-póni* '8', and *tě̀ě-póni* '9' (note that these terms are misinterpreted as 3+4, 2\*4, 5+4<sup>31</sup> by Lee Hochstetler).

The root *kònonto/kǎnǎndo(n)* attested in Manding and Mokole is unclear and deserves discussion by specialists. On the contrary, the forms interpreted as the combination of '5+4' in the table below seem to be quite transparent (Table 4.212).

Table 4.212: '9 = 5+4' in Mande

Language	'9'	'5'	'4'
Kyanga	sòòfí	sóórū	ǰí
Tura	sóisē	sólú	ǰisē
Susu	sólómánáání	súlí	náání
Vai	sôŋ náání	sóó(?)ú	náání
Bobo Madare	kórónǎ	kóò	náá

This section, however, is not unproblematic. The Jogo-Jeri non-primary terms for '6-9' are formed by two components. The second (i.e. the terms for 'one', 'two', 'three' and 'four' respectively) is easily recognizable, whereas the etymology of the first (*ma-*) is unclear.

#### 4.10.10 'Ten'

This term is especially interesting in light of the fact that the distribution of the isoglosses of 'ten' served as the basis for Maurice Delafosse's early classification of the Mande languages including the *Mande-tan* and *Mande-fu* groups. These two roots are indeed the main Mande roots with this meaning. However, their distribution does not correspond to the two major branches of Mande as they are distinguished today. The root *\*tan* is indeed found in all groups of the Western

<sup>31</sup><https://mpi-lingweb.shh.mpg.de/numeral/Jowulu.htm>

Table 4.213: Mande stems for ‘10’

Manding	*tán	*bî	
Jogo-Jeri	táà(n), ta		
Mokole	tán	*bí	
Vai-Kono	tân		
Susu	*tòngó	fùú	
SWM		*puu	
Bozo-Soninke	tan/téen/cemi		
Bobo		fě	m̥m̥
Dzuun (Samogo)	t(s)eũ/ceũ		
Jowulu			bʒĩ/byĩnɲ
SE-Eastern		*fu/*vu (< *pu)	kwi/kuri, wókòì
SE-Southern		*bù	gʒó(dō),kǝŋ sǝjɔlú,

branch except for Bobo and SWM. However, the attestations of the root *\*pu/fu* are not limited to South-Eastern and extend to a number of the Western branches such as Bobo, SWM, Susu (and possibly Manding-Mokole, assuming that its reflex denotes tens in compound numerals). Isolated forms attested in South-Eastern and in peripheral Western languages are noteworthy.

The reconstruction of *\*pu/fu* for Proto-Mande and the interpretation of *\*tan* as the Proto-Western Mande innovation seem well-founded.

The etymology of *\*tan* is obscure. Its similarity to the locally attested root *\*tan* (cf. Soninke *tàán* ‘foot, leg’; ‘wheel’; ‘time’ (when counting), Bozo Tieyaxo *tɔn* ‘foot, leg’; ‘time’ (when counting), Bozo Hainyaxo *tă*, Bozo Tiemacewe *tawa*, Bozo Sorogama *taba*) is likely a coincidence. Lexical roots with the meaning ‘foot’ are attested in NC numeral systems, usually as a basis for the non-compound terms for ‘fifteen’. The logic behind this development is simple: ‘ten’ is ‘two hands’, ‘twenty’ means ‘man’, i.e. ‘two hands and two feet’, hence ‘fifteen’ is ‘foot’. This seems to be the case for Boko and Busa, where a non-compound term for ‘fifteen’ (*gěo/ gěro*) is attested (hence ‘16=15+1’ in these languages). This root is etymologically related to ‘foot, leg’ in Duungoma (Samogo) *gě*, Dan *gě*, Mano *gâ* (it should be noted that within Mande a non-compound root for ‘fifteen’ is also attested in Ligbi, cf. *tígán* / *tiga* ‘15’, *tígá-ló* ‘16’).

In addition, a similarity to the term for ‘one’ as attested in some of the languages must be a coincidence.

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A hypothesis assuming a semantic shift \*NC \**tan* ‘5’ > Proto-Western-Mande *tan* ‘10’ in parallel with the development of the Mande innovation \**dúuru/ sóóru* ‘five’ seems to be a better explanation.

It bears reminding that the Bokobaru root *kuri* ‘ten’ (cf. also Boko *kúúli* recorded by Koelle) has a direct parallel in the isolated Bangime language (*kúré*).

##### 4.10.11 ‘Twenty’

Table 4.214: Mande stems and patterns for ‘20’

Manding	<‘human’?		
Jogo-Jeri			jālāmà/kèlè mó
Mokole	<‘human’?		
Vai-Kono	<‘human’	10*2	
Susu	<‘human’		
SWM	<‘human’?	10*2	
Bozo-Soninke		10*2	
Bobo			kpòró, còrò
Dzuun (Samogo)	<‘human’		fwé
Jowulu			kɔ̃ne/kɔ̃nninɲ
SE-Eastern		10*2	kèè-/ka
SE-Southern	<‘human’ <sup>32</sup>	10*2	yɔ

There is every reason to believe that the term for ‘twenty’ was based on the lexical root(s) meaning ‘human person’ at the Proto-Mande level. The etymology of some of the isolated forms presented in the table should be sought with this in mind.

##### 4.10.12 ‘Hundred’

check  
keng/kai

The root *kɛmɛ*, widely attested throughout Western Africa, is noteworthy. Its original semantics deserve a separate study: it is well known that in some languages this root can be used for ‘sixty’ or ‘eighty’ and not for ‘hundred’ (the archaic Bamana counting system: *mànkè mɛ* ‘60’, *bámanankè mɛ / kɛ mɛ* ‘80’, *kè mɛ ní mù gan* ‘100’ (80+20)) (Vydrin & Perekhvalskaya 2015: 360).

<sup>32</sup> Mende *núú gbɔyɔngo* ‘20’ (‘person finished’). <https://mpi-lingweb.shh.mpg.de/numeral/Mende.htm>



Table 4.215: Mande stems and patterns for ‘100’

Manding	*kèmé	
Jogo-Jeri	čěmé/tfíímí	20*5
Mokole	kème	
Vai-Kono	keme	
Susu	kèmé	
SWM	keme(ŋ)	Kpelle: <‘head’ (ŋwúŋ)
Bozo-Soninke	kame/keme	‘islam’-60
Bobo		ʃɔ̃(lì)/zò(ló)
Dzuun (Samogo)		20*5, 80+20
Jowulu		‘rope’*5
SE-Eastern		*20*5
SE-Southern	*kèmé?	kěŋ/kắŋ, la/lú

#### 4.10.13 ‘Thousand’

The roots for ‘thousand’ attested in the Mande languages were borrowed from by the Western African languages. The original meaning of the Mande root *wáa/wága* may be ‘a basket of cola nuts’ (Perekhvalskaja, [Vydrin & Perekhvalskaya 2015](#): 361), cf. Bamana *wágá* ‘panier à colas’, Bobo *wágá* ‘panier qui sert à transporter les colas ou wòlōwágá.’

