Online Component: Lexical Reconstruction in Central Chadic

Part II. Proto-Central Chadic Lexical Reconstructions

H. Ekkehard Wolff

Part II

Proto-Central Chadic Lexical Reconstructions

The reconstructions in Part II of this online component are presented in a tabular format for easy identification of individual languages and language GROUPS in terms of diachronic formation processes. The presentation aims at complete transparency of the diachronic processes involved, since at times these turn out to be fairly complex and would be hard to detect by just looking at the examples from modern languages and the respective PCC reconstruction. In order to ensure a unified presentation of the data and analyses, both relatively simple and complex diachronic developments are treated alike and are thus made maximally explicit. The tabular representation of the linguistic evolution of the examples contains only telegram-style listing of diachronic processes. For the full treatment and discussion of these processes, the user is referred to the print edition.

First, we describe and motivate the tabular presentation of the data. The first line presents the lemma, followed in the second line by the deepest-level reconstruction of the root (both simple and including prefixal and suffixal root-augmental elements). The simple root is given in **bold**. The conflated formula indicates potential root types depending on the presence and position of medial */a/, usually at the assumed PCC level, but occasionally identified as an 'areal root' of limited distribution within the Central Chadic area, and/or as 'loan'.

KNOW, TO
PCC *(ma-) **s(a)na** (-y, -k^{w}, -n, -t; FV)

The third line identifies the language group (always given in SMALL CAPITALS), followed in subsequent lines by the individual languages for which we have data. The last-line box contains numbered telegram-style formulaic comments on the sound changes and processes occurring in individual languages; the comments are numbered in the rightmost column of the individual-language boxes.

BATA

Gude	*ʃii* s^{y}ə^{y}y	*sa-y^{y}	*sØa-y	*(ma-)sna(-y/-k^{w})-n)	1
Sharwa	*sinan* sə^{y}nan	*sna-Ø*y*-n	*sna-y-n		2
Tsuvan	*asənakən*	*Øa-sna-k-n	*ma-sna-k^{w}-n		3

1. *y > y^{y} > i; +Y: *s > ʃ; lexical-final *a > ə; +Y: ə > i
2. ə-epenthesis; *y > $Ø^{y}$; +Y: ə > ɨ
3. *k^{w} > k; ə-epenthesis

In the individual-language boxes, the first column gives the name of the language or language variant as it occurs in the database (e.g. Gude).

The second column gives the data as transcribed by the field linguist or contained in available dictionaries and as quoted from the database (always in *italics*, e.g. *ʃìi*). Where differences are to be observed and for clarity of our analysis and internal reconstruction, the data transcription is followed by a non-phonemic hypothetical synchronically underlying representation, which identifies and indicates

- target segments of prosodies (by raised symbols ^{y}, ^{w}, ^{n} and ^{ʔ}),
- positions of prothetic and/or epenthetic schwa (ə), e.g. $s^{y}ə^{y}y$,
- word-final schwa as conditioned synchronic allophone of reconstructed */a/.

Since the phonological status of schwa in individual languages is debatable in the Chadicist linguistic community, this representation allows the reader to look at the synchronically underlying word form under the assumption that /ə/ is a synchronic vowel phoneme in the individual language. (This, however, is not the view taken in the present study, where we consider schwa in historical terms to be non-phonemic throughout, i.e. in all other 'reconstructed' forms that are marked by *.) For example, where Psikye (HIGI) 'arm/$hand_{1}$' is given in the database as *dzəvə*, we give as underlying the form < dzəvə >, which implies a conditioned change of lexical-final /a/ to [ə] (cf. PCC ***dzva**) that needs to be kept distinct from the insertion of epenthetic schwa in the first syllable. In the accompanying notes, we again follow the general principles of this study and refer to the phonological processes behind the synchronic presence of schwa as either 'ə-epenthesis', 'ə-prothesis, or 'lexical-final *a > ə'. – Note that, other than in the preceding volume (Wolff 2022), prenasalisation and glottalisation are systemically treated as prosodies in the present volume.

The third (and possibly fourth) column(s) give(s) the historically underlying and internally reconstructed form for the individual language, marked by *, e.g. *sa-y^{y} for Gude (BATA) 'to know'. This reflects – in diachronic perspective – the phonemic structure of the word form (including 'lost' segments indicated by Ø); it also marks natural sound changes from the reconstructed PCC forms and identifies the source segments of prosodies by raised symbols, even in cases of the diachronic loss of the segment (indicated by $Ø^{y}$, $Ø^{w}$, $Ø^{n}$, $Ø^{ʔ}$).

When considered necessary for transparency purposes, the fourth column represents intermediate internal reconstructions, indicating kind of first-level loss of segments (Ø) and root-augmental elements that may have optionally

been present in the proto-language form, e.g. *sØa-y for Gude, indicating loss of original C_2 */n/.

The fifth column gives the deepest-level reconstructed word form (PCC) including optionally present root-augmental elements, e.g. *(ma-)**sna**(-y/-k^{w})-n). For increased transparency and in cases where languages or language subgroups differ in terms of root types, these are made explicit by giving root-type formulas like √ C C Ca vs. √ C CaCa vs. √ CaCaCa, etc.

The sixth and rightmost column numbers relevant comments, which are made explicit in formulaic style in the bottom-level box of the tabular representation of the reconstructed lexical item. Note that plain deletions/losses of segments are not commented upon since they are overtly marked by Ø in the preceding columns.

Columns 2–5 on the same lines can be read from left to right or from right to left. Reading them from left to right offers a retrospective view, e.g. for the first lexical item 'to be able to' in Bachma (Bata) it would read *^{m}ba(m)* (from synchronic underlying form < mbam > – note the discrepancy between the data transcription and our underlying form regarding the status of the initial nasal!) stems from internally reconstructed *m-ba-n, which in turn stems from *mØ-ba-n (with deleted prefix vowel), ultimately going back to the PCC form *ma-ba-n. Reading the columns from right to left, on the other hand, shows the evolutionary development from the reconstructed PCC augmented root *ma-ba-n via intermediate *mØ-ba-n (by vowel deletion in the prefix), yielding an internally reconstructable form *m-ba-n, which results in the synchronic surface form *^{m}ba(m)*, which the field linguist interprets as showing an initial prenasalised obstruent ^{m}b, which internal reconstruction and comparative analysis, however, identify as a nasal+obstruent cluster, which legitimises a synchronically underlying form < mban >. As a shallow assimilation process, the final nasal *n, if present, either assimilates homorganically to the bilabials of the initial consonant cluster mb or reflects a sporadic sound shift *n → m (see 3.4.5 in the print edition).

A note on transcription

At variance with the original transcriptions as contained in the database (Gravina 2015), we have replaced IPA < j > by < y > according to long-established use in Chadic linguistics and African linguistics in general.

Apart from quoting the database entries – always in *italics* – as they are contained in the database, we have replaced < h > and < h^{w} > by phonetically more adequate < x > and < x^{w}>.

Further, and again at variance with Gravina (2014, 2015), we symbolise the non-low central vowel 'schwa' by < ə > and not by < ɨ >.

The abbreviations RED and FV mean REDuplication and Final Vowel, respectively. W and Y stand for W-prosody and Y-prosody.

able, to be

PCC *(ma-, RED-) **ba** (-a, -y, -k^{w}, -n; FV)

BATA

Bachama	*^{m}ba(m)* mban	*m-ba-n	*mØ-ba-n	*ma-ba-n	1
Sharwa	*^{m}ban* mban				
1. assimilation *n > m/mba_(?); see 3.4.5					

DABA

Daba	*^{m}bay* mbay	*m-ba-y	*mØ-ba-y	*ma-ba-y	

HURZA

Mbuko	*^{m}ba* mba	*m-ba	*mØ-ba	*ma-ba	

MANDARA

Podoko	*^{m}ba* mba	*m-ba	*mØ-ba	*ma-ba	

MOFU

Ouldeme	*^{m}bi* mby	*m-b-y	*mØ-bØ-y	*(RED-)ma-ba (-a, -y/-n/-k^{w}a)	1
	^{m}bako mbaka^{w}	*m-ba-k^{w}a	*mØ-ba-k^{w}a		2
Zulgo	*^{m}ba* mba	*m-ba	*mØ-ba		
Merey	*^{m}ba* mba	*m-ba	*mØ-ba		
Gemzek	*ma^{m}bana* mambana	*ma-mØ-ba-na	*RED-ma-ba-na		
Dugwor	*ma^{m}biy* mambə^{y}y	*ma-mØ-bØ-ay^{y}	*RED-ma-ba-a-y		3
1. *y > i 2. +W: FV *a > o 3. root-augmental /ay/ > əy; *y > y^{y}; +Y: ə > i					

HIGI

Kirya	*^{m}banə* mbanə	*m-ba-na	*mØ-ba-na	*ma-ba-y/-na	1
Bana	*^{m}ba(y)* mbay	*m-ba-y	*mØ-ba-y		
1. FV *a > ə					

GIDAR

Gidar	*əbapa*	*Øa-ba-pa	*ma-ba-ba	*ma-RED-ba	1
1. prefixal *a > ə; root-initial *b > p					

arm/hand$_{1}$

Areal root ***dzva** (-y, -k^{w}, -n; FV)

BATA

Bata	*tife* tə^{y}fa^{y}	*tfa-y^{y}	*tva-y	*dzva-y(-na)	1
Sharwa	*tivi* tə^{y}vy	*tvØ-y^{y}			2
Gude	*tʃiinə* ts^{y}ə^{y}ynə	*tsØØ-y^{y}-na	*tsva-y(-na)		3
Jimi	*tʃiyən* ts^{y}ə^{y}yən	*tsØØ-y^{y}-nØ			4
Tsuvan	*tʃəve* ts^{y}əva^{y}	*tsva-y^{y}			5

1. *dz > t; *v > f; ə-epenthesis; *y > y^y; +Y: *a > e; +Y: ə > ɨ
2. *dz > t; ə-epenthesis; *y > y^y > i; +Y: ə > i
3. *dz > ts; ə-epenthesis; *y > y^y > i; +Y: ts > tʃ; +Y: ə > i; FV *a > ə
4. *dz > ts; ə-epenthesis; *y > y^y; +Y: ts > tʃ; +Y: ə > i
5. *dz > ts; ə-epenthesis; *y > y^y; +Y: ts > tʃ; +Y: *a > e

MANDARA

Mandara	*ervа* a^yrva	*rva-y^y	*rva(-y)	*dzva(-y)	1
Malgwa	*ərva*	*rva			2
Glavda	*də*	*dØa	*dva		3
Dghwede	*dəva*	*dva			4

1. *dz > r; a-prothesis; *y > y^y; +Y: *a > e
2. *dz > r; ə-prothesis
3. *dz > d; lexical-final *a > ə
4. *dz > d; ə-epenthesis

LAMANG

Lamang	*dzəvo* dzəva^w	*dzva-k^w	*dzva-k^w	1
Hdi	*dzəvu* dzəvw	*dzvØ-k^w		2

1. ə-epenthesis; *k^w > $Ø^w$; +W: lexical-final *a > o
2. ə-epenthesis; *k^w > w > u

HIGI

Kamwe-Futu	*dziɓə* dzə^{y}ɓə	*dzɓa-$Ø^y$	*dzva(-y)	1
Psikye	*dzəvə* dzəvə	*dzva		2
Bana	*dəvə* dəvə	*dva		3

1. *v > ɓ; ə-epenthesis; *y > $Ø^y$; +Y: ə > i; lexical-final *a > ə
2. ə-epenthesis; lexical-final *a > ə
3. *dz > d; ə-epenthesis; lexical-final *a > ə

arm/hand$_2$

PCC/Areal root *(Ca-) **x(a)ra** (-a, -y, -k^w)

DABA

Buwal	*ra*	< *ra	< *Øra	< *xra	
Gavar	*ra*				

MAFA

Mafa	*ray*	*r-ay	*ØrØ-a-y	*xra(-a-y)	
Cuvok	*ha*	*xa	*xØa		

TERA

Tera	*xar*	*xarØ		*xara(-y)	
Ga'anda	*(^{m}bəra) hera* xa^{y}ra	*xara-$Ø^y$	*xara-y		1

1. *y > $Ø^y$; +Y: a > e

SUKUR

Sukur	*ri* ry	*r-y	*ØrØ-y	*xra-y	1
	rəi rəy	*ra-y	*Øra-y		2

1. *y > i 2. lexical-final *a > ə; *y > i					
HURZA					
Mbuko	*alay*	*al-ay	*ØalØ-a-y	*xara-a-y	1
Vame	*alay*				1
1. *r > l					
MANDARA					
Matal	*ahal* axal	*Øa-xalØ		*(Ca-)xara[1]	1
Podoko	*hara* xara	*xara			
1. *r > l					
MOFU					
				√ C Ca	
Zulgo	*ahər* axər	*axrØ		*xra(-a-y)	1
Gemzek	*ahər* axər				1
Merey	*həlay* xəlay	*xl-ay	*xlØ-a-y		2
Dugwor	*lay*	*l-ay	*ØlØ-a-y		3
				√ CaCa	
Ouldeme	*ahar* axar	*Øa-xarØ		*(Ca-)xara[2]	
Muyang	*ahar* axar				
Mada	*ahar* axar				
Moloko	*ahar* axar				
Mofu North	*har* xar	*xarØ			
Mofu-Gudur	*har* xar				
1. a-prothesis; ə-epenthesis 2. *r > l; ə-epenthesis 3. *r > l					
MAROUA					
Giziga-Marva	*han* xan	*xanØ		*xara(-k^{w})	1
	haŋ xaŋ	*xaŋ	*xanØ-k		2
Giziga-Muturwa	*haŋ* xaŋ				2
Mbazla	*haŋ* xaŋ				2
1. *r > n 2. *r > n; *k^{w} > k; fusion *nk > ŋ					

[1] The nature of the presumed initial consonant of the prefixal augment remains obscure in the absence of conclusive comparative evidence.

[2] See footnote 1.

armpit

PCC *(ma-, RED-) **x(a)b(a)wa** (-y, -t, -k^{w}, -ɗ; FV)

BATA

Bachama	*m^{w}am^{w}atœ* m^{w}am^{w}wata^{wy}	*ma-mw^{w}a-Ø^{y}-ta	*ma-Ømwa-y-ta	*ma-xbwa-y-ta	1
1. assimilation *b > m/ma_; *w > w^{w}; +W: m > m^{w}; *y > Ø^{y}; combined +W+Y: FV *a > œ					

DABA

Buwal	*^{m}buwa* mbə^{w}wa	*m-bw^{w}a	*mØ-Øbwa	*(RED-)(ma-)xbwa	1
Mbudum	*pumpa* pə^{w}mpa	*Øp-mØ-pØ^{w}a	*RED-ma-Øbwa		2
Gavar	*papa*	*pa-pa	*RED-ØpØa		3
1. ə-epenthesis; *w > w^{w}; +W: ə > u 2. *b > p; *w > Ø^{w}; ə-epenthesis; +W: ə > u 3. *b > p					

MAFA

				√ C C Ca	
Cuvok	*^{m}buwa* mbə^{w}wa	*m-bw^{w}a	*mØ-Øbwa	*ma-xbwa	1
				√ C CaCa	
Mafa	*^{m}bəhaw* mbəxaw	*m-bxaw	*mØ-xbawØ	*ma-xbawa	2
1. ə-epenthesis; +W: ə > u 2. metathesis xb > bx; ə-epenthesis					

HURZA

Mbuko	*a^{m}biyoek* a^{m}bə^{y}ya^{yw}k	*Ø^{n}a-by^{y}aØ^{w}-k	*m^{n}a-Øbwa-y-k	*ma-xbwa-y-k^{w}	1
1. *k^{w} > k; metathesis wy > yw; w > Ø^{w}; *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *y → y^{y}; +Y: ə > i; combined +W+Y: lexical-final *a > œ					

MARGI

Margi	*hu^{m}bu* xə^{wm}bw	*Ø^{n}-xbw^{w}	*m^{n}Ø-xbwØ	*ma-xbwa	1
Kilba	*u^{m}bu* ə^{wm}bw	*Ø^{n}-Øbw^{w}	*m^{n}Ø-ØbwØ		2
1. ə-epenthesis; *w > w^{w} > u; +W: ə > u; *m > Ø^{n}; +N: *b > ^{m}b 2. ə-prothesis; *w > w^{w} > u; +W: ə > u; *m > Ø^{n}; +N: *b > ^{m}b					