Table 4.217 gives an overview of Mande forms and patterns that will be used for further comparison to the evidence of other families (Table 4.209).

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Table 4.216: Mande stems and patterns for ‘1000’

Manding	wúlú/wúli	wáa/wá/wà/wága	bà
Jogo-Jeri	búlí, wúlú (< manding)		
Mokole		wàa/wá/ waga	
Vai-Kono	wúl		
Susu	wúlù/wúli		
SWM	wùlù	wála/wáá	
Bozo-Soninke	gulu	waxa	(‘islam’)-muso, wúdzùné
Bobo			
Dzuun (Samogo)		gbà’à, baa	bi ‘goat’, 800+200, <juula
Jowulu		wa’a’	800+200
SE-Eastern		wàà ‘200’	200*5, vûù, ‘dúú, pàdí, pə, boro
SE-Southern	wúlù/wlǔ/ gblǔ (?)	*wágá: wáá	kpi, ken

Table 4.217: Numerals in Proto-Mande

1	do, kelen	7	wɔ-X-fila (‘hand’+2?)
2	pila/fila	8	seki/segì (<‘plus’-3?)
3	sakpa/sagba/sawa, ʔààkǝ/yààkáʔ	9	kònonɔto/kònɔndɔ(n) (10-1, 5+4)
4	náání/nǎǎi	10	pu/fu, tan (< *‘5’?)
5	dúuru/sóóru, wo? ko? **tan? (> ‘10’?), nǎʔ	20	<‘human’
6	wɔɔ (wɔ-rɔ? ‘hand’+1?), t(s)um?	100	kɛmɛ, 20*5
		1000	wulu, wa(g)a

## 4.11 Mel

A narrow definition of the Mel family is preferred here (in accordance with the classification of the Atlantic languages suggested in (Pozdniakov & Segerer 2017). This family comprises two compact language groups, namely Northern (Temne, Landuma, and all Baga languages except for Baga Fore and Baga Mboteni, namely Baga Koba, Baga Maduri, Baga Sitemu and others) and Southern (Kisi, Sherbro, Mani, and Krim). Sua, Limba and Gola are not included within the Mel family and are viewed as isolated NC languages. The numeral systems of the two Mel groups comprised of the distant languages are treated separately below.

### 4.11.1 Southern Mel

Table 4.218: South Mel numerals

	Kisi	Sherbro	Bullom	Mani (Bullom So)	Krim
1	pìlèé/pilɔ, *pum?	bul	(nim)-bul	nìm-búl	yì-mo
2	dín/C-ín/ C-óη, danyö	tɪŋ	(nin)-tsiŋ/ tiŋ	nìn-cáŋ	yì-ym/ yèèn, díim
3	ŋg-àá/y-àá	ræ	(niin)-ra	nìn-rá	yì-ya/gàà
4	hìsólú	hyol	(nii)-hiɔɔl	nìŋ-nyól/ -nyól	yì-hiɔn
5	ŋùèénú	mɛn	(nii)-man	nìmán < niN-wán?	yì-wɛn/ n-wén
6	5+1	5+1	5+1	5+1	5+1
7	5+2	5+2	5+2	5+2	5+2
8	5+3	5+3	5+3	5+3	5+3
9	5+4	5+4	5+4	5+4	5+4
10	tɔ́	wāŋ	waan	wám	wāŋ/wàn
20	bídii(ŋ)/ bélé	‘finished it is man’	u-tɔɔŋ	ù-tòŋ	< ‘person’
100	< Mande	< English		pé, < Susu	
1000	< Mande	< English		< Susu	

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

Noun class markers are usually positioned as suffixes in Kisi. However, the first numerical terms in this language have noun class prefixes, which makes the forms look inconsistent, cf. *mùúŋ* / *mìsŋ* / *ŋìsŋ* / *dìŋ*, *tìsŋ* / *là-tìsŋ* ‘two’.

The terms for ‘hundred’ and ‘thousand’ were probably absent in Proto-South-Mel. The similarity between Kisi *tó* ‘ten’ and Bullom-Mani *təŋ* ‘twenty’ is noteworthy. ‘Twenty’ may follow the pattern ‘20=10PL’. If so, the original *təŋ* ‘ten’ should be viewed as an early borrowing from Western Mande (\**tan* ‘10’). In this case, \**wan* ‘10’ is an innovation (probably based on \**wan/wen* ‘five’) that developed in South Mel after Kisi had separated. The numeral system of modern Kisi exhibits no significant changes from the forms described by Koelle. It includes the form *ŋam-puum* ‘6’ (Tucker Childs: *ŋəŋpúm*) that may have retained an archaic allomorph of ‘one’ (\**pum*). The forms that will be used for further comparison are summed up in the table below (Table 4.219).

Table 4.219: Proto-South Mel numeral system (\*)

1	<i>pilè/pilɔ</i> (< * <i>lɛ/lɔ</i> ?), bul, mɔ	7	5+2
2	<i>tsiŋ/tiŋ</i>	8	5+3
3	<i>ra</i>	9	5+4
4	<i>hiɔl</i>	10	5PL?, < *West Mande?
5	<i>wan/wen</i>	20	‘person’, 10PL?
6	5+1	100, 1000	absent

##### 4.11.2 Northern Mel

A higher degree of homogeneity observable in these languages allows an instant reconstruction of their numeral system at the Proto-Northern Mel (Table 4.220)

Table 4.220: Proto-Northern Mel numeral system (\*)

1	-in	7	5+2
2	-rəŋ	8	5+3
3	-sas	9	5+4
4	-ŋkile/-nlɛ	10	<i>tɔfɔt</i> (< <i>tɔ-f-ɔt</i> ?)/ <i>pu</i> , <i>witɔ?</i>
5	<i>kə-ɬamaɬ</i> (< * <i>kə- ɬa</i> ‘hand’?)	20	10*2, <i>kə-gba</i> (< * <i>bay/bey</i> ‘chief’?)
6	5+1	100, 1000	absent

### 4.11.3 Proto-Mel

The table below gives an overview of South Mel and North Mel forms (Table 4.221).

Table 4.221: Proto-Mel numeral system (\*)

1	-in, < *lɛ/lɔ?	7	5+2
2	dɪŋ/tsɪŋ/tɪŋ, -rəŋ	8	5+3
3	*tat (> sas, ra)	9	5+4
4	hiɔl, -ŋkɪlɛ/<-nlɛ?	10	*pu/fu, 5PL?
5	wan/wen, <‘hand’	20	‘person’, 10PL?
6	5+1	100, 1000	absent

## 4.12 Atlantic

Our step-by-step reconstruction of numeral systems in the Atlantic languages will be based on their classification suggested in [Pozdniakov & Segerer 2017](#) (forthcoming) that distinguishes two main groups within the Atlantic family, namely Northern and Bak.

### 4.12.1 Northern

The numeral systems of Northern Atlantic are treated below by sub-group.

#### 4.12.1.1 Cangin

Table 4.222: Proto-Cangin numerals (\*)

1	no	7	5+2
2	nak	8	5+3
3	haj/ʔéeyə	9	5+4
4	nik-il < *nak-il?	10	sabbo (< Fula), da:ŋkah
5	jat (<‘hand’), ʔi:p	20	10*2
6	5+1	100, 1000	< Wolof? Fula?

Some of the reconstructions presented above are not immediately apparent and are in need of additional commentary. A detailed discussion of each of them

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

would be impossible here, so we will take the reconstruction suggested for ‘four’ (*nik-il*) as a sample.

At first glance, the forms of ‘four’ attested in the Cangin languages have nothing in common. Two of the five Cangin languages have *kinil* ‘four’ (Ndut-Palor), whereas in the remaining three (Laala, Noon, and Safin) *nikis* is used in this function. The easiest solution to the problem would be to postulate two alternative forms for this group. However, as the evidence of comparative-historical phonetics suggests, the final -l in Ndut-Palor regularly corresponds to the final -s in Laala-Ndut-Safin (Table 4.223).

Table 4.223: l ~ s regular correspondence in Cangin

*-l	‘eye’	‘black’	‘road’	‘four’
<b>Ndut</b>	ʔil	suul	wal	kinil
<b>Palor</b>	ʔil	suul	waal	kinil, enil
<b>Laala</b>	kɔs	*susus	was	nikis
<b>Noon</b>	kwas	*sujus	waz	nigis
<b>Safin</b>	xas	*suzus	was	nikis

This fact alone urges closer examination of the forms quoted above. Further analysis shows that a fossilized noun class prefix *kV-* is present in some of the Palor numerals, cf. *ka-nak* ‘deux’, *ke-jek* ‘trois’, *ki-nil* ‘quatre’, *kip* ‘cinq’. At the same time, the suffix -Vs is observable in the Noon numerals, cf. *jet-us* ‘five’. This evidence combined suggests the following development of the forms for ‘four’ (Table 4.224).

Table 4.224: Development of \**nik-Vl* ‘4’ in Cangin

Proto-Cangin	* <b>nik-Vl</b>		
Laala/Noon/Safin	* <b>nik-Vs</b>		<b>nikis</b>
Ndut/Palor	* <b>ki-nik- Vl</b>	<b>ki-nik-il</b>	<b>kinil</b>

##### 4.12.1.2 Nyun-Buy

Numerical terms are highly divergent within this sub-group, so it seems reasonable to treat them by branch (Table 4.225).

Table 4.225: Nyun-Buy numerals

	Nyun	Buy (Kobiana, Kasanga)
1	duk	tee(na), -anoʔ
2	nak	naŋ
3	lal	taar
4	ren(d)-ek	sannaŋ
5	ci-lax (<'hand'), -mækila	ju-roog (<'hand'?)
6	5+1	5+1
7	5+2	5+2
8	5+3	4+4
9	5+4	5+4
10	ha-lax (<'hands')	5PL, ntaajǎ
20	<'king'	< Mande, 10*2
100	< Mande	< Mande, < French
1000	< Mande	ŋ-kontu < Portuguese <sup>33</sup>

The pattern '5'='hand' ~ '10'='hands' is immediately apparent in Nyun. In the case of Buy, it can be accepted only under the assumption that the derived term for 'five' became phonetically distant from its source form, cf. Kasanga *ji-rek*, Kobiana *ji-hak* 'hand' (these forms must be related to Nyun *ci-lax* 'hand'). In any case, the Kasanga term *ŋa-roog* follows the pattern '5PL' that uses the same plural noun class as the one attested in *ŋa-rek* 'hands'.

The forms for 'ten' attested in Joola Ejamat (Atlantic Bak) *si-ntaaja* is important for the diachronic interpretation of the Kobiana form *ntaajǎ*. The evidence suggests that the latter was probably directly borrowed from Joola<sup>34</sup> (as was *-anoʔ* 'one').

#### 4.12.1.3 Jaad-Biafada

The forms of 'one' (*ni/ nɛ*) are distinguishable in the compound numerals, cf. Jaad *ŋka-inɛ* '6' ('5+1'), Biafada *mpaaji nyi* '7' ('6+1'), etc. The term for 'five' goes back to the lexical root meaning 'hand' (Biafada *gə-bəda*, Jaad *ko-bəda*).

<sup>33</sup>Guillaume Segerer (p.c.).

<sup>34</sup>According to Guillaume Segerer (p.c.) it is possible that the Ejamat and Kobiana forms both come from Manjak.

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Table 4.226: Jaad-Biafada numerals

1	nnəmma, *ni/nε/-inε, -kkā	7	5+2, 6+1 (< Manjak)
2	ke, ma-ae	8	5+3, wose/wase
3	jo/tfaw	9	5+4, leberebo
4	n(n)e/nnihi	10	(p)po
5	bəda (<‘hand’)	20	10*2
6	5+1, paaji (< Manjak), ŋka-?	100, 1000	< Fula

##### 4.12.1.4 Tenda

The reconstruction of the Proto-Tenda numerals (**Pozdniakovmstenda**) is based on a comparative analysis of five Tenda languages: Basari, Tanda, Bedik, Bapen, Konyagi.

Table 4.227: Tenda numerals (\*)

1	bat, ndi/riye/diye/iye, mbɔ	7	5+2
2	ki	8	5+3
3	taɬ	9	5+4
4	næx	10	poxw
5	mbəd (<‘hand’), cɔ/njɔ	20	10*2
6	5+1	100, 1000	< Fula, < Mande

The etymology of the Konyagi term for ‘five (*mbəd*)’ is based on the Jaad-Biafada evidence (these languages belong to the same sub-group as Tenda).

##### 4.12.1.5 Fula-Sereer

The numerical terms are highly divergent within this sub-group, so it seems reasonable to treat them by language (Table 4.228).

The fact that the Seerer terms covering the sequence from ‘two’ to ‘five’ have the same final segment is noteworthy. This could potentially be interpreted as a special morpheme or as a sub-morpheme that resulted from alignment by analogy. This discussion will be resumed below. Here it can only be stated that the

<sup>35</sup>Reviewing my first version of the book, Guillaume Segerer has advanced a new interesting etymology for Fula: *jow-i* ‘5’ = *jun-ngo* < *jow-ngo* ‘hand’. His hypothesis is quite possible.



Table 4.228: Fula-Sereer numerals

	Fula	Sereer
1	goʔo	leŋ
2	ɗiɗi	ɗik
3	tati	tadik
4	na(y)i	nahik
5	jo(w)i <sup>35</sup>	ɓe-tVɓ
6	5+1	5+1
7	5+2	5+2
8	5+3	4+4
9	5+4	5+4
10	sapp-o	xarɓ-
20	noogas/noogay	10*2
100	teeme-	< Fula
1000	< Mande, < Hausa	< Wolof?

morphological analysis of the Sereer term for ‘five’ (*ɓe-tVɓ*) suggested in the table below is not immediately apparent and is thus debatable. Within this approach the element *ɓe-* is interpreted as a noun class prefix despite the fact that such a class is lacking in Sereer. Complex issues pertaining to the reconstruction of the term for ‘five’ will not be treated here. We shall only note that the plural animate class is reconstructable as *ɓe-* (class 2) in Proto-Fula-Sereer.