MOFU

				√ C C Ca	
Mofu-Gudur	*^{m}bəwa* mbəwa	*m-bwa	*mØ-Øbwa	*ma-xbwa (-a-y/-ɗ)	1
Mofu North	*^{m}buwa* mbə^{w}wa	*m-bw^{w}a			2
Zulgo	*hi^{m}biɗ* xə^{ym}byɗ	*Ø^{n}-xb-y^{y}-ɗ	*m^{n}Ø-xbØØ-y-ɗ		3
Ouldeme	*hu^{m}buway* xə^{wm}bə^{w}way	*Ø^{n}-xbw^{w}-ay	*m^{n}Ø-xbwØ-a-y		2
				√ C CaCa	
Gemzek	*hə^{m}beɗ* xə^{m}ba^{y}ɗ	*Ø^{n}-xba-Ø^{y}-ɗ	*m^{n}Ø-xbaØØ-y-ɗ	*ma-xbawa (-a-y-k^{w}/-ɗ)	4
Dugwor	*hu^{m}bayek^{w}* xə^{wm}baya^{y}k^{w}	*Ø^{n}-xbay^{y}aw^{w}-k^{w}	*m^{n}0-xbawa-y-k^{w}		5
Merey	*hu^{m}beyək* xə^{wm}ba^{y}yək	*Ø^{n}-xbay^{y}ØØ^{w}-k			6
Moloko	*^{m}beyewk* mba^{y}ya^{y}wk	*m-bay^{y}aw-k	*mØ-Øbawa-y-k^{w}		7
1. ə-epenthesis 2. ə-epenthesis; *w > w^{w}; +W: ə > u					

3. *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *y > y^{y}; +Y: ə > i 4. *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 5. *m > Ø^{n}; +N: *b > ^{m}b; metathesis wy > yw; ə-epenthesis; *w > w^{w}; +W: ə > u; +Y: *a > e 6. *m > Ø^{n}; +N: *b > ^{m}b; *k^{w} > k; metathesis wy > yw; ə-epenthesis; *w > Ø^{w}; +W: ə > u; *y > y^{y}; +Y: *a > e; lexical-final *a > ə 7. *k^{w} > k; metathesis wy > yw; *y > y^{y}; +Y: *a > e

Higi

Kamwe-Nkafa	*ha^{m}buwə* xa^{m}bə^{w}wə	*Ø^{n}-xabw^{w}a	*m^{n}Ø-xabwa	*ma-xabwa	1
Kamwe-Futu	*ha^{n}duwa* xa^{n}də^{w}wa	*Ø^{n}-xadw^{w}a	*m^{n}Ø-xadwa		2
1. *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *w > w^{w}; +W: ə > u; lexical-final *a > ə 2. *b > d (dissimilation); *m > Ø^{n}; +N: *d > ^{n}d; ə-epenthesis; *w > w^{w}; +W: ə > u					

ashes

PCC ***pts(a)ɗa*** (-y, -k^{w}, -n ; FV)

Bata

				√ C C Ca	
Bata	*ɟite* fə^{y}ta^{y}	*fta-Ø^{y}	*ftØa-y	*ptsɗa-y	1
				√ C CaCa	
Bachama	*ɟitœdiye* fə^{y}ta^{yw}də^{y}ya^{y}	*ftaɗ-Ø^{w}-y^{y}a	*ftadØ-y-k^{w}a	*ptsaɗa-y-k^{w}a	2
1. *p > f; *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *p > f; *ts > t ; ə-epenthesis; metathesis *yk^{w} > k^{w}y; *k^{w} > Ø^{w}; *y > y^{y}; +Y: ə > i; +Y+W: *a > œ; +Y: FV *a > e					

Tera

Tera	*pədʒit* pədz^{y}ə^{y}t	*pdztØ-y^{y}	*pdzta-y	*ptsɗa-y	1
	pəʒit pəz^{y}ə^{y}t	*pztØ-y^{y}			2
Hwana	*fiɟe* fə^{y}s^{y}a^{y}	*fsØa-y^{y}	*ftsØa-y		3
1. *ts > dz; ə-epenthesis; *ɗ > t; *y > y^{y}; +Y: dz > dʒ; +Y: ə > i 2. *ts > z; ə-epenthesis; *ɗ > t; *y > y^{y}; +Y: z > ʒ; +Y: ə > i 3. *p > f; *ts > s; ə-epenthesis; *y > y^{y}; +Y: s > ʃ; +Y: ə > i; +Y: lexical-final *a > e					

Margi

Kilba	*pətsədu* pətsəɗw	*ptsɗ-w	*ptsɗØ-k^{w}	*ptsɗa-k^{w}	1
1. ə-epenthesis; *k^{w} > w > u					

Mandara

Glavda	*aft*	*ftØØ	*ftsɗa	*ptsɗa(-y-k^{w})	1
	aftsa	*ftsØa			2
Dghwede	*ftsut'e* ftsə^{w}ɗa^{y}	*ftsɗa-Ø^{y}-Ø^{w}	*ftsɗa-y^{y}-k^{w}		3
1. *p > f; a-prothesis 2. *p > f; *ts > t; a-prothesis 3. *p > f; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e					

Mofu

Muyang	*viti* və^{y}ti	*vtØ-y^{y}	*bta-y	*ptØa(-y)	*ptsɗa(-y-k^{w})	1
Moloko	*vəte* vəta^{y}	*vta-y^{y}				2

Zulgo	*bite* bəʸtaʸ	*bta-yʸ	*bta(-y)			3
Dugwor	*bəta*	*bta				4
Mofu North	*pətsaw* pətsaw	*ptsa-w	*ptsa-kʷ	*ptsØa-kʷ		5
1. *p > b > v; ə-epenthesis; *ts > t; *y > i; *y > yʸ; +Y: ə > i 2. *p > b > v; ə-epenthesis; *ts > t; *y > yʸ; +Y: lexical-final *a > e 3. *p > b; ə-epenthesis; *ts > t; *y > yʸ; +Y: ə > i; +Y: lexical-final *a > e 4. *p > b; ə-epenthesis; *ts > t 5. ə-epenthesis; *kʷ > w						

Maroua

Giziga-Marva	*afɬʃo* aftsʸaʷ	*ftsa-yʸ-Øʷ	*ftsØa-yʸ-kʷ	*ptsɗa-yʸ-kʷ	1
Giziga-Muturwa	*fuɬʃu* fəʷtsʸw	*fts-Øʸ-wʷ	*ftsØ-yʸ-kʷ		2
Mbazla	*fuɬʃu* fəʷtsʸw	*fts-Øʸ-wʷ			2
	puɬʃu pəʷtsʸw	*pts-Øʸ-wʷ	*ptsØ-yʸ-kʷ		3
1. *p > f; a-prothesis; *y > yʸ; +Y: *ts > tʃ; *kʷ > Øʷ; +W: lexical-final *a > o 2. *p > f; ə-epenthesis; *y > yʸ; +Y: *ts > tʃ; *kʷ > wʷ > u; +W: ə > u 3. ə-epenthesis; *y > yʸ; +Y: *ts > tʃ; *kʷ > wʷ > u; +W: ə > u					

Kotoko-Island

Buduma	*fədən*	*fd-n	*ptsØØ-n	*ptsɗa-n	1
1. *p > f; *ts > d; ə-epenthesis					

baboon

PCC *(na-/ra-) **x(a)r(a)gw(a)va** (-kʷ)

Daba

Mbudum	*lahaf* laxaf	*laxaf	*ØlaxafØ	*xragʷava	1
Daba	*lohov* laʷxaʷv	*laxʷav	*ØlaxʷavØ		2
1. *r > l; *gʷ > x; *v > f 2. *r > l; *gʷ > xʷ; +W; *a > o					

Tera

Tera	*ruf* rwf	*rwf	*ØrwfØ	*xrgʷva	1
1. *gʷ > w > u; *v > f					

Hurza

Mbuko	*hərgov* xərgʷaʷv	*xrgʷav	*xrgʷavØ	*xrgʷava	1
1. ə-epenthesis; +W: *a > o					

Mandara

Malgwa	*nagula* nagʷəʷla	*na-gʷla	*na-Ølgʷ Øa	*(na-/ra-)xrgʷva	1
	lagula lagʷəʷla	*la-gʷla	*la-Ølgʷ Øa		1
Glavda	*lukuva* ləʷkʷəʷva	*lkʷva	*Ølkʷva		2
1. *r > l; metathesis lgʷ > gʷl; ə-epenthesis; +W: *ə > u 2. *r > l; *gʷ > kʷ; ə-epenthesis; +W: *ə > u					

Mofu

				√ C C C Ca	
Merey	*wuluv* $w^wə^wlə^wv$	*w^wlv	*Ølw^wvØ	*xrg^wva	1
				√ CaC C Ca	
Ouldeme	*alkuv* $alk^wə^wv$	*alk^wv	*Øalk^wvØ	*xarg^wva	2
Muyang	*aluguv* $alə^wg^wə^wv$	*alg^wv	*Øalg^wvØ		3
Zulgo	*aluv* alwv	*alwv	*Øalwv		4
				√ C C CaCa	
Moloko	*hərgov* $xərg^wa^wv$	*xrg^wav	*xrg^wavØ	*xrg^wava	5
Gemzek	*hulov* $xə^wla^wv$	*xlØ^{w}av	*xlg^wavØ		6
				√ C CaCaCa	
Mofu-Gudur	*lag^{w}av*	*lag^{w}av	*Ølag^wavØ	*xrag^wava	7

1. *r > l; *g^w > w^w; metathesis lw > wl; ə-epenthesis; +W: ə > u
2. *r > l; *g^w > k^w; ə-epenthesis; +W: ə > u
3. *r > l; ə-epenthesis; +W: ə > u
4. *r > l; *g^w > w > u
5. ə-epenthesis; +W: *a > o
6. *r > l; *g^w > Ø^w; ə-epenthesis; +W: ə > u; +W: *a > o
7. *r > l

Maroua

				√ C C C Ca	
Giziga-Muturwa	*lu'uf* $lə^wʔ^wə^wf$	*l$ʔ^wf$	*Øl$ʔ^wf$Ø	*xrg^wva	1
				√ CaC CaCa	
Giziga-Marva	*al'of* $alʔ^wa^wf$	*al$ʔ^waf$	*Øal$ʔ^waf$Ø	*xarg^wava	2

1. *r > l; *g^w > $ʔ^w$; ə-epenthesis; +W: ə > u
2. *r > l; *g^w > $ʔ^w$; +W: a > o

Lamang

Lamang	*lk^wva*	*lk^wva	*Ølk^wva	*xrg^wva(-k^w)	1
	luk^wva $lə^wk^wva$				2
Hdi	*lkuvak* $lk^wə^wvak$	*lk^wva-k	*Ølk^wva-k		2

1. *r > l; *g^w > k^w
2. *r > l; *g^w > k^w; ə-epenthesis; +W: ə > u; suffixal *k^w > k

Gidar

Gidar	*lovo* la^wva^w	*laØ^{w}va	*Ølag^wva	*xrag^wva	1

1. *r > l; *g^w > Ø^w; +W: *a > o

baobab$_1$

PCC/Loan?[3] *(ma-, RED-) ***k(a)w(a)ka** (-t, -y, -n; FV)

Bata

				√ C C Ca	
Gude	*kuku'unə* $kwkwʔə^wnə$	*kw-kw^{w}ʔ-na	*RED-kwʔØ-na	*RED-kwka(-na)	1
Sharwa	*kəkə'wə*	*k-kʔwa	*RED-kwʔa		2

[3] In the light of Kanuri *kúwa* and Bagirmi *kuka* (Henry Tourneux, p.c. 2022), this word may be borrowed – but in which direction? Note that Newman (1977: 22) reconstructs *kuka for Proto-Chadic, adding that "Kanuri *kuwa* is undoubtedly a borrowing from Chadic, as is the case with a number of terms for native flora and fauna."

				√ C CaCa	
Tsuvan	*kuk^{w}akən* kwkwakən	*kw-kwak-n	*RED-kwakØ-n	*RED-kwaka-n	3
				√ CaC Ca	
Bata	*kawto* kawta^{w}	*kaw^{w}-ta	*kawØØ-ta	*kawka(-ta)(-y)	4
Bachama	*kawtoe* kawta^{wy}	*kaw^{w}-ta-Ø^{y}	*kawØØ-ta-y		5
	koewe ka^{wy}wa^{y}	*kaw^{w}-Ø^{y}	*kawØØ-y		6
				√ CaCaCa	
Bata	*kaawe* kaØawa^{y}	*kakawa-Ø^{y}	*kawaka-y	*kawaka-y	7
1. C_3 *k > ʔ; *w >w^{w} > u; ə-epenthesis; +W: ə > u; FV *a > ə 2. C_3 *k > ʔ; metathesis wʔ > ʔw; ə-epenthesis; lexical-final *a > ə 3. *w > u; ə-epenthesis; +W: ə > u 4. *w >w^{w}; +W: FV *a > o 5. *w >w^{w}; *y > Ø^{y}; combined +Y+W: FV *a > œ 6. *y > Ø^{y}; +Y: lexical-final *a > e; combined +Y+W: *a > œ 7. metathesis wk > kw; *y > Ø^{y}; +Y: lexical-final *a > e					

TERA

Tera	*kukwa* kwk^{w}a	*kw^{w}ka	*kwka	*kwka(-ta)	1
Ga'anda	*kuk^{w}ata* kwk^{w}ata	*kw^{w}ka-ta	*kwka-ta		2
1. *w > w^{w} > u; ə-epenthesis; +W: ə > u 2. *w > w^{w} > u; +W: *k > k^{w}					

HURZA

Mbuko	*koko* ka^{w}ka^{w}	*kØ^{w}a-kØ^{w}a	*RED-kwØa	*RED-kwka	1
Vame	*k^{w}ak^{w}a* kwakwa	*kwa-kwa	*RED-kwØa		
1. *w > Ø^{w}; +W: *a > o					

MARGI

Bura	*k^{w}agu* k^{w}agw	*kagw^{w}	*kawgØ	*kawka	1
	kogu ka^{w}gw				2
Kilba	*gu* gw	*gw	*ØØwgØ		3
1. *w > w^{w} > u; C_3 *k > g; metathesis wg > gw; +W: C_1 *k > k^{w} 2. *w >w^{w} > u; C_3 *k > g; metathesis wg > gw; +W: *a > o 3. C_3 *k > g; metathesis wg > gw; *w > u					

MANDARA

Matal	*mak^{w}ak^{w}a* mak^{w}ak^{w}a	*ma-kaØ^{w}ka	*ma-kawka	*(ma-)kawka	1
	makok^{w}a maka^{w}k^{w}a				2
Glavda	*k^{w}ak^{w}a*	*kaØ^{w}ka	*kawka		1
Mandara	*k^{w}ak^{w}a*				1
Malgwa	*k^{w}ak^{w}a*				1
	kok^{w}a ka^{w}k^{w}a				2
1. *w > Ø^{w}; +W: *k > k^{w} 2. *w > Ø^{w}; +W: *k > k^{w}; +W: *a > o					

MOFU

Moloko	*koko* ka^{w}ka^{w}	*kaØ^{w}ka	*kawka	1
1. w > Ø^{w}; +W: +W: *a > o				

LAMANG

Lamang	*kowo* ka^{w}wa^{w}	*kaw^{w}a	*kawØa	*kawka	1
Hdi	*ka'u* kaʔw	*kaʔw	*kawʔØ		2
1. *w > w^{w}; +W: *a > o 2. C_3 *k > ʔ; metathesis wʔ > ʔw; *w > u					

HIGI

Kirya	*kuku* kwkəʷ	*kwʷka	*kwka	1
Bana	*kʷəkʷə* kʷəkʷə	*kØʷka		2
1. *w > wʷ > u; lexical-final *a > ə; +W: ə > u 2. *w > Øʷ; +W: *k > kʷ; ə-epenthesis; lexical-final *a > ə				

KOTOKO-NORTH

Afade	*kuka* kwka	*kwka	*kwka	1
1. *w > u				

KOTOKO-CENTRAL

Lagwan	*kuka* kwka	*kwka	*kwka	1
1. *w > u				

baobab$_2$

PCC *(ma-, RED-) **b(a)t(a)w(a)ɓa**

DABA

				√ C C C Ca	
Mbudum	*matuɓ* matwɓ	*ma-twɓ	*ma-ØtwɓØ	*ma-btwɓa	1
				√ C CaC Ca	
Buwal	*mataɓ*	*ma-taɓ	*ma-ØtaØɓØ	*ma-btawɓa	
1. *w > u					