#### 4.12.1.6 Wolof

Table 4.229: Wolof numerals

1	CL-enn	7	5+2
2	ñaar (< *CL-(X)aar)	8	5+3
3	ñ-ett (< *CL-(X)ett)	9	5+4
4	ñ-ent (< *CL-(X)en(i)t)	10	fukk
5	jurom	20	< ‘person’, 10*2
6	5+1	100, 1000	< Fula, < Mande

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The Wolof term for ‘one’ exhibits the agreement in noun class, cf. *k-enn nit* ‘one person’, *g-enn garab* ‘one tree’, *f-enn* ‘somewhere’, *l-enn* ‘something’, etc. The same can be applied to the terms covering the sequence from ‘two’ to ‘four’ as demonstrated in Pozdniakov 2015: 82. Nothing is known about the original radical of the root (assuming there was one) since it was replaced by a noun class consonant.

Speaking of ‘twenty’, it should be said that the form *nit(t)* (apparently related to the lexical root *nit* ‘person’) is widely used alongside the common Wolof pattern ‘10\*2’.

##### 4.12.1.7 Nalu-Baga Fore-Baga Mboteni

This sub-group is the most problematic within Northern Atlantic. Admittedly, the evidence pertaining to their classification as Northern is inconclusive. Moreover, the sub-group itself is highly heterogeneous, which affects its numeral systems as well. The pertinent data for each of these languages is provided below (Table 4.230).

Table 4.230: Numerals in Nalu, Baga Fore and Baga Mboteni

	Nalu	Baga Fore	Baga Mboteni
1	de:ndik	ki-ben	mbó
2	bi-lɛ	ci-di	sà-lɛ
3	p-aat	ci-tɛt	n-dér
4	bii-naaŋ	ci-neŋ	í-nà
5	teedoŋ (< té ‘hand’?)	su-sa(n)	ì-rìβɛ́, *ba(x)?
6	5+1	5+1	5+1
7	5+2	5+2	5+2
8	5+3	5+3	5+3
9	5+4	5+4	5+4
10	5*2, *a-lafaŋ?	ɛ-tɛ-lɛ (< ‘hands’ +2)	tèn (< “*hand”?)
20	10*2	10*2	10*2
100	m-laak	bɔ-1	< Mande
1000	m-paak (100pl?) < Susu	tengbeŋ-1	?

## 4.12.1.8 Proto-Atlantic North

The prospects for the reconstruction of the Proto-North Atlantic numerals are discussed below.

## 4.12.1.8.1 ‘One’ (Table 4.231)

Table 4.231: Numerals for ‘1’ in Northern Atlantic

Cangin	no		
Nyun			duk
Buy	nɔʔ		tee(na)
Jaad-Biafada	*ɲi/nɛ		nnəmma,pakkã
Tenda	di(ye)	mbɔ	bat
Fula-Sereer	leɲ		goʔo
Wolof	-enn		
Nalu	deendik	mbó	ki-ben

Isolated forms are quoted in the rightmost column. Direct parallels to some other forms are attested in Cangin – Buy (nɔʔ) and Konyagi – Baga Mboteni (mbɔ). The most common root is \*di(n)/ li(n)/ ye(n)/ ne(n) (assuming that these forms are related).

## 4.12.1.8.2 ‘Two’, ‘Three’ and ‘Four’ (Table 4.232)

Table 4.232: Numerals for ‘2’-‘4’ in Northern Atlantic

	‘2’	‘2’	‘2’	‘2’	‘3’	‘3’	‘4’	‘4’
Cangin	nak					haj	nik-il < nak-ilʔ	
Nyun	nak				lal			ren(d)-ek
Buy	naɲ				taar			sannaɲ
Jaad-Biafada			ke			jo/caw	n(n)e(hi)	
Tenda			ki		taɭ		næx	
Fula-Sereer		dik			tati(k)		na(y)i(k)	
Wolof				X-aar	X-ett		X-en(i)t	
Nalu		di/le			tet/tat		naaɲ/nɛɲ/na	

The forms of ‘two’ in Tenda-Jaad-Biafada can be explained as a shared innovation, since these two branches belong to the same sub-group. The forms quoted in the two leftmost columns could be related, but the pertinent evidence is inconclusive. The roots *\*nak* and *\*di(k)* are reserved for further comparison.

As in the majority of other NC branches, the terms for ‘three’ and ‘four’ (tentatively recorded as *\*taɬ* ‘3’ and *\*nak* ‘4’) are fairly consistent in North Atlantic. Thus it appears that the terms for ‘two’ and ‘four’ are the same (or phonetically similar) across the languages of this branch. Cangin is the only language that does not comply with the additional distribution, because in the case of Cangin both terms are reconstructed as *\*nak*. Interestingly, the form of ‘four’ bears a suffix, hence it could potentially be explained as a derivative of ‘two’. At the same time, the root *nak* ‘four’ is reminiscent of one of the most persistent NC roots with this meaning.

In Jaad-Biafada we find the root *\*jow/caw* ‘3’. This is undoubtedly an innovation in the group which is represented by a remarkable isogloss. This is therefore an argument in favour of interpreting this group as part of the northern branch of the Atlantic family: Biafada *-njo / bí-co/ bí-yo* ‘3’, Jaad *ma-cau/ ma-caw/ má-cu* ‘3’. It is possible that we are dealing with an ancient borrowing of Proto-Jaad-Biafada from Mande (from *saba* ‘three’).

In theory, it is possible that forms attested in the Cangin languages (*ka-hay / \*ʔe-jeʔ*), also originated from the Mande form (likely weakened to *\*habi / hawi*).

In this case, we find either reflexes of the Proto-NC form *\*tath* or borrowings (taking into account very ancient forms) – from the Mande languages in numerous Northern Atlantic languages.

#### 4.12.1.8.3 ‘Four’

The root *\*na(h)i-k* can be securely reconstructed for Proto-Northern Atlantic. As has been demonstrated above, the initial *ñ-* of the Wolof term is a reflex of a noun class prefix that replaced the initial radical of the root. The final *-t* in the Wolof term probably resulted from the alignment by analogy with the term for ‘three’ that ends in *-t*, cf. *\*ñ-eenk ? → ñ-eent* ‘4’ by analogy with *ñ-ett* ‘3’.