MAFA

Cuvok	*ᵐbaatay* mbaØatay	*m-bawat-ay	*mØ-batawØØ-a-y	*ma-batawɓa-a-y	1
Mafa	*ᵐbotoᵐbota* mbaʷtaʷ-mbaʷta	*m-bata-m-bataØʷ	*RED-mØ-batawØØ	*RED-ma-batawɓa	2
1. metathesis tw > wt 2. *w > Øʷ; +W: *a > o					

SUKUR

Sukur	*ᵐbutə* mbwtə	*m-bwta	*mØ-btwØa	*ma-btwɓa	1
1. metathesis tw > wt; lexical-final *a > ə					

MOFU

Mofu North	*maataɓ*	*ma-ataɓ	*ma-ØataØɓØ	*ma-batawɓa(-a-y)	
Mofu-Gudur	*ᵐbaatay* mbaØatay	*m-bawat-ay	*mØ-batawØØ-a-y		1
1. metathesis tw > wt					

beard

PCC *(ma-, RED) **gʷ(a)ma** (-a, -y)

SUKUR

Sukur	*ɣəmay*	*ɣm-ay	*ɣmØ-a-y	*gʷma-a-y	1
1. *gʷ > ɣ; ə-epenthesis					

HURZA

Mbuko	*həmay*	*xm-ay	*xmØ-a-y	*gʷma-a-y	1
1. *gʷ > x; ə-epenthesis					

MARGI

Bura	*kumi* $k^wə^wmy$	*$k^wmØ$-y		*g^wma-y	1
1. *g^w > k^w; ə-epenthesis; *y > i; +W: ə > u					

MANDARA

Matal	*ag^way*	*Øa-g^w-ay	*ma-g^wØØ-a-y	*(ma-)g^wma(-a-y)	
	ag^woy ag^wa^wy	*Øag^w-ay			1
Malgwa	*kuuma* $kə^wwma$	*kw^wma	*k^wma		2
	uuma $ə^wwma$	*w^wma	*wma		3
Mandara	*uma*	*wma			4
Podoko	*mume* $mwma^y$	*mØ-wma-$Ø^y$	*ma-wma-y		5
1. +W: *a > o 2. *g^w > k^w > k+w^w; *w > u; ə-epenthesis; +W: ə > u 3. ə-prothesis; *g^w > w^w > u 4. *g^w > w > u 5. *g^w > w > u; *y > $Ø^y$; +Y: *a > e					

MOFU

Ouldeme	*mamay*	*ma-m-ay	*ma-ØmØ-a-y	*(ma-)g^wma(-a-y)	
Gemzek	*həma*	*xma	*xma		1
1. *g^w > x; ə-epenthesis					

MAROUA

Giziga-Muturwa	*hummuŋ* $x^wə^wmmə^wŋ$	*x^w-x^wm-ŋ	*RED-x^wmØ-k-n	*RED-g^wma-k^w-n	1
1.*g^w > x^w; assimilation x^wm > mm; *k^w > k; fusion kn > ŋ; ə-epenthesis; +W: ə > u					

LAMANG

Lamang	*ɣma*	*ɣma	*g^wma(-a-y)	1
Hdi	*ɣumay* $ɣə^wmay$	*$ɣ^w$mØ-ay		2
1. *g^w > ɣ 2. *g^w > $ɣ^w$; ə-epenthesis; +W: ə > u				

HIGI

Kamwe-Futu	*ɣuɓe* $ɣ^wə^wɓa^y$	*$ɣ^w$ɓa-$Ø^y$		*g^wma-y	1
Kirya	*ɣumi* $ɣ^wə^wmy$	*$ɣ^w$mØ-y			2
1. *g^w > $ɣ^w$; *m > ɓ; ə-epenthesis; +W: ə > u; *y > $Ø^y$; +Y: lexical-final *a > e 2. *g^w > $ɣ^w$; ə-epenthesis; +W: ə > u; *y > i					

GIDAR

Gidar	*$a^ŋgeme$* $a^ŋga^yma^y$	*$Ø^n$a-gama-$Ø^y$	*m^na-gama-y	*ma-g^wama-y	1
	$e^ŋgeme$ $a^{yŋ}ga^yma^y$				1
1. *g^w > g; *m > $Ø^n$; +N: g > ^{ŋ}g; *y > $Ø^y$; +Y: *a > e					

beer$_1$ (traditional, from millet)

Areal root *(k^wa-, na-) **v(a)x^wa** (-y, -n)

BATA

Bata	*v^we* v^wa^y	*v$Ø^w$a-$Ø^y$	*vx^wa-y	*(na-(k^wa-)) vx^wa(-y, -n)	1
Tsuvan	*$əv^we$* $əv^wa^y$	*v$Ø^w$a-$Ø^y$			2
Gude	*$ənv^wa$* $ənv^wa$	*nØ-v$Ø^w$a	*na-vx^wa		3
Jimi	*^ŋgəvun* $ŋgəvə^wn$	*ŋ-gØ-v$Ø^w$-n	*nØ-k^wa-vx^wØ-n		4
Sharwa	*$v^wəh$* vwəx	*vwx	*vxwØ		5

1. *x^w > $Ø^w$; *y > $Ø^y$; +Y: lexical-final *a > e
2. *x^w > $Ø^w$; ə-prothesis; *y > $Ø^y$; +Y: lexical-final *a > e
3. *x^w > $Ø^w$; ə-prothesis
4. *x^w > $Ø^w$; *k^w > g; homorganic assimilation *n > ŋ/__g; ə-epenthesis; +W: ə > u
5. *x^w > x+w; metathesis xw > wx; ə-epenthesis

DABA

				√ C Ca	
Gavar	*mavə* mavə	*ma-va	*ma-vØa	*ma-vx^wa	1
Mbudum	*mavu* mavw	*ma-vw	*ma-vwØ		2
Daba	*movu* ma^{w}vw	*ma-vw^w	*ma-vw^{w}Ø		3
				√ CaCa	
Buwal	*mavaw* mavaw	*ma-vax^w	*ma-vax^{w}Ø	*ma-vax^{w}a	4

1. lexical-final *a > ə
2. *x^w > w > u
3. *x^w > w^w > u; +W: *a > o
4. *x^w > w

MANDARA

Podoko	*pihe* pə^{y}xa^y	*pxa-$Ø^y$	*pxa-y^y	*vx^wa(-y)	1
Malgwa	*h^{w}a* x^{w}a	*x^{w}a	*Øx^{w}a		

1. *v (> b) > p; *x^w > x; ə-epenthesis; *y > $Ø^y$; +Y: ə > i; +Y: lexical-final *a > e

beer$_2$ (traditional, from millet/sorghum)

Areal root *(ma-) **ɣ^w(a)z(a)ma** (-y, -k^w; FV)

MAFA

Mafa	*zom* za^{w}m	*Ø^{w}zam	*ɣ^{w}zamØ	*ɣ^{w}zama	1
Cuvok	*wuzam* w^{w}ə^{w}zam	*w^{w}zam			2

1. *ɣ^w > Ø^w; +W: *a > o
2. *ɣ^w > w^w; ə-epenthesis; +W: *ə > u

MANDARA

Matal	*g^{w}əzəw*	*g^{w}zw	*g^{w}zmØ	*ɣ^{w}zma(-y-k^{w}a)	1
	guzu g^{w}ə^{w}zw				2
Malgwa	*wuʃike* w^{w}ə^{w}s^{y}yka^y	*w^{w}s-y^y-ka	*w^{w}sØØ-y-ka		3

1. *ɣ^w > g^w; *m > w; ə-epenthesis
2. *ɣ^w > g^w; *m > w > u; ə-epenthesis; +W: ə > u
3. *ɣ^w > w^w; *z > s; *k^w > k; *y > y^y > i; +Y: s > ʃ; +Y: FV *a > e

MOFU

				√ C C Ca	
Muyang	*zum* zə^{w}m	*^{w}zm	*Ø^{w}zmØ	*ɣ^{w}zma	1
Zulgo	*guzum* g^{w}ə^{w}zə^{w}m	*g^{w}zm	*g^{w}zmØ		1
				√ C CaCa	
Mofu North	*zam*	*zam	*ØzamØ	*ɣ^{w}zama	
Ouldeme	*wuzam* w^{w}ə^{w}zam	*w^{w}zam	*w^{w}zamØ		2
Mofu-Gudur	*wuzam* w^{w}ə^{w}zam				2
Mada	*wzom* wza^{w}m				3

Gemzek	*guzom* $g^wə^wza^wm$	*g^wzam	*$g^wzamØ$		4
Merey	*guzom* $g^wə^wza^wm$				4
Dugwor	*guzom* $g^wə^wza^wm$				4
				√ CaCaCa	
Gemzek	*gozom* $g^wa^wza^wm$	*g^wazam	*$g^wazamØ$	*$ɣ^wazama$	5
1. ə-epenthesis; +W: ə > u 2. *$ɣ^w$ > w^w; ə-epenthesis; +W: ə > u 3. *$ɣ^w$ > w^w; +W: a > o 4. *$ɣ^w$ > g^w; ə-epenthesis; +W: ə > u; +W: a > o 5. *$ɣ^w$ > g^w; +W: a > o					

Maroua

Giziga-Marva	*muzom* mwza^{w}m	*m-w^wzam	*mØ-wzamØ	*ma-$ɣ^w$zama	1
Mbazla	*zam*	*zam	*ØzamØ		
1. *$ɣ^w$ > w > u; ə-epenthesis; +W: *a > o					

Lamang

Lamang	*yuzo* $ɣ^wə^wza^w$	*$ɣ^wzØ^wa$	*$ɣ^wzwa$	*$ɣ^wzma$	1
Hdi	*yuzu* $ɣ^wə^wzw$	*$ɣ^wzwØ$			2
1. ə-epenthesis; *m > w > $Ø^w$; +W: ə > u; +W: lexical-final *a > o 2. ə-epenthesis; *m > w > u; +W: ə > u					

beer$_3$ (traditional, from millet)

Areal root/loan?[4] ***(**ma-**)** **paɮa** (-k^w)

Daba[5]

Mbudum	*^{n}daɮa* ndaɮa	*n-daɮa	*mØ-daɮa	*ma-paɮa(-k^w)	1
Daba	*^{m}baɮa'* mbaɮaʔ	*m-baɮa-ʔ	*mØ-paɮa-k^w		2

[4] Central Chadic has three widespread roots for the local traditional 'beer' (now extended to include reference to all alcoholic beverages), which is made from millet/sorghum and sold by women in the villages, and which has very important social and cultural functions. Given the existence of three separate roots, either the culture of beer-making has been invented independently in a parallel fashion across the Central Chadic area, or the roots refer to different stages of the process of beer-making (see footnote 6 on Lamang *mbazla*). The root *ma-**paɮa** is linked by Gravina (2015) to Kanuri ^{m}bal. Possibly, the Kanuri borrowed the term from Central Chadic, or both borrowed from an unidentified third donor. It is the only CC root so far that would appear to have both a stable prefixal augment (which almost always fuses with the root-initial consonant and results in a homorganic nasal cluster or prenasalisation) and a stable vocalisation pattern, which does not allow for different root types as is usual for PCC roots. This could be pointing to its nature as a loan into Central Chadic. The relevance of these observations remains unclear in the light of the rather limited number of occurrences of the root across CC languages. Note that Malgwa (Mandara) is the only language in the database to have reflexes of all three roots.

[5] The change of place of articulation of the initial consonant in Mbudum is unexpected in the light of the rich available data and would appear to be completely unmotivated. In Daba, the final glottal stop has no equivalent in other languages. These two observations might also point in the direction of a non-CC origin of the root, i.e. loan, whereby the details of borrowing remain to

1. *p > d (see footnote); homorganic assimilation *m > n/_d 2. *p > b; *k^{w} > ʔ					
Sukur					
Sukur	*məpaɮə*	*m-paɮa	*mØ-paɮa	*ma-paɮa	1
1. ə-epenthesis; lexical-final *a > ə					
Mandara					
Mandara	*^{m}baɮa* mbaɮa	*m-baɮa	*mØ-paɮa	*ma-paɮa	1
Malgwa	*^{m}badhla* mbaɮa				1
1. *p > b/m__					
Mofu					
Ouldeme	*^{m}baɮa* mbaɮa	*m-baɮa	*mØ-paɮa	*ma-paɮa	1
Muyang	*^{m}baɮa* mbaɮa				1
Moloko	*^{m}baɮa* mbaɮa				1
Mofu North	*^{m}baɮa* mbaɮa				1
Mofu-Gudur	*^{m}baɮa* mbaɮa				1
1. *p > b/m__					
Lamang[6]					
Lamang[6]	*mbazla*	*m-baɮa	*mØ-baɮa	*ma-paɮa	1
1. *p > b/m__					

belch, to[7]

PCC *(ma-, RED-) **g^{w}(a)ɗ(a)ɮa** (-a, -y, -k^{w}, -n; FV)

Daba					
				√ C C Ca	
Mbudum	*ŋgərɮ* ŋgərɮ	*ŋ-grɮ	*mØ-grɮØ	*ma-g^{w}ɗɮa	1
				√ C CaCa	
Buwal	*ɗaɮ*	*ɗaɮ	*ØɗaɮØ	*g^{w}ɗaɮa	
1. *g^{w} > g; *ɗ > r; ə-epenthesis; homorganic assimilation *m > ŋ/_g					

be worked out. In the present study, we treat this root as if it was a CC areal root and attempt to 'reconstruct' it in the same way as other 'Pseudo'-PCC roots. We consider the Sukur form the key to understanding the original 'prefixal' structure of this augmented root.

6 Used in an expression referring to a calabash shard used to scrape out beer sediment. The general term in Lamang for 'beer' made from sorghum/millet is *ɣuzo* ('beer$_2$').

7 As Gravina (2015) points out, this root is the voiced equivalent of the root for 'cough' and vice versa – at least on the PCC level of reconstruction. This neat (non-accidental/onomatopoeic?) interrelationship no longer holds for some of the modern CC languages.

MAFA

				√ C C Ca	
Mafa	*guɮa* gʷəʷɮa	*gʷɮa	*gʷØɮa	*gʷdɮa	1
				√ C CaCa	
Cuvok	*ɗaɮa*	*ɗaɮa	*ØɗaɮaØ	*gʷɗaɮa	
1. ə-epenthesis; +W: ə > u					

HURZA

Mbuko	*ɗəɮe* dəɮaʸ	*dɮa-Øʸ	*ØdɮaØ-y	*gʷdɮa(-y/-na, -kʷ-na)	1
Vameˢ	*ɮanaŋa* ɮanaŋa	*ɮa-na-ŋa	*ØØɮa-na-k-na		2
1. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. *kʷ > k; fusion kn > ŋ; see footnote					

MARGI

Margi	*ɮa'wi* ɮaʔwy	*ɮaʔw-y	*waʔɮØ-y	*gʷadɮa-y	1
Bura	*ɮaɓʷi* ɮaɓʷy	*ɮaʔØʷ-y	*Øʷaʔɮ Ø-y		2
1. *gʷ > w; *ɗ > ʔ; multiple metathesis wʔɮ > ɮʔw; *y > i 2. ɗ > ʔ; multiple metathesis gʷʔɮ > ɮʔgʷ; *gʷ > Øʷ; fusion Øʷ+ʔ > ɓʷ; *y > i					

MANDARA

Matal	*magɮay* magɮay	*ma-gɮ-ay	*ma-gØɮØ-a-y		1
Glavda	*giɮˀga* gəʸɮəga	*gɮ-Øʸ-ga	*gØɮØ-y-ka	*(ma-)gʷdɮa(-a)-y(-kʷa)	2
Malgwa	*iidhla* əʸyɮa	*yɮa-Øʸ	*ØdɮaØ-y		3
1. *gʷ > g 2. *gʷ > g; *kʷ > k > g; ə-epenthesis; +Y: ə > ɨ 3. ə-prothesis; *ɗ > y; *y > Øʸ; +Y: ə > i; *y > i					

MOFU

				√ C C Ca	
Mofu-Gudur	*dəɮ* dəɮ	*dɮ	*ØdɮØ	*(ma-/RED-) gʷdɮa((-a)-y(a))	1
Ouldeme	*gəɮay* gəɮay	*gɮ-ay	*gØɮØ-a-y		2
Mada	*meʸgɮea* maʸᵍgɮaʸa	*mⁿa-gɮ-a-Øʸa	*ma-gØɮØ-a-ya		3
Zulgo	*ɮeɮe* ɮaʸɮaʸ	*ɮa-ɮa-Øʸ	*RED-ØØɮa-y		4
				√ C CaCa	
Merey	*raɬ*	*raɬ	*ØraɬØ	*(ma-)gʷɗaɮa(-y)	5
Gemzek	*mereɮe* maʸraʸɮaʸ	*ma-raɮa-Øʸ	*ma-Øraɮa-y		6
1. ə-epenthesis 2. *gʷ > g; ə-epenthesis 3. *gʷ > g; *y > Øʸ; +Y: *a > e; *m > mⁿ; +N: g > ᵑg 4. *y > Øʸ; +Y: *a > e 5. *ɗ > r; *ɮ > ɬ 6. *ɗ > r; *y > Øʸ; +Y: *a > e					

[8] The surface realisation of the Vame augmented root shape is unexpected in terms of the petrified augment surface sequence -na-ŋa < *-na-k-na. Currently, we have no explanation for the double occurrence of *{-n(a)} in this form.

MAROUA

Giziga- Muturwa	*'irɮi'i* ʔəʸrɮəʸʔy	*ʔr-ɮʔ-yʸ < *ʔɮ-ɮʔ-yʸ	< * ʔɮ-ʔɮ-y < *RED-ØdɮØ-y	*RED-gʷdɮa-y	1
1. *ɗ > ʔ; (after reduplication) metathesis in original root only: ʔɮ > ɮʔ; *ɮ > r (dissimilation in reduplicated root only); ə-epenthesis; *y > yʸ; +Y: ə > i					

LAMANG

Lamang[9]	*wułɗa* wəʷłɗa	*wʷłɗa	*wdła	*(ma-)gʷdɮa	1
Hdi	*ŋəɮu* ŋəɮw	*ŋɮw	*mØ-gwØɮa		2
1. *gʷ > w; *ɮ > ł; ; ə-epenthesis; +W: ə > u 2. re-segmentalisation *gʷ > g+w; fusion *mg > ŋ; metathesis wɮ > ɮw; w > u; ə-epenthesis					

HIGI

Bana	*ɮi* ɮy	*ɮ-y	*ØØɮØ-y	*gʷdɮa-y	1
1. *y > i					

KOTOKO-NORTH

Afade	*ɬ'e* ʔɬaʸ	*ʔɬa-Øʸ	*ØʔɬaØ-y	*(ma-)gʷdɮa (-y/-kʷ/-n)	1
	ɬ'aun ʔɬawn	*ʔɬa-w-n	*ØʔɬaØ-kʷ-n		2
Mpade	*ms'o* mʔsaʷ	*m-Øʷʔsa	*mØ-gʷʔsa		3
1. *ɗ > ʔ; *ɮ > ɬ; fusion ʔɬ > ɬʔ; *y > Øʸ; +Y: lexical-final *a > e 2. *gʷ > w; *kʷ > w; *ɗ > ʔ; *ɮ > ł; fusion ʔɬ > ɬʔ; w > u 3. *ɗ > ʔ; *ɮ > s; fusion ʔs > sʔ; *gʷ > Øʷ; +W: lexical-final *a > o					

KOTOKO-CENTRAL

Lagwan[10]	*(gel)iɬi* (gaʸl)əʸɬy	*galɬ-yʸ	*galɬØ-y	*gʷadɮa-y	1
1. *gʷ > g; *ɗ > l; *ɮ > ł; ə-epenthesis; *y > yʸ; +Y: ə > i ; +Y: *y > i					

belly

PCC ***xʷ(a)ɗa*** (-y, -ɗ, -kʷ)

MAFA

Mafa	*hʷaɗ*	*xʷadØ		*xʷaɗa	
Cuvok	*hʷaɗ*				

TERA

Ga'anda	*hʷira* xʷəʸra	*xʷra-yʸ	*xʷra-y	*xʷɗa-y	1
1. *ɗ > r; ə-epenthesis; *y > yʸ; +Y: ə > i					

SUKUR

Sukur	*huɗ* xʷəʷɗ	*xʷdØ	*xʷɗa	1
1. ə-epenthesis; +W: ə > u				

MANDARA

Podoko	*huɗa* xʷəʷɗa	*xʷɗa	*xʷɗa	*xʷɗa(-y)	1
Glavda	*xuɗa* xʷəʷɗa				1
	xʷəd	*xʷdØ			2
Matal	*hʷəɗ*				2

[9] Cognate root 'cough' from Wolff (2015), not contained in Gravina (2015). Generally, an etymological relationship between the roots 'cough' and 'belch' would be plausible.

[10] The database gives *gel iɬi* transcribed as two words, of which only *iɬi* is considered by the compiler of the database to be the cognate part (see Gravina 2015). Since no separate meaning for *gel* is indicated, we might as well consider the whole expression to be cognate. This is reflected in our reconstruction here, but by enclosing the *gel* part in parentheses.

Mandara	*hud̂e* $x^wə^wd̂a^y$	*$x^wd̂a$-$Ø^y$	*$x^wd̂a$-y		3
Malgwa	*hud̂e* $x^wə^wd̂a^y$				3
Dghwede	*$x^wt'e$* $x^wd̂a^y$				4
1. ə-epenthesis; +W: ə > u 2. ə-epenthesis; *ɗ̂ > d (transcription error?) 3. ə-epenthesis; +W: ə > u; *y > $Ø^y$; +Y: lexical-final *a > e 4. *y > $Ø^y$; +Y: lexical-final *a > e					

MOFU

				√ C Ca	
Ouldeme	*xurad̂* $x^wə^wrad̂$	*x^wra-ɗ̂		*$x^wd̂a$(-ɗ)	1
Muyang	*hud̂* $x^wə^wd̂$	*$x^wdØ$			2
Zulgo	*hud̂* $x^wə^wd̂$				2
Merey	*hud̂* $x^wə^wd̂$				2
Gemzek	*hud̂* $x^wə^wd̂$				2
				√ CaCa	
	hod̂ $x^wa^wd̂$	*$x^wadØ$		*$x^wad̂a$	3
Mada	*hod̂* $x^wa^wd̂$				3
Moloko	*hod̂* $x^wa^wd̂$				3
Mofu North	*$h^wad̂$*				
Mofu-Gudur	*$h^wad̂$*				
Dugwor	*wad̂*	*wadØ			4
1. *ɗ̂ > r; ə-epenthesis; +W: ə > u 2. ə-epenthesis; +W: ə > u 3. +W: *a > o 4. *x^w > w					

MAROUA

Mbazla	*wuru* $w^wə^wrə^w$	*w^wra	*w^wra	*$x^wd̂a$	1
	awuru $aw^wə^wrə^w$	*aw^wra			2
1. *x^w > w^w; *ɗ̂ > r; ə-epenthesis; lexical-final *a > ə; +W: ə > u 2. *x^w > w^w; *ɗ̂ > r; a-prothesis; ə-epenthesis; lexical-final *a > ə; +W: ə > u					

LAMANG

Lamang	*xudî* $x^wə^wdy$	*$x^wdØ$-y		*$x^wd̂a$-y	1
Hdi	*xudî* $x^wə^wdy$				1
1. ə-epenthesis; +W: ə > u; *y > i					

HIGI

Kamwe-Nkafa	*h^wi* x^wy	*x^w-y	*$x^wØØ$-y	*$x^wd̂a$(-y)	1
Kamwe-Futu	*h^wi* x^wy				1
Bana	*$x^wər$* $x^wər$	*$x^wrØ$	*x^wra		2
Kirya	*h^wur* $x^wə^wr$				3
1. *y > i 2. *ɗ̂ > r; ə-epenthesis 3. *ɗ̂ > r; ə-epenthesis; +W: ə > u					

MUSGUM

Vulum	*war*	*warØ	*wara	*$x^wad̂a$	1
Mbara	*war*				1
1. *x^w > w; *ɗ̂ > r					

bird

PCC *(ma-) **ɗ(a)y(a)kʷa** (-n)

MAFA

Mafa	*ɗ'iyak* dəʸyak	*ɗʸyakØ	*ɗyakʷa	1
Cuvok	*ɗ'iyak* dəʸyak			1
1. *kʷ > k; *y > yʸ; ə-epenthesis; +Y: ə > i				

TERA

Tera	*ɗ'iki* ɗykəʸ	*ɗʸkə	*ɗykʷa	1
	dyika[11] ɗyəʸka	*ɗʸka		2
1. *kʷ > k; lexical-final *a > ə; *y > yʸ; *y > i; +Y: ə > i 2. *kʷ > k; (*ɗ' = d transcription error); ə-epenthesis; *y > yʸ; +Y: ə > i				

SUKUR

Sukur	*'yak* ʔyak	*ʔyakØ	*ɗyakʷa	1
1. *ɗ' > ʔ; *kʷ > k				

MARGI

				√ C C Ca	
Bura	*ɗ'ika* ɗyka	*ɗyka		*ɗykʷa	1
Margi	*'ikyi* ʔykʸəʸ	*ʔyʸka	*ʔyka		2
				√ C CaCa	
Kilba	*'yaku* ʔyakw	*ʔyakwØ		*ɗyakʷa	3
	'yagu ʔyagw	*ʔyagwØ			4
Margi-South	*'yagu* ʔyagw				4
1. *kʷ > k; *y > i 2. *ɗ' > ʔ; *kʷ > k; *y > yʸ; *y > i; lexical-final *a > ə; +Y: ə > i; +Y: k > kʸ 3. *ɗ' > ʔ; *kʷ > k+w; w > u 4. *ɗ' > ʔ; *kʷ > g+w; w > u					

MANDARA

				√ C C Ca	
Glavda	*ɗ'i:ka* dəʸyka	*ɗʸka		*ɗykʷa(-n)	1
	ɗ'ii dəʸy	*ɗʸØØ			2
Podoko	*ɗ'iya* dəʸya	*ɗʸØa			3
Mandara	*y'ie* dʸyaʸ				4
Malgwa	*gyiye* dʸəʸyaʸ				5
Dghwede	*t'iⁿge* ɗyⁿgaʸ	*ɗʸga-Øⁿ	*ɗyga-nⁿ		6
				√ C CaCa	
Matal	*dəyaŋ* dəyaŋ	*ɗyaŋ	*ɗyakØ-n	*ɗyakʷa-n	7
	ɗ'iyaŋ dəʸyaŋ	*ɗʸyaŋ			8
1. *kʷ > k; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

[11] Transcription error (Newman, p.c. 2022) in the database, which has d instead of ɗ.

2. ə-epenthesis; *y > y^y; +Y: ə > i; *y > i
3. ə-epenthesis; *y > y^y; +Y: ə > i
4. *y > y^y; +Y: *ɗ̀ > $ɟ^y$; *y > i; +Y: lexical-final *a > e
5. *y > y^y; +Y: *ɗ̀ > $ɠ^y$; ə-epenthesis; +Y: ə > i; +Y: lexical-final *a > e
6. *k^w > g; *y > y^y; +Y: lexical-final *a > e; *n > $Ø^n$; +N: g > ^{ŋ}g
7. ə-epenthesis; *k^w > k; fusion *nk > ŋ
8. ə-epenthesis; *k^w > k; fusion *nk > ŋ; *y > y^y; +Y: ə > i

Mofu

				√ C C Ca	
Muyang	*edîŋ* a^yɗy^yŋ	*Øa-ɗy^yŋ	*ma-ɗykØ-n	*(ma-)ɗyk^wa-n	1
Gemzek	*diyiŋ* d$ə^y y ə^y$ŋ	*dy^yŋ	*dykØ-n		2
	dîyiŋ də̀$^y y ə^y$ŋ	*ɗy^yŋ	*ɗ̀ykØ-n		2
Moloko	*edəyen* a^ydəya^yn	*Øa-ɗy^yØa-n	*ma-ɗyka-n		3
				√ C CaCa	
Zulgo	*dîyeŋ* də̀$^y y a^y$ŋ	*ɗy^yaŋ	*ɗyakØ-n	*(ma-)ɗyak^wa-n	4
Merey	*dîyeŋ* də̀$^y y a^y$ŋ				4
Dugwor	*dîyeŋ* də̀$^y y a^y$ŋ				4
Mofu-Gudur	*dîyaŋ* də̀^{y}yaŋ				5
Ouldeme	*adɛ̀ŋ*^{w} adə̀^{y}ŋ^w	*Øa-dØ^{y}aŋ^w	*ma-ɗyak^{w}Ø-n		6

1. *y > y^y > i; +Y: *a > e; *k^w > k; fusion *kn > ŋ
2. ə-epenthesis; *y > y^y; +Y: ə > i; *k^w > k; fusion *kn > ŋ; (transcription error d = ɗ̀?)
3. ə-epenthesis; *y > y^y; +Y: a > e
4. ə-epenthesis; *y > y^y; +Y: ə > i; +Y: *a > e; *k^w > k; fusion *kn > ŋ
5. ə-epenthesis; *y > y^y; +Y: ə > i; *k^w > k; fusion *kn > ŋ
6. *y > $Ø^y$; +Y: *a > e; fusion *k^wn > $ŋ^w$

Maroua

			√ C C Ca	
Giziga-Muturwa	*dîyu(w)* də̀^{y}yw	*ɗy^ywØ	*ɗyk^{w}a	1
			√ C CaCa	
Mbazla	*dîyaw* də̀^{y}yaw	*ɗy^yawØ	*ɗyak^{w}a	1
Giziga-Marva	*dîyew* də̀^{y}ya^{y}w			2

1. *k^w > w (> u); ə-epenthesis; *y > y^y; +Y: ə > i
2. *k^w > w; ə-epenthesis; *y > y^y; +Y: ə > i; +Y: *a > e

Lamang

Lamang	*dîyaka* də̀^{y}yaka	*ɗy^yaka	*ɗyak^{w}a	1
Hdi	*dîyak* də̀^{y}yak	*ɗy^yakØ		1

1. *k^w > k; ə-epenthesis; *y > y^y; +Y: ə > i

Higi

Kirya	*ikə* ykə	*yka	*Øyka	*ɗyk^{w}a	1
Kamwe-Futu	*iyo* $ə^y ya^w$	*y^yØ^{w}a	*Øyk^{w}a		2
Bana	*'yig^{w}u* ʔyə^{y}g^{w}w	*ʔy^yg^{w}w	*ʔyg^{w}Ø		3

1. *k^w > k; *y > i; lexical-final *a > ə
2. ə-prothesis; +Y: ə > i; *k^w > $Ø^w$; +W: lexical-final *a > o
3. *ɗ̀ > ʔ; *k^w > g^w > g^w + w; w > u; ə-epenthesis; *y > y^y; +Y: ə > i

bite$_1$, to

PCC *(ma-, k^{w}a-) **dza** (-a, -y, -n, -k^w, -x ; FV)

DABA

Gavar	*ŋtsa*	*ŋ-tsa	*mØ-kØ-tsa(-y)	*ma-k^{w}a-dza(-y)	1
Buwal	*ŋtʃa* ŋts^{y}a	*ŋ-tsa-Ø^y			2
Daba	*ⁿgatʃ* ŋgats^y	*ŋ-ga-tsØ-Ø^y	*mØ-ka-tsa-y		3
1. *dz > ts; *k^w > k; fusion mk > ŋ 2. *dz > ts; *k^w > k; fusion mk > ŋ; *y > Ø^y; +Y: ts > tʃ 3. *dz > ts; y > Ø^y; +Y: ts > tʃ; *k^w > k > g; homorganic assimilation *m > ŋ/_g					

MAFA

Mafa	*dʒ-* dz^y-	*dzØ-Ø^y		*(ma-)dza-y	1
	ndʒe ndz^{y}a^y	*n-dza-Ø^y	*mØ-dza-y		2
1. *y > Ø^y; +Y: dz > dʒ 2. homorganic assimilation *m > n/_dz; *y > Ø^y; +Y: dz > dʒ; +Y: lexical-final *a > e					