#### 4.12.1.8.4 ‘Five’ (Table 4.233) and the terms from ‘six’ to ‘nine’

The North Atlantic languages are characterized by the term for ‘five’ being systematically derived from the lexical root meaning ‘hand’. Interestingly, this development seems to post-date the replacement of the original root for ‘hand’ by

Table 4.233: Numerals for ‘5’ in Northern Atlantic

Cangin	jat (<‘hand’)		ʔi:p	
Nyun	ci-lax (<‘hand’)			-mækila
Buy			ju-roog	
Jaad-Biafada	bəda (‘hand’)			
Tenda	mbəd (<‘hand’?)	co/njo		
Fula-Sereer		jo(w)i	* ʃe-tVɓ	
Wolof		jurom		
Nalu	teedoŋ/*tee (‘hand’?)		ribə(l)	su-sa(n), *ba(x)?

an innovation in the majority of the branches. At least four independent formations of this kind are attested within eight branches (cf. the evidence quoted in the leftmost column of the table). Both Tenda and Jaad-Biafada terms for ‘five’ are of common ancestry: they seem to have developed from the root *\*bəda* at the Proto-Jaad-Biafada level, since both languages belong to the same sub-group. This probably indicates that the pattern based on the term for ‘hand’ was used in the languages that belong to the Northern group at the proto-level (possibly as an alternative to the inherent NC root for ‘five’). In view of this, the formal alterations of ‘five’ are easily explained as those automatically caused by the replacement of the inherent term for ‘hand’ by an innovation. As we hope to demonstrate in the next chapter, the derivational pattern ‘hand’ > ‘five’ is surprisingly rare in the NC languages. It is barely attested, for example, in Benue-Congo, thus being characteristic of the North Atlantic languages (and the Atlantic languages on the whole, see below).

In view of this, the reflexes of the inherent NC root for ‘five’ could have been preserved in only a minority of North Atlantic branches. The roots *\*jo/ co*, *\*tVɓ/ rog* and *\*rib/ ʔi:p* unrelated to the term for ‘hand’ deserve special attention within this context.

The pattern ‘5+’ (‘hand’+) can be securely reconstructed for the terms covering the sequence from ‘six’ to ‘nine’. The uncommon pattern ‘7=6+1’ attested in Biafada was borrowed from one of the Manjak languages (Atlantic Bak), as was the derived term for ‘six’ (*mpaaji*).

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##### 4.12.1.8.5 ‘Ten’ and ‘Twenty’ (Table 4.234)

Table 4.234: Numerals and patterns for ‘10’ and ‘20’ in Northern Atlantic

	‘10’	‘10’	‘10’	‘20’	‘20’	‘20’
Cangin			< Fula, da:ŋkah	10*2		
Nyun		< ‘hands’			< ‘king’	
Buy		5PL	ntaajã	10*2		< Mande
Jaad-Biafada	(p)po			10*2		
Tenda	pəxw			10*2		lapem
Fula-Sereer			sapp-o, xarɓ-	10*2		noogas/ noogay
Wolof	fukk			10*2	‘person’	
Nalu		5*2	*a-lafaŋ?	10*2?		

With the evidence of the three branches, the reconstruction of the term for ‘ten’ (tentatively recorded as *\*pok*) seems secure. Its attestations are admittedly limited, apparently due to its replacement with derived terms based on ‘five’ (‘hand’). This reconstruction is also supported by the presence of the final velar: as we have seen, it is reconstructable in a number of other numerical terms at the proto-level.

The pattern for ‘twenty’ is reconstructable as ‘20=10\*2’. Particular derivatives based on the typologically widely attested patterns (‘20’ < ‘person’, 20 < ‘king’) seem to have formed independently.

##### 4.12.1.8.6 ‘Hundred’ and ‘thousand’

The evidence points to the absence of these terms in Proto-North Atlantic. Attested forms are borrowings from ‘influential’ languages such as Fula, Wolof, Manding, Hausa (in the case of Niger Fulfulde). Interestingly, the terms in question are already borrowings in some of these source-languages.

## 4.12.1.8.7 Proto-North Atlantic numeral system (Table 4.235)

Table 4.235: Proto-North Atlantic numeral system (\*)

1	di(n)/li(n)/ye(n)/ne(n), mbo	7	5+2
2	di(k), nak	8	5+3
3	taɬ	9	5+4
4	nak	10	pok
5	<‘hand’, jo, tVɬk/rog, rib/?i:p	20	10*2
6	5+1	100, 1000	absent

## 4.12.2 Bak

## 4.12.2.1 Joola languages

Over a hundred sources covering the numeral systems of fifteen major Joola dialects have been made available to us courtesy of Guillaume Segerer. His collection of evidence may be labeled a ‘dialect atlas’ of numerical terms. These terms often exhibit significant variations not only in their phonetics but in the inventory of lexical roots as well.<sup>36</sup> The name Joola pertains to a group of at least seven related languages (including Bayot). A study of their numeral systems may help set a clearer distinction between these languages. Moreover, it might shed some light on their (hitherto unclear) internal classification.

Numerical terms as attested in ten major Joola languages are discussed below.

## 4.12.2.1.1 ‘One’ (Table 4.236)

The main form is reconstructed as *\*-anor*, with the initial vowel forming a part of the root. The only languages where this root is not present are Bayot (*don* ‘1’) and Kwaatay (*fɛnɛŋ* ‘1’). The root *əkon* with a vocalic opening (sporadically attested in Kasa and Bayot) is found in Fogny alongside *\*-anor*.

## 4.12.2.1.2 ‘Two’, ‘three’ and ‘four’ (Table 4.237)

Two alternative roots for ‘two’ are attested in Joola, namely *\*si-ɬubə?* and a relatively wide-spread *\*si-gaba?*

<sup>36</sup>I wish to express my gratitude to G. Segerer for his assistance with regard to the dialectal attribution of sources.

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Table 4.236: Joola numerals for ‘1’

Bliss Banjal	Kasa Mlomp	Fogny Karon	Keeraak Ejamat	Bayot Kwaatay
-anoʔ	-anor	-anor	-anor	
-anor	-anor (akon) (ta)	-anor əkon	-anor	(akon) don fɛnɛŋ
			yinka, (sia)	

Table 4.237: Joola numerals for ‘2’-‘4’

Bliss Banjal	Kasa Mlomp	Fogny Karon	Keeraak Ejamat	Bayot Kwaatay
‘2’				
si-lubəʔ	si-ɭubɤʔ	(liba)	sɪ'subə	ʔi- rigəʔ/tɪgga
si-rubə	sɪ-subəl	su-supək/ ɕi-ɕipək <sup>h</sup>	si-lu:bəʔ	sɪ'subə
‘2’				
si-gabaʔ	si-gäbä, (ku-menten)	si-gäbäʔ	si-gäbä	
‘3’				
si-həəji	si-hɤ:ʔiʔ	si-feegiiɾ/ si-fe:ʔiʔ	sɪ-hə:ju	i-fiigiʔ/ i-fəəʔi
gu-fu:ɡuɾ/si-fɤ:ʔiɾ	sɪ-hə:juɭ	si-hə:ci:l	si-həəji, (fu-fooateen)	ki-hɤ:ʔiʔ
‘4’				
si-bäkir	si-bä:kiɾ/si- bäkiʔ	si-bäkir/ si-ba:ci:r	si-bacir	sɪ-bəyɾ
si-baagir	sɪ-bacɭ	ɕɪ-päkil/ si-ba:ci:l	si-bäkir	ki-bäkir



The term for ‘three’ goes back to *\*si-feegir*, with its reflexes being attested in all dialects.