MANDARA

Malgwa	*dʒa* dz^{y}a	*dza-Ø^y	*dza-y	*(ma-)dza (-a,-y,-k^w,-x, FV)	1
Dghwede	*ⁿdzaxa* ndzaxa	*n-dza-xa	*mØ-dza-xa		2
Podoko	*ⁿdʒewe* ndz^{y}a^{y}wa^y	*n-dza-Ø^y-wa	*mØ-dza-y-k^{w}a		3
Matal	*matsay*	*ma-ts-ay	*ma-tsØ-a-y		4
1. *y > Ø^y; +Y: dz > dʒ 2. homorganic assimilation *m > n/_dz 3. *y > Ø^y; +Y: dz > dʒ; *k^w > w; homorganic assimilation *m > n/_dz; +Y: *a > e 4. *dz > ts					

MOFU

Ouldeme	*matsay*	*ma-ts-ay	*ma-tsØ-a-y	*(ma-)dza(-a,-y,-n)	1
Zulgo	*dze(-r)* dza^y(-r)	*dza-Ø^y(-n)	*dza-y(-n)		2
Gemzek	*dzay*	*dz-ay	*dzØ-a-y		
	medze ma^{y}dza^y	*ma-dza-Ø^y	*ma-dza-y		3
Mofu North	*mezey* ma^{y}za^{y}y	*ma-z-ay^y	*ma-zØ-a-y		4
Mofu-Gudur	*z*	*zØ			5
1. *dz > ts 2. *y > Ø^y; +Y: lexical-final *a > e; (*n > r) 3. *y > Ø^y; +Y: *a > e 4. *dz > z; *y > y^y; +Y: *a > e 5. *dz > z					

MAROUA

Mbazla	*tʃi* ts^{y}y	*ts-y^y	*tsØ-y	*dza-y	1
1. *dz > ts; *y > y^y; +Y: *ts > tʃ; *y > i					

bite$_2$/chew, to

PPC *(ma-, RED-) **x^{w}(a)p(a)ɗa** (-a, -y; -k^{w}; FV)

HURZA

Mbuko	*pa*	*pa	*ØpØa	*x^{w}pɗa	
Vame	*piya* pə^{y}ya	*py^{y}a	*Øpya		1
1. ə-epenthesis; *ɗ > y > y^{y}; +Y: ə > i					

MARGI

Margi	*bdə*	*bdə	*Øbdə	*x^{w}pɗa(-y)	1
Bura	*bda*	*bda	*Øbda		2
	bdi bdy	*bd-y	*ØbdØ-y		3
1. *p > b; lexical-final *a > ə 2. *p > b; *ɗ > d 3. *p > b; *ɗ > d; *y > i					

MANDARA

Podoko	*upaɗa* wpaɗa	*wpaɗa		*x^{w}paɗa(-k^{w}a)	1
Malgwa	*ukpaɗa* ə^{w}k^{w}paɗa	*k^{w}paɗa			2
Glavda	*xupaɗ^{ɔ}ga* x^{w}ə^{w}paɗ̠ga	*x^{w}paɗ̠-ga	*x^{w}paɗØ-ga		3
1. *x^{w} > w > u 2. *x^{w} > k^{w}; ə-prothesis; +W: ə > u 3. ə-epenthesis; +W: ə > u; *k^{w} (> k) > g					

MOFU

				√ C C Ca	
Muyang	*həpəɗ̠*	*xpɗ̠	*xpdØ	*(ma-)x^{w}pɗa(-a, -y)	1
Merey	*həpəɗ̠*				1
Gemzek	*mehəpəɗe* ma^{y}xəpəɗa^{y}	*ma-xpɗa-Ø^{y}	*ma-xpɗa-y		2
Dugwor	*məpəɗ̠ey* məpəɗa^{y}y	*m-pɗ̠-ay^{y}	*mØ-ØpdØ-a-y		3
				√ CaC Ca	
Mofu-Gudur	*ha^{m}bəɗ̠*	*Ø^{n}-xabɗ̠	*m^{n}Ø-xabdØ	*ma-x^{w}apɗa	4
				√ C CaCa	
Ouldeme	*paɗ̠*	*paɗ̠	*ØpadØ	*(RED-)x^{w}paɗa	
Moloko	*paɗ̠*				
Zulgo	*papəɗ̠*	*pa-pØɗ̠	*RED-ØpadØ		5
1. *x^{w} > x; ə-epenthesis 2. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 3. ə-epenthesis; *y > y^{y}; +Y: *a > e 4. *x^{w} > x; *p > b; ə-epenthesis; *m > Ø^{n}; +N: b > ^{m}b 5. ə-epenthesis (after REDuplication and medial a > Ø)					

LAMANG

				√ C C Ca	
Hdi	*xi'ida* xə^{y}ʔə^{y}da	*xʔda-Ø^{y}	*xØʔda-y	*x^{w}pɗa-y	1
				√ C CaCa	
Lamang	*xpaɗa*	*xpaɗa		*x^{w}paɗa	2
1. *x^{w} > x; re-segmentalisation *ɗ > ʔ+d; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *x^{w} > x					

blind (to be), blind person

PCC *(ma-, na-) **ɣʷ(a)r(a)fa**(-y, -kʷ, -n; FV)

BATA

Tsuvan	*awəlfe* awəlfaʸ	*a-wlfa-Øʸ	*Øa-wlfa-y	*(ma-)ɣʷrfa(-y,-n)	1
Gude	*muurəfa* məʷwrəfa	*m-wʷrfa	*mØ-wrfa		2
	uurəfə əʷwrəfə	*wʷrfa			3
Jimi	*wərəfən*	*wrfa-n			4
1. *ɣʷ > w; *r > l; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. *ɣʷ > wʷ; ə-epenthesis; +W: ə > u; w > u 3. *ɣʷ > wʷ > u; ə-pro- & epenthesis; lexical-final *a > ə; +W: ə > u 4. *ɣʷ > w; ə-epenthesis; lexical-final a > ə					

DABA

				√ C C Ca	
Gavar	*wələf* wələf	*wlf	*wlfØ	*ɣʷrfa	1
Daba	*wələf* wələf				1
Mbudum	*wuləf* wʷəʷləf	*wʷlf	*wʷlfØ		2
				√ C CaCa	
Buwal	*ulaf* wlaf	*wlaf	*wlafØ	*ɣʷrafa	3
1. *ɣʷ > w; *r > l; ə-epenthesis 2. *ɣʷ > wʷ; *r > l; ə-epenthesis; +W: ə > u 3. *ɣʷ > w > u; *r > l					

HURZA

Mbuko	*hurof* xʷəʷraʷf	*xʷraf	*xʷrafØ	*ɣʷrafa	1
Vame	*ɣulaf* ɣʷəʷlaf	*ɣʷlaf	*ɣʷlafØ		2
1. *ɣʷ > xʷ; ə-epenthesis; +W: ə > u; +W: *a > o 2. *r > l; ə-epenthesis; +W: ə > u					

MARGI

Margi	*ləfə*	*lfa	*Ølfa	*ɣʷrfa	1
Kilba	*wulfu* wʷəʷlfəʷ	*wʷlfa			2
1. *r > l; ə-epenthesis; lexical-final *a > ə 2. *ɣʷ > wʷ; *r > l; ə-epenthesis; lexical-final *a > ə; +W: ə > u					

MANDARA

				√ C C Ca	
Glavda	*gulfa* gʷəʷlfa	*gʷlfa		*(na-)ɣʷrfa(-y)	1
Matal	*guləf* gʷəʷləf	*gʷlf	*gʷlfØ		1
	gʷələf				2
Malgwa	*wulfe* wʷəʷlfaʸ	*wʷlfa-Øʸ	*wʷlfa-y		3
	ŋulfe ŋwlfaʸ	*ŋwlfa-Øʸ	*nØ-wlfa-y		4
Podoko	*ᵑguləfa* ŋgʷəʷləfa	*ŋ-gʷlfa	*nØ-gʷlfa		5
	ləfa	*lfa	*Ølfa		6
				√ CaC Ca	

Mandara	*welfe* wa^{y}lfa^{y}	*walfa-Ø^{y}	*walfa-y	*ɣ^{w}arfa-y	7
1. *ɣ^{w} > g^{w}; *r > l; ə-epenthesis; +W: ə > u 2. *ɣ^{w} > g^{w}; *r > l; ə-epenthesis 3. *ɣ^{w} > w^{w}; *r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 4. *ɣ^{w} > w > u; *r > l; *y > Ø^{y}; +Y: lexical-final *a > e; homorganic assimilation *n > ŋ/_w 5. *ɣ^{w} > g^{w}; *r > l; ə-epenthesis; homorganic assimilation *n > ŋ/_g^{w} 6. *r > l; ə-epenthesis 7. *ɣ^{w} > w; *r > l; *y > Ø^{y}; +Y: *a > e					

Mofu

				√ C C Ca	
Ouldeme	*wuləf* w^{w}ə^{w}ləf	*w^{w}lf	*w^{w}lfØ	*ɣ^{w}rfa	1
Zulgo	*guluf* g^{w}ə^{w}ləf	*g^{w}lf	*g^{w}lfØ		2
Merey	*guluf* g^{w}ə^{w}ləf				2
Mofu-Gudur	*hulf* x^{w}ə^{w}lf	*x^{w}lf	*x^{w}lfØ		3
	wulf w^{w}ə^{w}lf	*w^{w}lf	*w^{w}lfØ		1
				√ C CaCa	
Mada	*muwlofa* mə^{w}wla^{w}fa	*m-w^{w}lafa	*mØ-w^{w}lafa	*(ma-)ɣ^{w}rafa	4
Moloko	*hələf* xəla^{w}f	*x^{w}laf	*x^{w}lafØ		5
Gemzek	*gulof* g^{w}ə^{w}la^{w}f	*g^{w}laf	*g^{w}lafØ		6
Dugwor	*gulof* g^{w}ə^{w}la^{w}f				6
Mofu North	*wulaf* w^{w}ə^{w}laf	*w^{w}laf	*w^{w}lafØ		7
Mofu-Gudur	*wulaf* w^{w}ə^{w}laf				7
1. *ɣ^{w} > w^{w}; *r > l; ə-epenthesis; +W: ə > u 2. *ɣ^{w} > g^{w}; *r > l; ə-epenthesis; +W: ə > u 3. *ɣ^{w} > x^{w}; *r > l; ə-epenthesis; +W: ə > u 4. *ɣ^{w} > w^{w}; *r > l; ə-epenthesis; +W: ə > u; +W: *a > o 5. *ɣ^{w} > x^{w}; *r > l; ə-epenthesis; +W: *a > o 6. *ɣ^{w} > g^{w}; *r > l; ə-epenthesis; +W; ə > u: +W: *a > o 7. *ɣ^{w} > w^{w}; *r > l; ə-epenthesis; +W: ə > u					

Maroua

				√ C C Ca	
Giziga-Muturwa	*huluf* x^{w}ə^{w}lə^{w}f	*x^{w}lf	*x^{w}lfØ	*ɣ^{w}rfa	1
				√ C CaCa	
Giziga-Marva	*hulof* x^{w}ə^{w}la^{w}f	*x^{w}laf	*x^{w}lafØ	*ɣ^{w}rafa	2
1. *ɣ^{w} > x^{w}; *r > l; ə-epenthesis; +W: ə > u 2. *ɣ^{w} > x^{w}; *r > l; ə-epenthesis; +W: ə > u; +W: *a > o					

Lamang

Lamang	*ɣulpa* ɣ^{w}ə^{w}lpa	*ɣ^{w}lpa	*ɣ^{w}lpa	*ɣ^{w}rfa(-k^{w})	1
Hdi	*ɣulpaku* ɣ^{w}ə^{w}lpakw	*ɣ^{w}lpa-kw	*ɣ^{w}lpa-k^{w}		2
1. *r > l; *f > p; ə-epenthesis; +W: ə > u 2. *r > l; *f > p; ə-epenthesis; +W: ə > u; re-segmentalisation *k^{w} > k+w; w > u					

Higi

				√ C C Ca	
Bana	*ɣ^{w}ələf*	*ɣ^{w}lf	*ɣ^{w}lfØ	*(ma-)ɣ^{w}rfa(-y(a))	1
Kamwe-Nkafa	*ɣuli* ɣ^{w}ə^{w}ly	*ɣ^{w}l-y	*ɣ^{w}lØØ-y		2

Kamwe-Futu	*ɣuləpi* ɣʷəʷləpy	*ɣʷlp-y	*ɣʷlpØ-y		3
	ɣulə ɣʷəʷlə	*ɣʷla	*ɣʷlØa		4
Kirya	*məɣuɾipaə* məɣʷəʷɾəʸpaə	*m-ɣʷɽpa-Øʸə	*mØ-ɣʷlpa-ya		5
				√ CaC Ca	
Kamwe-Nkafa	*ɣʷeli* ɣʷaʸly	*ɣʷal-yʸ	*ɣʷalØØ-y	*ɣʷarfa-y	6
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; +W: ə > u; *y > i 3. *r > l; *f > p: ə-epenthesis; +W: ə > u; *y > i 4. *r > l; ə-epenthesis; +W: ə > u; lexical-final *a > ə 5. *r > l; *f > p; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: l > ɽ; +Y: ə > i; FV *a > ə 6. *r > l; *y > yʸ; +Y: *a > e; *y > i					

Kotoko-Central

				√ C C Ca	
Lagwan	*nxuɦi* nxʷəʷfy	*m-xʷf-y	*mØ-xʷØfØ-y	*ma-ɣʷrfa-y	1
				√ CaC Ca	
Mser	*ngʷafi* ngʷafaʸ	*m-gʷafa-Øʸ	*mØ-gʷaØfa-y	*ma-ɣʷarfa-y	2
1. *ɣʷ > xʷ; ə-epenthesis; +W: ə > u; *y > i; partial assimilation *m > n/_xʷ 2. *ɣʷ > gʷ; lexical-final *a > ə; *y > Øʸ; +Y: ə > i; partial assimilation *m > n/_xʷ					

Kotoko-South

Zina	*ɣʷayra*	*ɣʷayra	*ɣʷarØa-y	*ɣʷarfa-y	1
1. metathesis ry > yr					

blood

PCC *(RED-, xa-, ma-) **xw(a)b(a)za** (-y)

Bata

Bachama	*zaᵐbe* zaᵐbaʸ	*Øⁿ-Øzaba-Øʸ	*mⁿØ-Øbaza-y	*ma-xʷbaza-y	1
Bata	*zaaᵐbe* zaaᵐbaʸ				2
1. metathesis bz > zb; *y > Øʸ; +Y: lexical-final *a > e; *m > mⁿ; +N: *b > ᵐb 2. metathesis bz > zb; *y > Øʸ; +Y: lexical-final *a > e; *m > mⁿ; +N: *b > ᵐb; (vowel length unaccounted for)					

Daba

					√ C C Ca	
Mbudum	*muᵐbəz* mʷəʷmbəz	*m-m-ʷbz		*RED-mØ-ØʷbzØ	*RED-ma-xʷbza	1
Gavar	*'ampəs*	*ʔa-m-ps	*ma-mØ-ps	*RED-ma-ØpsØ	*RED-ma-xʷbza	2
					√ C CaCa	
Buwal	*ᵐbaᵐbaz* mbambaz	*m-baØ-m-baz		*RED-mØ-ØbazØ	RED-*ma-xʷbaza	
1. *xʷ > Øʷ; ə-epenthesis; +W: ə > u 2. *b > p; *z > s; ə-epenthesis; RED: *m > ʔ						

Mafa

Mafa	*paᵐbaz* pambaz	*Øba-m-baz	*RED-mØ-ØbazØ	*RED-	1
Cuvok	*beᵐbez* baʸmbaʸz	*Øba-mbaz-Øʸ	*RED-mØ-ØbazØ-y	ma-xʷbaza(-y)	2

1. RED: *b > p; 2. *y > Øʸ; +Y: *a > e

Sukur

Sukur	*mu^{m}buss*[12]	mʷəʷmbʷəʷs	*m-m-ʷbs	*RED-mØ-ØʷbsØ	*RED-ma-xʷbza	1
1. *xʷ > Øʷ; *z > s; ə-epenthesis; RED +W: *m > mʷ; +W: *b > bʷ; +W: ə > u; (length of final /ss/ not accounted for; see footnote)					

Hurza

Mbuko	*mez* maʸz	*ma-z-Øʸ	*ma-ØØzØ-y	*(RED-)	1
Vame	*munʒe* məʷnzʸaʸ	*m-m-ʷza-Øʸ	*RED-mØ-ØʷØza-y	ma-xʷbza-y	2
1. *y > Øʸ; +Y: *a > e 2. *xʷ > Øʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: z > ʒ; +Y: lexical-final *a > e; homorganic assimilation *m > n/_z					

Margi

Kilba	*mafi* masʸy	*ma-s-yʸ	*ma-ØØsØ-y	*ma-xʷbza-y	1
1. *z > s; *y > yʸ > i; +Y: s > ʃ					

Mandara

				√ C C Ca	
Podoko	*muza* mwza	*m-wza	*mØ-wØza	*(ma-)xʷbza(-y)	1
Mandara	*uʒe* wzʸaʸ	*wza-Øʸ	*wØza-y		2
Malgwa	*uuʒe* əwzʸaʸ				3
				√ CaC Ca	
Matal	*aŋiz* aŋəʸz	*ŋz-Øʸ	*mØ-xaØzØ-y	*ma-xʷabza-y	4
	aŋiʒ aŋəʸzʸ				5
1. *xʷ > w > u 2. *xʷ > w > u; *y > Øʸ; +Y: *z > ʒ; +Y: lexical-final *a > e 3. ə-prothesis; *xʷ > w > u; *y > Øʸ; +Y: *z > ʒ; +Y: lexical-final *a > e 4. *xʷ > x; ə-epenthesis; fusion *mx > ŋ; *y > Øʸ; +Y: ə > i 5. *xʷ > x; ə-epenthesis; fusion mx > ŋ; *y > Øʸ; +Y: *z >ʒ; +Y: ə > i					

Mofu

				√ C C Ca	
Ouldeme	*amiz* aməʸz	*Øamz-Øʸ	*xʷamØzØ-y	*ma-xʷbza-y	1
Zulgo	*mə^{m}bəz* məmbəz	*m-m-bz	*RED-mØ-ØbzØ	*RED-ma-xʷbza	2
				√ CaC Ca	
Mada	*emeʒ* aʸmaʸzʸ	*Øamaz-Øʸ	*xʷamazØ-y	*ma-xʷabza-y	3
				√ C CaCa	
Mofu North	*ma^{m}baz*	*ma-mØ-baz	*RED-ma-ØbazØ	*RED-ma-xʷbaza	
Mofu-Gudur	mambaz				
Gemzek	*ba^{m}baz*	*Øba-m-baz	*RED-mØ-ØbazØ		
Merey	bambaz	< *mba-m-baz			
1. metathesis mxʷ > xʷm; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis 3. metathesis mxʷ > xʷm; ə-epenthesis; *y > Øʸ; +Y: z > ʒ; +Y: a > e					

[12] Transcription/copy error (*ss* instead of *s*)?

MAROUA

				√ C C Ca	
Giziga-Marva	*pu^{m}bus* p^{w}ə^{w}mb^{w}ə^{w}s	*Øp^{w}-m-b^{w}s	*RED-mØ-Ø^{w}bsØ	*RED-ma-x^{w}bza	1
				√ C C Ca	
Mbazla	*ha^{m}bus* xamb^{w}ə^{w}s	*xa-m-b^{w}s	*xa-mØ-Ø^{w}bsØ	*xa-ma-x^{w}bza	2
	a^{m}bus amb^{w}ə^{w}s	*Øa-m-b^{w}s			2
	'a^{m}bus ʔamb^{w}ə^{w}s	*ʔa-m-^{w}s			3
1. *x^{w} > Ø^{w}; *z > s; RED *b > p; ə-epenthesis; +W: *b > b^{w}; +W: p > p^{w}; +W: ə > u; 2. *x^{w} > Ø^{w}; *z > s; ə-epenthesis; +W: *b > b^{w}; +W: ə > u; 3. *x^{w} > Ø^{w}; *z > s; *x > ʔ; ə-epenthesis; +W: *b > b^{w}; +W: ə > u;					

LAMANG

Lamang	*ɣuɓsi* ɣ^{w}ə^{w}ɓsy	*ɣ^{w}ɓs-y	*ɣ^{w}bsØ-y	*x^{w}bza(-y)	1
	uɓsi w6sy	*wɓs-y	*wbsØ-y		2
Hdi	*us* ws	*ws	*wØsØ		3
1. *x^{w} > ɣ^{w}; *b > ɓ; *z > s; *y > i; ə-epenthesis; +W: ə > u 2. *x^{w} > w > u; *b > ɓ; *z > s; *y > i 3. *x^{w} > w > u; *z > s					

HIGI

Kamwe-Futu	*myimyi* m^{y}ym^{y}y	*m-y^{y}-m-y^{y}	*RED-mØ-ØØØØ-y	*RED-ma-x^{w}bza-y	1
Kamwe-Nkafa	*mimyi* mym^{y}y	*m-y-m-y^{y}			1
	mimi mymy	*m-y-m-y			2
Kirya	*mimi* mymy				2
Bana	*mimi* mymy				2
1. *y > y^{y}; +Y: *m > m^{y}; *y > i 2. *y > i					

blow$_1$, to[13]

PCC *(ma-) **v(a)ɮa** (-a, -y, -k^{w}, -n)

BATA

Bata	*fil* fə^{y}l	*flØ-Ø^{y}	*fla-y	*vɮa-y	1
1. *v > f; *ɮ > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

HURZA

Mbuko	*vəɮe* vəɮa^{y}	*vɮa-Ø^{y}	*vɮa-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e				

[13] It is not at all clear whether the two roots for 'blow, to' (also meaning 'breathe, to') should be kept distinct, as we do here and following Gravina (2015), or whether they are onomatopoeic variants of just one root. Also, borrowing in whatever direction might have played a role in the light of Shoa/Shuwa Arabic *fasa ~ fasi ~ fasu* (Gravina 2015).

Mofu

Merey	*vəɮ*	*vɮØ		*(ma-)vɮa(-a, -y)	1
Zulgo	*viɮ* vəʸɮ	*vɮ-Øʸ	*vɮØ-y		2
Dugwor	*məvəɮey* məvəɮaʸy	*mØ-vɮØ-a-yʸ	*ma-vɮa-a-y		3
Gemzek	*mevəɮe* maʸvəɮaʸ	*ma-vɮa-Øʸ	*ma-vɮa-y		4
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: ə > i 3. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 4. ə-epenthesis; *y > Øʸ; +Y: prefixal and lexical-final *a > e					

Lamang

Hdi	*vułay* vəʷɬay	*vɬ-ay-Øʷ	*vɬØ-a-y-kʷ	*vɮa-a-y-kʷ	1
1. *ɮ > ɬ; ə-epenthesis; *kʷ > Øʷ; +W: ə > u					

Kotoko-North

Mpade	*fil* fəʸl	*flØ-Øʸ	*fla-y	*vɮa-y	1
Malgbe	*file* fəʸlaʸ	*fla-Øʸ			2
1. *v > f; *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *v > f; *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

Kotoko-Central

Mser	*vil* vəʸl	*vl-Øʸ	*vlØ-y	*vɮa-y(-kʷ-n)	1
Lagwan	*vilwun* vəʸlwəʷn	*vl-Øʸ-wʷ-n	*vlØ-y-kʷ-n		2
1. *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > wʷ; +W: ə > u					

blow$_2$ (with mouth), breathe, to

PCC *(ma-, RED-) **v(a)tsa** (-a, -y, -kʷ, -n; FV)

Bata

Tsuvan	*avatskən*	*a-vats-k-n	*Øa-vatsØ-k-n	*ma-vatsa-kʷ-n	1
1. *kʷ > k; ə-epenthesis					

Sukur

Sukur	*vus* vəʷs	*vs-Øʷ	*vsØ-kʷ	*vtsa-kʷ	1
1. *ts > s; *kʷ > Øʷ; ə-epenthesis; +W: ə > u					

Hurza

Vame	*fuwa* fəʷwa	*f-wʷa	*fØØ-kʷa	*vtsa-kʷa	1
1. *v > f; *kʷ > wʷ; ə-epenthesis; +W: ə > u					

Margi

Bura	*fya* fya	*f-ya	*fØØ-ya	*vtsa-y(a)	1
	fi fy	*f-y	*fØØ-y		2
1. *v > f 2. *v > f; *y > i					

Mofu

				√ C Ca	
Mofu-Gudur	*f*	*f	*vØØ	*(ma-)vtsa(-a,-y(a)/-kʷ)	1
Moloko	*fe* faʸ	*fa-Øʸ	*vØa-y		2

Ouldeme	*vi* vy	*v-y	*vØØ-y		3
Muyang	*vu* vw	*v-w	*vØØ-k^{w}		4
Gemzek	*mevətse* ma^{y}vətsa^{y}	*ma-vtsa-Ø^{y}	*ma-vtsa-y		5
Dugwor	*mafay*	*ma-f-ay	*ma-fØØ-a-y		1
Mada	*mevea* ma^{y}va^{y}a	*ma-va-Ø^{y}a	*ma-vØa-ya		6
				√ CaCa	
Ouldeme	*vatsay*	*vats-ay	*vatsØ-a-y	*vatsa-a-y	

1. *v > f
2. *v > f; *y > Ø^{y}; +Y: lexical-final *a > e
3. *y > i
4. *k^{w} > w > u
5. ə-epenthesis; *y > Ø^{y}; +Y: *a > e
6. *y > Ø^{y}; +Y: *a > e

MAROUA

Giziga-Muturwa	*fi* fy	*f-y	*fØØ-y	*vtsa-y(-k^{w})	1
Giziga-Marva	*fi* fy				1
Mbazla	*fuwi* fə^{w}wy	*f-w^{w}-y	*fØØ-y-k^{w}		2

1. *v > f; *y > i
2. *v > f; *k^{w} > w^{w}; metathesis yw^{w} > w^{w}y; ə-epenthesis; +W: ə > u; *y > i

LAMANG

Lamang[14]	*va*	*va	*vØa	*vtsa(-ya)	
	viya və^{y}ya	*v-y^{y}a	*vØØ-ya		1

1. ə-epenthesis; *y > y^{y}; +Y: ə > i

HIGI

Kamwe-Nkafa	*vəsə*	*vsə	*vsa	*vtsa(-y)	1
Kamwe-Futu	*visi* və^{y}sy	*vs-y^{y}	*vsØ-y		2
	vi vy	*v-y	*vØØ-y		3
Kirya	*vi* vy				3
Bana	*viy* və^{y}y	*və-y^{y}	*vØa-y		4

1. *ts > s; ə-epenthesis; lexical-final *a > ə
2. *ts > s; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i
3. *y > i
4. ə-epenthesis; *y > y^{y}; +Y: ə > i

KOTOKO-ISLAND

Buduma	*fa*	*fa	*fØa	*vtsa	1

1. *v > f

[14] Clearly, *viya* refers to the blowing of the wind (see the expression *vìy-ùk-àa sáfáká* 'the blowing of the wind'; Wolff 2015 Vol.2: 493), and at the same time translates as 'rainy season', which is characterised by strong and cold winds. Whether and how this relates etymologically to *va* 'blow, to' is not clear. Note that the expression *vìy-ùk-àa sáfáká* suggests a synchronic biradical root **vya* for Lamang. The language is, however, known to occasionally create biradical 'pseudo'-roots from monoradical roots by fusion with and petrification of grammatical morphemes. This includes the root *va*, which allows for the pseudo-root **vata* (< *vá-tá*) 'blow by using bellows; reduce iron ore in furnace' and, possibly, **vya* (< *v-ya*) 'blowing of wind'.

KOTOKO-NORTH

				√ C Ca	
Afade	*fti* fty	*ft-y	*ftØ-y	*vtsa-y	1
				√ CaCa	
Mpade	*fasɨ* fasəʸ	*fasə-Øʸ	*fasa-y	*vatsa-y	2
Malgbe	*fasɨ* fasəʸ				2
1. *v > f; *ts > t; *y > i 2. *v > f; *ts > s; lexical-final *a > ə; *y > Øʸ; +Y: *ə > ɨ					

KOTOKO-CENTRAL

				√ C Ca	
Lagwan	*vifi* vəʸsʸy	*vs-yʸ	*vsØ-y	*vtsa-y	1
				√ CaCa	
Mser	*vas*	*vas	*vasØ	*vatsa	2
1. *ts > s; ə-epenthesis; *y > yʸ; +Y: s > ʃ; +Y: ə > i; *y > i 2. *ts > s					

MUSGUM

Mulwi	*vuvuwi* vəʷvəʷwy	*v-v-wʷ-y	*RED-vØØ-y-kʷ	*RED-vtsa-y-kʷ	1
1. *kʷ > wʷ; metathesis ywʷ > wʷy; ə-epenthesis; +W: ə > u; *y > i					

body, self

PCC *(na-) **ɣʷ(a)va** (-y)

MAFA

				√ C Ca	
Mafa	*va*	*va	*Øva	*ɣʷva	
				√ CaCa	
Cuvok	*vaw*	*vaw	*wavØ	*ɣʷava	1
1. *ɣʷ > w; metathesis wv > vw					

TERA

Tera	*va*	*va	*Øva	*ɣʷva	

SUKUR

Sukur	*və*	*və	*Øva	*ɣʷva	1
1. lexical-final *a > ə					

MANDARA

				√ C Ca	
Glavda	*v*	*v	*ØvØ	*ɣʷva(-y)	
Matal	*vək*	*vk	*kvØ		1
Dghwede	*vəga*	*vga	*gva		2
Mandara	*vua*	*vwa	*wva		3
Malgwa	*vuwe* vəʷwaʸ	*vwʷa-Øʸ	*wva-y		4
				√ CaCa	
Podoko	*kava*	*kava		*(na-)ɣʷava	5
	nava	*nØ-ava	*na-Øava		
1. *ɣʷ > k; metathesis kv > vk; ə-epenthesis 2. *ɣʷ > g; metathesis gv > vg; ə-epenthesis					

3. *ɣ^{w} > w; metathesis wv > vw; w > u 4. *ɣ^{w} > w^{w}; metathesis wv > vw; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 5. *ɣ^{w} > k

MOFU

				√ C Ca	
Gemzek	*ba*	*ba	*Øba	*ɣ^{w}va	1
Merey	*ba*				1
Dugwor	*ba*				1
Zulgo	*ba*				1
	va	*va	*Øva		
Mada	*va*				
Moloko	*va*				
Muyang	*vu* vw	*vw	*wvØ		2
Ouldeme	*vo* va^{w}	*vØ^{w}a	*vwa		3
				√ CaCa	
Mofu North	*vaw*	*vaw	*wavØ	*ɣ^{w}ava	4

1. *v > b 2. *ɣ^{w} > w > u; metathesis wv > vw 3. *ɣ^{w} > w > Ø^{w}; metathesis wv > vw; +W: lexical-final *a > o 4. *ɣ^{w} > w; metathesis wv > vw

MAROUA

Giziga-Marva	*vo* va^{w}	*vØ^{w}a	*vwa	*ɣ^{w}va	1

1. *ɣ^{w} > w > Ø^{w}; metathesis wv > vw; +W: lexical-final *a > o

LAMANG

Lamang	*ɣva*	*ɣva		*ɣ^{w}va	1
Hdi	*vəɣa*	*vɣa	*ɣva		2

1. *ɣ^{w} > ɣ 2. *ɣ^{w} > ɣ; metathesis ɣv > vɣ; ə-epenthesis

HIGI

Kirya	*və*	*və	*Øva	*ɣ^{w}va	1
Bana	*vɣa*	*vɣa	*ɣva		2
Kamwe-Nkafa	*g^{w}a*	*g^{w}a	*g^{w}Øa		3
Kamwe-Futu	*g^{w}o* g^{w}a^{w}				4
Psikye	*gəva*	*gva			5

1. lexical-final *a > ə 2. *ɣ^{w} > ɣ; metathesis ɣv > vɣ 3. *ɣ^{w} > g^{w} 4. *ɣ^{w} > g^{w}; +W: lexical-final *a > o 5. *ɣ^{w} > g; ə-epenthesis

boil, to

PCC *(ma-) **kʷ(a)ɗ(a)xa** (-a, -y, -kʷ, -n)

BATA

Bachama	*kʷaɗᵝasa* kʷaɗᵝasa	*kʷaɗàsa-Øʸ	*kʷaɗaxa-y	1
1. *x > s; *y > Øʸ; +Y: *ɗ̀ > dʸ				

DABA

				√ C C Ca	
Daba	*kuɗay* kəʷɗay	*kʷɗ-ay	*kʷɗØØ-ay	*kʷɗxa-a-y	1
				√ C CaCa	
Mbudum	*kydeh* kʸdaʸx	*kdax-Øʸ	*kɗaxØ-y	*kʷɗaxa-y	2
1. ə-epenthesis; +W: ə > u 2. *kʷ > k; *y > Øʸ; +Y: k > kʸ; +Y: *a > e; (transcription error ɗ = ɗ̀ or ɗ̀> ɗ ?)					