The term for ‘four’ is securely reconstructed as *\*si-bääkiŋ*.

#### 4.12.2.1.3 ‘Five’ and ‘ten’ (Table 4.238)

Table 4.238: Joola numerals for ‘5’ and ‘10’

Bliss Banjal	Kasa Mlomp	Fogny Karon	Keeraak Ejamat	Bayot Kwaatay
‘5’				
hu-tək	hu-tək <sup>h</sup>	fu-tək/u-sək	hu-tək	o-to/ɔ-ɬ/ ɔ-rɔ
fu-tək		ɪ-çäk <sup>h</sup> /i-sak	fu-tək/ hu-ʒok	hu-tək
‘5’				
	(naa-suan) ŋaa-suwaŋ			
‘5’				
		*fu-tam		
*tən				
‘10’				
ku-ŋɛn <‘hands’ gu-ŋɛn <‘hands’	ku-ŋɛn <‘hands’	ku-ŋɛn <‘hands’	ku-ŋɛn <‘hands’ ku-ŋɛn <‘hands’	
‘10’				
	sɛ-bɛɛs ‘hands’	ŋaa-suwan		gu-tie(pəkɔ) ‘hands’ su-moŋu/ su-ŋɔmu ‘hands’

#### 4 Step-by-step reconstruction of numerals in the branches of Niger-Congo

The Banjal form *\*tən* (reconstructed on the basis of the compound numerical terms) and the (related?) Fogny form *fu-tam* attested in a source dating to the seventeenth century (d'Avezac 1845) are of special interest.

The Mlomp form of 'five' (sporadically attested in Kasa as well) is identical to the Karon form for 'ten' (*ḡaa-suwan* in both cases). The etymology of these forms is unclear. At the same time, the majority of the forms for 'ten' (but not for 'five' as in the majority of the North Atlantic languages) go back to the lexical root meaning 'hands'. To illustrate this point, the lexical stems for 'hand' in the Joola languages are quoted in the table (Table 4.239).

Table 4.239: Joola stems for 'hand'

Bliss Banjal	Kasa Mlomp	Fogny Karon	Keeraak Ejamat	Bayot Kwaatay
<b>'hand'</b>				
ka-ḡen(ak)	ka-ḡen	ka-ḡen(ak)/ ka-ḡen	ka-ḡen	
ga-ḡen/ ka-ḡen(ak)		ka-ḡen	ka-ḡen(ak)	ka-ḡyen(ak)
<b>'hand'</b>				
ε-pes	e-bēs	ε-pes/ε-bēs		
<b>'hand'</b>	ε-bēs			
				ε-mḡu/ ε-ḡḡu
<b>'hand'</b>				
	ka-se?			ka-te/ga-te/ te/kə-se
<b>'hand'</b>				
bu-lēḡej		ε-lēcēs		
<b>'hand'</b>		<b>'upper arm'</b>		
bi-lēḡej			bu-lēfec	
			<b>'inner hand'</b>	
<b>'hand'</b>				
ka-ḡeḡum(əku)			kə-ləḡum	
			<b>'hand'</b>	

As can be deduced from the presentation above, at least four lexical roots for ‘hand’ that serve as a basis for the terms for ‘ten’ are distinguishable in Joola. Interestingly, the source roots and the numerical terms that depend on them are not necessarily the same within a language. The main root is *\*ku-ɲen/ ku-ɲen* ‘10’ <‘hands’. At the same time, *bɛɛs* ‘hand’ yields *sɛ-bɛɛs* ‘ten’ in Mlomp. This derivative is not attested in Kasa and Karon where *bɛɛs* ‘hand’ alternates with *ɲen/ ɲen* ‘hand’. The base *\*ka-tɛ* ‘hand’ attested in Bayot and Kasa yields *gu-tie-* in Bayot. Finally, *ɛ-mɔŋu* ‘hand’ > *su-mɔŋu* ‘ten’ in Kwaatay (also *ɛ-ŋɔmu* ‘hand’ > *su-ŋɔmu* ‘ten’ with a metathesis).

As noted above, the root *ɛ-ntaaɟa* attested in Keeraak and Ejamat was possibly incorporated into Kobiana (North Atlantic). This root, admittedly very rare in the Joola cluster, is the only primary one for ‘ten’ and as such it deserves special attention (especially in view of its later replacement with the derivatives based on ‘hand’).

#### 4.12.2.1.4 ‘Twenty’, ‘hundred’, and ‘thousand’

Two apparent derivational patterns are used for the term for ‘twenty’ in the Joola languages:

<‘king’: Bliss *a-yuy*, Banjal *ɔ-vi/ɔ-vvi*, Kasa *a-yi/ ɔ-ji*, Karon *ɔwi*, Bayot *ɔ-y*;

<‘person’: Kasa *an / bu-k-an*, Fogny *ka-banan* ‘person finished’.

In Kwaatay the term for ‘twenty’ is based on ‘mouth’ (*bu-tum-an*).

The terms for ‘hundred’ and ‘thousand’ are borrowings from Mande or ‘influential’ Atlantic languages (often either Fula or Wolof) in the majority of the dialects, cf. *keme/teme* ‘100’, *wuli, juni* ‘1000’.

In conclusion it should be added that the Joola terms covering the sequence from ‘six’ to ‘nine’ follow the common pattern ‘5+’.

#### 4.12.2.2 Manjak languages

This branch is represented by three closely related languages (Manjak, Mankanya, Pepel). Numerical terms attested in them are presented in the table below (Table 4.240).

As can be gleaned from the table, the Manjak stems for numerals are very different from those attested in Joola. At the same time, morphological and lexical evidence strongly suggests that these two branches are genetically the closest and belong to the same Bak sub-group.

Table 4.240: Manjak numerals

1	lɔl(e)/lɔŋ	7	6+1, jand/jaanʔ/ cand (Pepel)
2	-təb/-təw, -pugut/pugus (Pepel)	8	4PL, koas/ʊʌs
3	wa-(y)ant/wa-jent/ jens	9	10-1, (8+1)
4	baakər/wakər	10	5PL ('hands'), (n)taaja/taaya, taim (Pepel)
5	ɲɛɛn ('hand')	20	10*2
6	paagi/paaji	100	< French
		1000	kɔnt

This implies that the numeral system of one of these branches must have undergone systematic innovations. We will reserve our conclusions until the evidence from the other Bak sub-groups, i.e. Balant and Bijogo, is reviewed.

#### 4.12.2.3 Balant

Despite the fact that Balant is usually treated as one language, we will present the evidence of Balant Ganja and Balant Kentohe separately (Table 4.241), because the difference between these two idioms is of key importance to our study.