MAFA

Cuvok	*kuɗaha* kʷəʷɗaxa	*kʷɗaxa	*kʷɗaxa	1
1. ə-epenthesis; +W: ə > u				

TERA

Tera	*kuraxi* kʷəʷraxy	*kʷrax-y	*kʷraxØ-y	*kʷɗaxa(-y)	1
	kuɮakh kʷəʷɮax	*kʷɮax	*kʷɮaxØ		2
1. *ɗ̀> r; ə-epenthesis; *y > i; +W: ə > u 2. *ɗ̀ (> r > l ?) > ɮ; ə-epenthesis; *y > i; +W: ə > u					

HURZA

Mbuko	*kʷaɗah*	*kʷaɗaxØ	*kʷaɗaxa	
Vame	*kʷaɗaha*	*kʷaɗaxa		

MARGI

Bura	*kudu* kʷəʷdəʷ	*kʷdØa	*kʷɗxa	1
1. *ɗ̀> d (or transcription error)?; ə-epenthesis; lexical-final *a > ə; +W: ə > u				

MANDARA

Podoko	*kʷaɗaha*	*kʷaɗaxa	*kʷaɗaxa	
Malgwa	*kʷaɗa*	*kʷaɗà	*kʷaɗØØa	

MOFU

			√ CaC Ca	
Zulgo	*kʷaɗa*	*kʷaɗØa	*kʷaɗxa	
			√ CaCaCa	
Muyang	*koɗahay* kʷaʷɗaxay	*kʷaɗaxØ-a-y	*(ma-)kʷaɗaxa (-a, -y, -kʷ, -n)	1
Ouldeme	*kʷaɗeheŋ* kʷaɗaʸxaʸŋ	*kʷaɗaxa-Øʸ-kʷ-n		2
Gemzek	*mekʷeɗehe* maʸkʷaʸɗaʸxaʸ	*ma-kʷaɗaxa-Øʸ		3
Mofu North	*mekʷeɗehey* maʸkʷaʸɗaʸxaʸy	*ma-kʷaɗaxØ-ayʸ		3
Dugwor	*məkʷoɗehey* makʷaʷɗaʸxaʸy			4
Mada	*makʷaɗah*	*ma-kʷaɗaxØ		
1. +W: *a > o 2. suffixal *kʷ > k; fusion kn > ŋ; *y > Øʸ; +Y: *a > e 3. *y > Øʸ; +Y: *a > e 4. Prefixal *a > ə; +W: *a > o; *y > yʸ; +Y: *a > e				

LAMANG

				√ C CaCa	
Hdi	*kəɗahay* kəɗaxay	*kɗax-ay	*kɗaxØ-ay	*k^{w}ɗaxa-a-y	1
				√ CaCaCa	
Lamang	*k^{w}aɗaha*	*k^{w}aɗaxa		*k^{w}aɗaxa	
1. *k^{w} > k; ə-epenthesis					

bone$_{1}$

PCC *(ma-, ta-, RED-) **ɗy(a)ła** (-t, -a, -y, -k^{w}, -n)

BATA

Tsuvan	*iɮe* iɮa^{y}	*y^{y}ɮa	*Øyɮa		*ɗyła(-k^{w}, -n)	1
Sharwa	*allə* ayla	*yla	*Øyla(-n)			2
Gude	*ila*	*yla				3
Jimi	*ilən* ylən	*ylØ-n				4
Bachama	*uule* ə^{w}ula^{y}	*Ø^{y}w^{w}la	*yk^{w}la	*Øyla-k^{w}		5
1. *ł > ɮ; *y > y^{y} > i; +Y: lexical-final *a > e 2. *ł > l; a-prothesis; assimilation *yl > ll; lexical-final *a > ə 3. *ł > l; *y > i 4. *ł > l; *y > i; ə-epenthesis 5. *ł > l; metathesis *lk^{w} > k^{w}l; *k^{w} > w^{w} > u; ə-prothesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e						

MAFA

Mafa	*taɬ*	*ta-ɬ	*ta-ØØɬØ	*ta/RED-ɗyła(-n)	
Cuvok	*ɬaɬar*	* ɬa-ɬa-r	*RED-ØØɬa-n		1
1. *n > r					

TERA

Tera	*ɠəɬ* ɗ^{y}əɬ	*ɗy^{y}ɬØ		*ɗyła	1
	qəli ɗ^{y}ələ^{y}	*ɗØ^{y}lə			2
Ga'anda	*ela* a^{y}la	*Ø^{y}la	*Øyla		3
1. ə-epenthesis; *y > y^{y}; +Y: *ɗ > ɗ^{y} > ɠ 2. ə-epenthesis; *ł > l; *y > Ø^{y}; +Y: *ɗ > ɗ^{y} > *q*; lexical-final *a > ə; +Y: lexical-final ə > i 3. a-prothesis; *y > Ø^{y}; +Y: prothetic a > e					

SUKUR

Sukur	*taɬ*	*ta-ɬ	*ta-ØØɬØ	*ta-ɗyła	

MARGI

			√ C C Ca	
Kilba	*ɗih^{y}i* ɗyx^{y}ə^{y}	*ɗy^{y}xa	*ɗyła	1
			√ C CaCa	
Margi	*ɗyahu* ɗyaxw	*ɗyaxØ-w	*ɗyała-k^{w}	2
1 *ł > x; *y > y^{y} > i; +Y: x > x^{y}; lexical-final *a > ə; +Y: ə > i 2. *ł > x; *k^{w} > w > u				

MANDARA

Glavda	*ɬa*	*ɬa	*ØØɬa	*(ma-, RED-)ɗyła	
	ɬaɬa	*ɬa-ɬa	*RED-ØØɬa		
Podoko	*ɬaɬa*	*ɬa-ɬa			
Matal	*aɬaɬ*	*Øa-ɬa-ɬØ	*ma-RED-ØØɬØ		

Dghwede	*łałe* łałaʸ	*ła-ʸła	*RED-ØØʸła		1
Mandara	*hʸahʸe* xyaxyaʸ				2
Malgwa	*hʸehʸe* xyaʸxyaʸ	*xya-xyʸa	*RED-Øyxa		2
1. *y > Øʸ; +Y: lexical-final *a > e 2. *ł > x; metathesis yx > xy ; *y > yʸ; +Y: *a > e					

MOFU

Muyang	*ałat*	*a-ła-t	* Øa-ØØła-t	*ma(-ta-/RED-) ɗyła(-t)	
Ouldeme	*ałał*	*a-ła-łØ	*Øa-RED-ØØła		
Mada	*ałał*				
Zulgo	*atał*	*Øa-ta-ł	*ma-ta-ØØłØ		
Gemzek	*atał*				
Merey	*mətał* mətał	*mØ-ta-ł			1
Dugwor	*mətał* mətał				1
Mofu-North	*ⁿdał* ndał	*n-da-ł	*mØ-ta-ØØłØ		2
1. ə-epenthesis 2. homorganic assimilation *m > n/_ɗ; *t > d/N__					

MAROUA

				√ C C Ca	
Giziga-Muturwa	*tełʲ(e)* taʸłʲ(aʸ)	*ta-ØʸłʲØ	*(ma-)ta-Øyła	*(ma-)ta-ɗyła	1
	eteł aʸtaʸł	*Øa-ta-ØʸłØ			1
	ateł ataʸł				1
Giziga-Marva	*ateł* ataʸł				1
				√ C CaCa	
Mbazla	*'a'ał*	*ʔa-ʔałØ	*RED-ʔØała	*RED-ɗyała	2
1. *y > Øʸ; +Y : *a > e 2. *ɗ > ʔ					

HIGI

Kamwe-Nkafa	*'yithlə* ʔyəʸłə	*ʔyʸła		*ɗyła(-n)	1
Bana	*'yilə* ʔyəʸłə				1
	eler aʸłaʸr	*Øʸła-r	*Øyła(-n)		2
Kamwe-Futu	*iła* yła	*Øyła			3
Kirya	*ilə* ylə				4
1. *ɗ > ʔ; ə-epenthesis; *y > yʸ; +Y: ə > i; lexical-final *a > ə 2. a-prothesis; *y > Øʸ; +Y : *a > e; *n > r 3. *y > i 4. *y > i ; lexical-final *a > ə					

KOTOKO-ISLAND

Buduma	*ahay* axay	*a-xØ-ay	*Øa-ØØxa-a-y	*ma-ɗyła-a-y	1
1. *ł > x					

KOTOKO-NORTH

Afade	*enl'i* aʸnlʔy	*n-łyʸʔ	*mØ-ʔłyØ	*ma-ɗyła	1
Malgbe	*enli* aʸnły	*n-łyʸ	*mØ-ØłyØ		2
Mpade	*enʃi* aʸnʃy				3
1. *ɗ > ʔ; a-prothesis; homorganic assimilation *m > n/_ l; metathesis *ył > ły; *y > yʸ; +Y: *a > e; *y > i					

2. a-prothesis; homorganic assimilation *m > n/_ ɬ; metathesis *yɬ > ɬy; *y > y^y; +Y: *a > e; *y > i
3. *ɬ > ʃ; a-prothesis; homorganic assimilation *m > n/_ ɬ; metathesis *yɬ > ɬy; *y > $Ø^y$; +Y: *a > e; *y > i

Kotoko-Central

Lagwan	*ali* aɬy	*a-ɬy	*Øa-ØyɬØ	*ma-ɗyɬa	1
Mser	*enʃi* $a^y ns^y y$	*n-sy^y	*mØ-ØysØ		2

1. metathesis yɬ > ɬy; *y > i
2. *ɬ > s; metathesis ys > sy; *y > y^y: +Y: s > ʃ; a-prothesis; homorganic assimilation *m > n/_ s; +Y: prefixal *a > e; *y > i

Kotoko-South

Zina	*asasə*	*a-sa-sa	*Øa-RED-ØØsa	*ma-RED-ɗyɬa	1
Mazera	*asis'e* $as ə^y s ?a^y$	*a-s-Ø$^?$sØ^{y}a	*Øa-RED-ʔysa		2

1. *ɬ > s; lexical-final *a > ə
2. *ɗ > ʔ > Ø$^?$; *ɬ > s; metathesis *ys > sy; +ʔ: *s > s$^?$; ə-epenthesis; *y > $Ø^y$; +Y: ə > i; +Y: lexical-final *a > e;

Gidar

Gidar	*ɬeŋɬeŋ* $ɬa^y ŋɬa^y ŋ$	*Ø^{y}ɬaŋ-Ø^{y}ɬa-ŋ	*RED-Øyɬa-k-n	*RED-ɗyɬa-k^w-n	1

1. *k^w > k; fusion *kn > ŋ; *y > $Ø^y$; +Y: *a > e

bone$_2$

Areal root *(k^wa-, ma-, RED-) **r(a)k(a)ɬa** (-y, -t)

Daba

				√ C C Ca	
Mbudum	*kirŋgiɬ* $kə^y r^n gə^y ɬ$	*k-Ø^n-rgɬ-Ø^y	*kØ-m^{n}Ø-rgɬØ-y	*k^wa-ma-rkɬa-y	1
Daba	*g^ngiriɮ* $g^n gə^y rə^y ɮ$	*g-Ø^n-grɮ-Ø^y	*gØ-m^{n}Ø-rgɮØ-y		2
				√ C CaCa	
Buwal	*kərə^{n}geɬ* $ka^y rə^n ga^y ɬ$	*ka-Ø^n-rgaɬ-Ø^y	*ka-m^{n}Ø-rgaɬØ-y	*k^wa-ma-rkaɬa-y	3

1. radical *k > g; prefixal *k^w > k; *m > Ø^n; +N: g > ^{n}g; ə-epenthesis; *y > $Ø^y$; +Y: ə > i
2. radical *k > g; *ɬ > ɮ; metathesis rg > gr; prefixal *k^w (> k) > g; *m > Ø^n; +N: g > ^{n}g; ə-epenthesis; *y > $Ø^y$; +Y: ə > i
3. radical *k > g; prefixal *k^w > k; *m > Ø^n; +N: g > ^{n}g; ə-epenthesis; *y > $Ø^y$; +Y: *a > e

Hurza

Mbuko	*kəlakaɬ*	*k-lakaɬ	*kØ-lakaɬØ	*(RED-/k^wa-) rakaɬa	1
Vame	*alələk*	*aɬ-Øɬak < *RED-aɬak	*RED-ØakaɬØ		2

1. *r > l; *k^w > k; ə-epenthesis
2. metathesis kɬ > ɬk; ə-epenthesis

Mofu

Moloko	*kəlakaɬ*	*k-lakaɬ	*kØ-lakaɬØ	*k^wa-rakaɬa	1

1. *r > l; prefixal *k^w > k; ə-epenthesis

Musgum

Mulwi	*kɛɬke* $ka^y ɬka^y$	*ka-ɬka-Ø^y	*ka-Økɬa-y	*(k^wa-/ma-)rkɬa-y(-t)	1
Vulum	*kɛɬke* $ka^y ɬka^y$				1

Mbara[15]	*ᵑgiɬ* ᵑgəʸɬ	*Øⁿ-Øgɬ-Øʸ	*mⁿØ-rgɬØ-y		2
Muskum	*kiɬit* kəʸɬəʸt	*kɬ-Øʸ-t	*ØkɬØ-y-t		3
1. prefixal *kʷ > k; metathesis kɬ > ɬk; *y > Øʸ; +Y: *a > e 2. *k > g; *m > Øⁿ; +N: g > ᵑg; ə-epenthesis; *y > Øʸ; +Y: ə > i; (for alternative reconstruction, see footnote) 3. *y > Øʸ; +Y: ə > i					

bow

PCC *(xa-, ma-kʷa-, ma-kʷa-da-, RED) **r(a)ga** (-a, -y, -ɗ, -kʷ, -n)

BATA

Gude	*raga*	*raga		*raga(-y, -n)	
Bata	*rage* ragaʸ	*raga-Øʸ	*raga-yʸ		1
Jimi	*ragən* ragən	*ragØ-n	*raga-n		2
1. *y > Øʸ; +Y: lexical-final *a > e 2. ə-epenthesis					

MAFA

Mafa	*lekeɗ* laʸkaʸɗ	*laka-Øʸ-ɗ	*laka-yʸ-ɗ	*(RED)raga(-y, -ɗ, -n)	1
Cuvok	*lalaŋ*	*la-laØ-ŋ	*RED-lakØ-n		2
1. *r > l; *g > k; *y > Øʸ; +Y: *a > e 2. *r > l; *g > k; fusion *kn > ŋ					

TERA

Tera	*ri* ry	*rØØ-y	*rga-y	1
1. *y > i				

SUKUR

Sukur	*ray*	*rØØ-ay	*rga-a-y	

HURZA

Mbuko	*liᵑge ləʸᵑgaʸ*	*Øⁿ-lga-Øʸ	*mⁿØ-lga-y	*(ma-)rga(-y)	1
Vame	*ləka*	*lka			2
1. *r > l; *m > mⁿ > Øⁿ; +N: g > ᵑg; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 2. *r > l; *g > k; ə-epenthesis					

MARGI

				√ C Ca	
Bura	*lali* laly	*la-lØ-y	*RED-lØa-y	*RED-rga-y	1

[15] This example raises the question of the relative chronology of diachronic processes. If deletion of radical C_1 *r happened first, then prefixal *m would not prosodise but undergo homorganic assimilation *m > ŋ/_g. The resulting synchronic forms would then be ŋgiɬ with initial nasal+obstruent cluster. If, however, *m prosodised first, it would have affected radical C_2 *g across the presence of C_1 *r (as we indicate in our analysis for Mbara), which would be deleted later. The resulting synchronic form would then correctly be rendered as *ᵑgiɬ* with N-prosody effects yielding prenasalisation.