The opening sequence of the Ganja terms is quoted according to [Creissels & Biaye 2015](#). They form the most reliable part of the presentation. A few remarks pertaining to the differences in these Balant dialects are in order. First of all, the Balant Kentohe terms for 'one', 'two', 'three' and 'six' exhibit a final homorganic nasal of uncertain origin. The forms attested by Koelle in the 19<sup>th</sup> century sources suggest that we are dealing with a morpheme *-n* not assimilated to a preceeding consonant by point of articulation. Secondly, Koelle's evidence speaks in favor of 'six' being a base for a larger group of numerical terms. According to him, not only 'eight' and 'nine' but also 'ten' followed the pattern '6+'.

#### 4.12.2.4 Bijogo

Let us examine an analysis of the Bijogo numeral system found in ([Segerer 2002](#)). According to him, the term for 'one' is *nɔd* ("cette forme est retenue pour l'énumération abstraite", *ibid.* 171). His interpretation of *\*-d* as the only true reflex of the etymon (with other segments ensuring the grammatical agreement) is immediately convincing, cf. the following examples quoted by him (*ibid.* 171):

Table 4.241: Balant numerals

	Balant Ganja	Balant Kentohe
1	hódà/wódà/-ɔdaʔ, bóódíbó/wóódíbó (counting)	-ɔɔdn/ho:dn/fóóda
2	sìbí/-sebe	-sɪbm/-sebm/g-ʃííbn (Koelle 1963[1854])
3	hàbí/yààbíí	-habm/káábn (Koelle 1963[1854])
4	tàllá/tàhlàlā	-tasla/tahla/tájiila (Koelle 1963[1854])
5	jùíf/jéèf	cɪf/‘-cef/kiif ~ ciif (Koelle 1963[1854])
6	fááj/faac	mfaacp/faad (Koelle 1963[1854]), 5+1
7	6+1	6+1, 5+2
8	táhtállà/tāntàhlā (4 redupl.), 6+2	5+3, 6+2 (Koelle 1963[1854])
9	jíntállá/jíntàhlā (5+4)	5+4, 6+3 (Koelle 1963[1854])
10	jímín/jínminn (<5?)	cɪfmun/f-cef meen (<5?), 6+4 (Koelle 1963[1854])
20	10*2	<‘person’
100	gèmé/kémé (borrowed)	<‘5 persons’
1000	wílí (borrowed), kont	f-ko:nti

- (2) a. *o-to ɔ-nɔɔd* ‘a person’  
 b. *e-booʃi ɛ-nɛɛd* ‘a dog’  
 c. *u-gbe u-nɛɛd* ‘a road’  
 d. *ka-ʃɔkɔ n-ka-d* ‘a house’  
 e. *ɲɔ-katɔ ɲ-ɲɔ-d* ‘a fish’.

Segerer justly observes that ‘La forme générale de l’élément ayant pour valeur ‘un (autre)’ est donc (V)-n-pC-d, où pC est le préfixe de classe du nom déterminé’ (ibid. 171).

He also quotes the form *dideeki* ‘seul’ (var. *deeki* ‘tout seul’). A variant of this form probably appears as *èdígé/ néédige/ módiige* ‘one’ in Wilson and Koelle.

As demonstrated by Segerer, the term for ‘three’ (*ɲ-ɲɔkɔ*) is a Bijogo innovation of a cultural origin, cf. SG *ɲɔ-ɲkɔ* - PL of *nɔ-ɲkɔ* ‘finger’ (dim. <*kɔ-ɲkɔ* ‘hand’):

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Table 4.242: Bijogo numerals

	Bijogo Kagbaga (Bubaque)	Bijogo (other dialects)
1	n-ɔɔd (*-d)	
2	n-somb (Segerer, p.c.), n-sombɛŋt	sòòbɛ́/súngb/cuuwɛ, ndank (Kamona)
3	n-ŋɔ-ɔkɔ (<'fingers')	
4	ya-agenɛk	
5	n-de-ɔkɔ (dɛ 'to finish', -ɔkɔ 'hand')	nu-duβ-ɔkɔ (Kamona)
6	5+1	
7	5+2	
8	5+3	
9	5+4	
10	n-ruakɔ (ru 'to rise', -ɔkɔ 'hand')	
20	o-joko ('person'), -ansak-o-to ('to finish'+ 'somebody')	ŋɔjɛt oto (Kamona), Koelle 1963[1854]: ríakǎ́to/ŋórembaǎ́óoto
100	20*5	
1000	kuntu	

'Un roi bijogo ne se déplace jamais sans l'attribut symbolique de sa fonction, constitué par une sculpture de bois et de corne ... Cet objet, nommé u-ran kɔ-ɔkɔ, représente une main à trois doigts' (ibid. 172). It should be noted that this root is attested in all Bijogo dialects and is already accounted for by Koelle (-ŋǎǎgɔ).

As established by Segerer, the same root is attested as ɔkɔ in the terms for 'five' and 'ten'.

##### 4.12.2.5 Proto-Bak

Now we will compare the Bak numerals.

###### 4.12.2.5.1 'One' (Table 4.243)

A comparison of the terms quoted in the leftmost column yields the form that can be tentatively recorded as *\*don*. The rightmost column gives an overview of roots attested in only one out of four branches.

Table 4.243: Bak numerals for ‘1’

Joola	<b>don</b>	-anor, əkon, fɛnɛŋ, yinka, (sia), (ta)
Manjak	lɔl(e)/lɔŋ	
Balant		-ɔdaʔ
Bijogo	<b>*d</b>	-edʒɛ

## 4.12.2.5.2 ‘Two’ (Table 4.244)

Table 4.244: Bak numerals for ‘2’

Joola	si-ʔubəʔ	si-gabaʔ
Manjak		-təb/-təw, pugʊʔ/pugus
Balant	sɪbɪ/-sebe	
Bijogo	sòòbɛ́/súngb/cuuwɛ	

The leftmost column presents the root attested in three sub-groups. It is traceable to *\*ʔubəʔ*.

## 4.12.2.5.3 ‘Three’ and ‘four’ (Table 4.245)

Table 4.245: Bak numerals for ‘3’ and ‘4’

	‘3’	‘4’	‘4’
Joola	si-feegir	si-bääkiʔ	
Manjak	wa-(y)anʔ/wa-jenʔ/jens	baakər/wakər	
Balant	habi/yabi		tasala/tahala
Bijogo	ɲ-ɲɔ-ɔkɔ (<‘fingers’)		ya-agenɛk

For the first time in our step-by-step analysis of numeral systems in the numerous NC families we observe the existence of a separate root for ‘three’ in each of the branches of a language group.

The term for ‘four’ exhibits an isolated Joola-Manjak innovation as well as isolated innovations in Balant and Bijogo.

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##### 4.12.2.5.4 ‘Five’ (Table 4.246)

Table 4.246: Bak numerals for ‘5’

Joola		fu-tək, tən?, ɲaa-suwaŋ? (cf. ‘10’)
Manjak	ɲɛn (‘hand’) (cf. Joola ‘10’)	
Balant		jüf/jéèf
Bijogo	n-de-ɔkɔ (de ‘to finish’, -ɔkɔ ‘hand’)	

The pattern ‘hand’ > ‘5’ is traceable within two branches. However, the roots involved are different in each case. Numerous isolated forms are grouped together in the rightmost column.

##### 4.12.2.5.5 The terms from ‘six’ to ‘nine’ (Table 4.247)

Table 4.247: Bak numerals and patterns for ‘6’-‘9’

	‘6’	‘6’	‘7’	‘8’	‘9’
Joola	5+1		5+2	5+3	5+4
Manjak		paagi/paaji	6+1, jand/jaan?/cand	4PL, koas/ɔʌs	10–1, (8+1)
Balant		fááj/faac	6+1	4 redupl., 6+2	6+3, 5+4
Bijogo	5+1		5+2	5+3	5+4

The form *\*paag/paaj* ‘six’ is a common Manjak-Balant isogloss.<sup>37</sup> It is not surprising that the primary term for ‘six’ attested in these languages served as the basis for the ‘7=6+1’ pattern. This pattern received further development in Balant where it was employed for terms up to ‘ten’ (i.e. ‘10=6+4’) according to the 19<sup>th</sup> century sources. At the same time, the archaic pattern ‘8=4PL’/‘8=4 redupl.’ is attested in these languages alongside the pattern ‘8=6+2’.

<sup>37</sup>Guillaume Segerer is right to note (p.c.) that the Manjak-Balant form *\*paag*- ‘6’ may be related to Joola *\*-feegir/-həɔji* ‘3’



## 4.12.2.5.6 ‘Ten’ (Table 4.248)

Table 4.248: Bak numerals for ‘10’

Joola	ε-ntaaja <sup>38</sup>	ku-ŋen/ŋen ‘hands’	‘hands’ (bɛɛs, moŋu/ŋɔmu, tie) 5PL (‘hands’)	ŋaa-suwan  taim jimmín, 6+4
Manjak	(n)taaja/ taaya			
Balant				
Bijogo			n-ruakɔ (ru ‘to rise’, -ɔkɔ ‘hand’)	

In addition to the common pattern ‘10 = ‘hands’’, both branches share a common root (*ntaaja*) that could be interpreted as a shared Proto-Joola-Manjak innovation.

## 4.12.2.5.7 ‘Twenty’, ‘hundred’ and ‘thousand’

The term for ‘twenty’ is based on the lexical root meaning ‘person’ in all of the branches (except for Manjak, where it was replaced with the pattern ‘20=10\*2’). The same development is observable in Balant Ganja as well.

The terms for ‘hundred’ and ‘thousand’ are most likely borrowings. However, the origin of *kont/kunt* ‘thousand’ attested in three of the Bak branches deserves special discussion (in North Atlantic this root (*ŋ-kontu*) is found in both of the Buy languages).

<sup>38</sup>The stem is attested only in Joola Feloup, so, it seems to be borrowed from Manjak.

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### 4.12.2.5.8 Overview of the Bak numerical terms (Table 4.249)

Table 4.249: Bak numerals

1	don/lɔŋ, -anor, əkon	7	6+1, 5+2, jand/jaanʔ/ cand (Pepel)
2	ʔubəʔ, -təb/-təw, -pugut/pugus	8	4PL/4 redupl., ʊʌs
3	feegir, yantʔ/jentʔ, habi/yabi	9	5+4, 10-1, 6+3
4	baakər/wakər, tasala/tahala	10	5PL ('hands'), (n)taaj, taim, -suwan
5	'hand', tək, tənʔ	20	'person', 10*2
6	paag/paaj, 5+1	100	borrowed
		1000	kʊnt (borrowed?)

### 4.12.3 North Atlantic and Bak Atlantic numerals in the comparative perspective

It should be stressed that the Atlantic family is among the most divergent within Niger-Congo. Some of the numerical terms in both of the Atlantic groups exhibit a variety of forms potentially explained as Proto-NC reflexes. Moreover, the comparative evidence presented in Tables 4.227 (Proto-North-Atlantic) and 4.241 (Proto-Bak-Atlantic) points to the near total absence of common roots present in both groups. The only exception to this is the root *tək/ tVk* 'five'.

In view of this, the only available solution would be the study of the Atlantic evidence within a wider NC context (i.e. in contrast to the reconstructions available for other NC families). A comparison of the intermediate reconstructions within the macro-family will be offered in the next chapter.

## 4.13 Isolated languages vs. Atlantic and Mel

According to the traditional classification outlined in Sapir 1971, Limba, Sua and Gola belong to the Atlantic languages. However, as we tried to demonstrate in Pozdniakov & Segerer 2017 (forthcoming) this hypothesis is as ill-grounded today as it was half a century ago.

An overview of the pertinent data for each language is presented in the tables below.

## 4.13.1 Sua

Table 4.250: Sua numerals

1	sɔn	7	5+2
2	cen	8	5+3
3	b-rar	9	5+4
4	b-nan	10	tɛŋi
5	sɔŋgun	20	10*2
6	5+1	100	kɛmɛ
		1000	uŋ-kɔntu

## 4.13.2 Gola

Table 4.251: Gola numerals

1	guùŋ	7	5+2
2	tì-yèe/tī-el/cel	8	5+3
3	taai/tāāl	9	5+4
4	tii-nàŋ	10	zìiyà
5	nòònòŋ	20	kpè(w)ùŋ
6	5+1	100	20*5
		1000	< English

## 4.13.3 Limba

Table 4.252: Limba numerals

1	ha-nthe	7	5+2
2	ka-le/kaa-ye	8	5+3
3	ka-tati	9	5+4
4	ka-naŋ	10	kɔhi
5	ka-sɔhi	20	10*2
6	5+1	100	kɛmɛ, wuli (borrowed)
		1000	wulu (< Mande)

#### *4 Step-by-step reconstruction of numerals in the branches of Niger-Congo*

This chapter includes 250 tables presenting the evidence by group, branch or sometimes a dialect of a certain language. Among them are summary tables that provide an overview of the numerical terms in twelve major families of Niger-Congo and in a number of isolated languages. Our attempt at reconstructing the Proto-Niger-Congo numeral system on the basis of this comprehensive evidence will be presented in Chapter 5.



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# The numeral system of Proto-Niger-Congo

This book proposes the reconstruction of the Proto-Niger-Congo numeral system. The emphasis is placed on providing an exhaustive account of the distribution of forms by families, groups, and branches. The big data bases used for this purpose open prospects for both working with the distribution of words that do exist and with the distribution of gaps in postulated cognates. The distribution of filled cells and gaps is a useful tool for reconstruction.

The first chapter of this book is devoted to the study of various uses of noun class markers in numeral terms. The second chapter deals with the alignment by analogy in numeral systems. Chapter 3 offers a step-by-step reconstruction of number systems of the proto-languages underlying each of the twelve major NC families, on the basis of the step-by-step-reconstruction of numerals within each family. Chapter 4 deals with the reconstruction of the Proto-Niger-Congo numeral system on the basis of the step-by-step-reconstructions offered in Chapter 3. Chapter 5 traces the history of the numerals of Proto-Niger-Congo, reconstructed in Chapter 4, in each individual family of languages.