				√ CaCa	
Margi	*laga*	*laga		*raga	2
Kilba	*laga*				2
Margi South	*lagga*				3
1. *r > l; *y > i 2. *r > l 3. *r > l ; doubling *g > gg unexplained					

MANDARA

				√ C Ca	
Podoko	*lika* ləʸka	*lka-Øʸ	*lka-y	*rga-y	1
Mandara	*elke* aʸlkaʸ				2
Malgwa	*elke* aʸlkaʸ				2
				√ CaCa	
Glavda	*la::ʁa* laaɣa	*laØaɣa	*laxaɣa	*xa-raga	3
Matal	*alak*	*Øa-lak	*xa-lakØ		4
1. *r > l; *g > k; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *r > l; *g > k; a-prothesis; *y > Øʸ; +Y: *a > e 3. *r > l; *g > ʁ; metathesis xl > lx 4. *r > l; *g > k					

MOFU

				√ C Ca	
Zulgo	*likiɗ* ləʸkəʸɗ	*lkØ-Øʸ-ɗ	*lka-y-ɗ	*rga-y-ɗ	1
				√ CaCa	
Gemzek	*halaŋ*	*xa-laŋ	*xa-lakØ-n	*xa/RED-raga ((-y) -n)	2
Merey	*lalaŋ*	*la-la-ŋ	*RED-lakØ-n		2
Mofu North	*lalaŋ*	*la-la-ŋ			2
Mofu-Gudur	*leleŋ* laʸlaʸŋ	*la-la-Øʸ-ŋ	*RED-lakØ-y-n		3
Ouldeme	*alak*	*Øa-lakØ	*xa-laka	*xa-/ma-(kʷa-) raga(-y,-ɗ)	4
Mada	*eleked* aʸlaʸkaʸɗ	*Øa-laka-Øʸ-ɗ	*xa-laka-y-ɗ		5
Dugwor	*həlek* xəlaʸk	*x-lak-Øʸ	*xØ-lakØ-y		5
Moloko	*meⁿgelek* maʸⁿgaʸlaʸk	*ma-ⁿga-lakØ-Øʸ	*mⁿa-ka-laka-y		6
1. *r > l; *g > k; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *r > l; *g > k; fusion *kn > ŋ 3. *r > l; *g > k ; fusion *kn > ŋ; *y > Øʸ; +Y: *a > e 4. *r > l ; *g > k 5. *r > l ; *g > k; *y > Øʸ; +Y: *a > e 6. r > l ; *g > k; *kʷ > k > g; *m > mⁿ; +N: g > ⁿg ; *y > Øʸ; +Y: *a > e					

MAROUA

Giziga-Marva	*helek* xaʸlaʸk	*xa-lak-Øʸ	*xa-lakØ-y	*xa-raga-y	1
Mbazla	*helek* xaʸlaʸk				1
1. *r > l; *g > k; *y > Øʸ; +Y: *a > e					

LAMANG

				√ C Ca	
Hdi	*ləɣed* ləɣaʸɗ	*lɣa-Øʸ-ɗ	*lɣa-y-ɗ	*rga-y-ɗ	1
				√ CaCa	
Lamang	*leɣe* laʸɣaʸ	*laɣa-Øʸ	*laɣa-y	*raga-y	2
1. *r > l; *g > ɣ; ə-epenthesis; *y > Øʸ; +Y: *a > e 2. *r > l; *g > ɣ; *y > Øʸ; +Y: *a > e					

HIGI

				√ C Ca	
Kamwe-Nkafa	*ligʸi* ləʸgʸy	*lgØ-yʸ		*rga-y	1
Bana	*rəgi* rəgy	*rgØ-y			2
				√ CaCa	
Kamwe-Futu	*regi* raʸgy	*ragØ-yʸ		*raga-y	3
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: g > gʸ; +Y: ə > i; *y > i 2. ə-epenthesis; *y > i 3. *y > Øʸ; +Y: *a > e; *y > i					

MUSGUM

Mbara	*giⁿdiliŋ* gəʸⁿdəʸləʸŋ	*g-ⁿd-lŋ-Øʸ	*ØⁿØ-gØ-dØ-lkØ-y-n	*ma-kʷa-da-rga-y-n	1
1. radical *g > k; *r > l; *kʷ > g; ə-epenthesis; +N: d > ⁿd; *y > Øʸ; +Y: ə > i; fusion kn > ŋ					

brain

PCC *(ma-, kʷa- (kʷa-)) **r(a)ɬ a** (-y, -kʷ; FV)

HURZA

Mbuko	*məkəliᵑgeɬ* məkələʸᵑgaʸɬ	*mⁿØ-ka-ka-laɬØ-Øʸ	*ma-kʷa-kʷa-rała-y	1
1. *r > l; prefixal *kʷ > k; metathesis kl > lk; +N: k > ᵑg; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e; prefixal *a > ə				

MANDARA

Matal	*ariɬ* arəʸɬ	*rɬ-Øʸ	*rɬØ-y	*rła-y	1
1. a-prothesis; ə-epenthesis; *y > Øʸ; +Y: ə > i					

MOFU

				√ C Ca	
Muyang	*eⁿdiɬ* aʸndəʸɬ	*n-dɬ-Øʸ	*mØ-dɬØ-y	*ma-rła-y	1
				√ CaCa	
Ouldeme	*aⁿdeɬ* andaʸɬ	*n-daɬ-Øʸ	*mØ-daɬØ-y	*ma-(kʷa-)rała-y	2
Zulgo	*areƛ* araʸƛ	*Øa-raƛ-Øʸ	*ma-raƛØ-y		3
Gemzek	*areƛ* araʸƛ				3
Merey	*ɗeᵑgeɬ* ɗaʸᵑgaʸɬ	*Øⁿ-ɗakaɬ-Øʸ	*mⁿØ-ka-ɗaɬØ-y		4
Dugwor	*aleᵑgeɬ* alaʸᵑgaʸɬ	*Øⁿa-lagaɬ-Øʸ	*mⁿa-ka-laɬØ-y		5
1. *r > d; a-prothesis; ə-epenthesis; homorganic assimilation *m > n/_d; *y > Øʸ; +Y: *a > e; +Y: ə > i 2. *r > d; a-prothesis; homorganic assimilation *m > n/_d; *y > Øʸ; +Y: *a > e 3. *ɬ > ƛ; +Y: *a > e 4. *r > ɗ; *kʷ > k; metathesis kɗ > dk; *m > Øⁿ; +N: k > ᵑg; *y > Øʸ; +Y: *a > e 5. *r > l; *kʷ > k; metathesis kl > lk; *m > Øⁿ; +N: k > ᵑg; *y > Øʸ; +Y: *a > e					

MAROUA

Giziga-Marva	*aleɬ* alaʸɬ	*a-laɬ-Øʸ	*Øa-laɬØ-y	*ma-raɬa-y	1
1. *r > l; *y > Øʸ; +Y: *a > e					

KOTOKO-NORTH

Afade	*erɬ'i* aʸrɬʔy	*rɬØ-ʔ-yʸ	*rɬØ-yʸ-ʔ	*rɬa-y-kʷ	1
Maltam	*eriɬ'i* aʸrəʸɬʔy				2
1. a-prothesis; kʷ (> k) > ʔ; metathesis yʔ > ʔy; *y > Øʸ; +Y: *a > e; *y > i 2. a-prothesis; ə-epenthesis; kʷ (> k) > ʔ; metathesis yʔ > ʔy; *y > Øʸ; +Y: *a > e; +Y: ə > i; *y > i					

KOTOKO-CENTRAL

Mser	*meres'i* maʸraʸsʔəʸ	*ma-rasʔ-Øʸ-ə	*ma-rasØ-y-ʔa	*ma-raɬa-y-kʷa	1
1. *ɬ > s; kʷ (> k) > ʔ; metathesis yʔ > ʔy; *y > Øʸ; +Y: *a > e; FV *a > ə; +Y: ə > i					

breast (female), udder, milk (fresh)

PCC *(ma-, RED-) **ɗ(a)w(a)xa** (-y, -kʷ, -t, -n; FV)

BATA

Bata	*wato* watawʷ	*wʷa-ta	*ØwØa-ta		1
Jimi	*wan* wan	*wa-n	*ØwØa-n		
Gude	*'wanə* ʔwanə	*ʔwa-na	*ʔwØa-na	*ɗwxa(-t/-kʷ,-n(a))	2
Sharwa	*'wa* ʔwa	*ʔwa	*ʔwØa		3
Tsuvan	*'wakən* ʔwakən	*ʔwa-k-n	*ʔwØa-kʷ-n		4
1. *w > Øʷ; +W: FV *a > o 2. *ɗ > ʔ; FV *a > ə 3. *ɗ > ʔ 4. *ɗ > ʔ; *kʷ > k; ə-epenthesis					

DABA

Buwal	*wa*	*wa	*ØwØa	*(ma-)ɗwxa	
Mbudum	*wa*				
Gavar	*ŋ'wa* ŋʔwa	*ŋ-ʔwa	*mØ-ʔwØa		1
1. *ɗ > ʔ; homorganic assimilation *m > ŋ/_ʔ					

MAFA

Mafa	*wa*	*wa	*ØwØa	*ɗwxa	
Cuvok	*wa*				

TERA

Tera	*ɓuɓu* ɓwɓw	*ɓw-ɓw	*RED-ɓwØØ	*RED-ɗwxa(-y)	1
	ɓiɓi ɓyɓy	*ɓy-ɓØy	*RED-ɓwØØ-y		2
1. *ɗ > ɓ/_w 2. *ɗ > ɓ/_w; *y > i					

SUKUR

Sukur	*'wa* ʔwa	*ʔwa	*ʔwØa	*ɗwxa	1
1. *ɗ > ʔ					

MARGI

Bura	*'uwa* ʔəʷwa	*ʔwʷa	*ʔwØa	*ɗwxa	1
Margi	*u'wa* əʷʔwa				2
Margi-South	*u'wa* əʷʔwa				2
Kilba	*'wa*	*ʔwa			3
1. *ɗ> ʔ; ə-epenthesis; *w > wʷ; +W: ə > u 2. *ɗ> ʔ; ə-prothesis; *w > wʷ; +W: ə > u 3. *ɗ> ʔ					

MANDARA

				√ C C Ca	
Podoko	*uɓa* wɓa	*wɓa	*ɓwØa	*ɗwxa(-y)	1
Glavda	*u:ɓa* əʷwɓa	*wʷɓa			2
Dghwede	*wup'a* wəʷɓa				3
Mandara	*ube* wɓaʸ	*wba-Øʸ	*bwØa-y		4
Malgwa	*uuɓe* əʷwɓaʸ	*wʷɓa-Øʸ	*ɓwØa-y		5
				√ CaC Ca	
Matal	*awa*	*awa	*ØawØa	*ɗawxa	
1. *ɗ> ɓ/_w; metathesis ɓw > wɓ; *w > u 2. *ɗ> ɓ/_w; metathesis ɓw > wɓ; ə-prothesis; +W: ə > u; *w > u 3. *ɗ> ɓ/_w; metathesis ɓw > wɓ; ə-epenthesis; +W: ə > u 4. *ɗ> b/_w; metathesis bw > wb; *w > u; +Y: lexical-final *a > e 5. *ɗ> ɓ/_w; metathesis ɓw > wɓ; ə-prothesis; *w > wʷ; +W: ə > u; *w > u					

MOFU

				√ C C Ca	
Mada	*ɗwa*	*ɗwa	*ɗwØa	*(ma-)ɗwxa	
Mofu-Gudur	*dəwa*				1
Muyang	*ɗuwa* dəʷwa	*ɗwʷa			2
Ouldeme	*adɨwa* adəʷwa	*Øa-ɗwʷa	*ma-ɗwØa		2
				√ CaCaCa	
Zulgo	*awah* awax	*awax	*ØawaxØ	*ɗawaxa	
Gemzek	*awah* awax				
Dugwor	*awah* awax				
Merey	*wah* wax	*wax	*ØØwaxØ		
1. ə-epenthesis 2. ə-epenthesis; *w > wʷ; +W: ə > u					

MAROUA

				√ C C Ca	
Giziga-Muturwa	*ɗuwa* dəʷwa	*ɗwʷa	*ɗwØa	*ɗwxa	1
Giziga-Marva	*ɗuwa* dəʷwa				1
Mbazla	*'wa* ʔwa	*ʔwa	*ɗwØa		2
				√ C CaCa	
Mbazla	*wa'* waʔ	*waʔ	*wadØØ	*ɗwaxa	3
1. ə-epenthesis; *w > wʷ; +W: ə > u 2. *ɗ> ʔ 3. *ɗ> ʔ; metathesis ʔw > wʔ					

LAMANG

Lamang	*uɓa* wɓa	*wɓa	*ɓwØa	*ɗwxa	1
Hdi	*u'a* wʔa	*wʔa	*ʔwØa		2
1. *ɗ > ɓ/_w; metathesis ɓw > wɓ; *w > u 2. *ɗ > ʔ; metathesis ʔw > wʔ; *w > u					

HIGI

Kamwe-Futu	*uwo* əʷwaʷ	*Øwʷa	*ɗwØa	*ɗwxa	1
Kirya	*'wa* ʔwa	*ʔwa	*ɗwØa		2
Bana	*'wa* ʔwa				2
1. ə-prothesis; *w > wʷ; +W: ə > u; +W: lexical-final *a > o 2. *ɗ > ʔ					

KOTOKO-NORTH

Afade	*eʔwi* aʸʔwy	*ʔw-yʸ	*ʔwØØ-y	*(ma-)ɗwxa-y	1
Maltam	*eᵐbi* aʸmby	*m-bØ-yʸ	*mØ-bwØØ-y		2
1. *ɗ > ʔ; a-prothesis; *y > yʸ; +Y: *a > e; *y > i 2. *ɗ > b/m_w; a-prothesis; *y > yʸ; +Y: *a > e; *y > i					

KOTOKO-CENTRAL

Lagwan	*iwi* əʸwy	*Øw-yʸ	*ɗwØØ-yʸ	*ɗwxa-y	1
1. ə-prothesis; *y > yʸ; +Y: ə > i; *y > i					

broom[16]

PCC *(ma-, RED-) **ɬ(a)ɗ(a)kʷa** (-y)

BATA

Sharwa	*ʃimtə* sʸəʸmtə	*smta-Øʸ	*mØ-stØa-y	*ma-ɬɗkʷa-y	1
Gude	*ʃinta* sʸəʸnta				2
1. *ɬ > s; *ɗ > t; metathesis ms > sm; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: s > ʃ; +Y: ə > i 2. *ɬ > s; *ɗ > t; metathesis ms > sm; homorganic assimilation *m > n/__t; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: s > ʃ; +Y: ə > i					

DABA

				√ C C Ca	
Gavar	*ŋkələɗ* ŋkələɗ	*ŋ-kɬɗ	*mØ-kɬdØ	*ma-ɬɗkʷa	1
Mbudum	*ŋkələɗ* ŋkələɗ				1
				√ CaC Ca	
Buwal	*mlaɗ*	*m-ɬaɗ	*mØ-ɬaɗØØ	*ma-ɬaɗkʷa	
1. *kʷ > k; multiple metathesis ɬɗk > kɬɗ; ə-epenthesis; homorganic assimilation *m > ŋ/_k					

[16] On first sight, there are three roots for 'broom'; Gravina (2015) gives them as ***kiɬiɗ***, ***sirik***ʷ, and ***simit***ʸ with diffuse areal distribution within Central Chadic, of which one could turn out to be a loan in whatever direction in the light of Kanuri *sùⁿdòk* (besides *fəratáram*). Somewhat surprisingly, two of the apparently three roots may co-occur in some language groups, as in MARGI and MANDARA, and also in MUSGUM. We may, of course, be dealing with a cultural *wanderwort* that was introduced at different times in different places in the CC language area. On a deep level of reconstruction, however, these apparently different roots turn out to be cognate, when we allow for spectacular instances of metathesis, which are quite frequent in CC languages. In this case, double occurrence of the root in some language groups may be due to later interdialectal borrowing.

MAFA

Cuvok	*saᵐbak*	*samcɗak	*ma-sɗakØ	*ma-ɬɗakʷa	1
1. *kʷ > k; *ɬ > s; metathesis ms > sm; assimilation *mɗ > mb					

TERA

Tera	*tʃitʃet* tsʸəʸtsʸaʸt	*ts-tsat-Øʸ	*RED-tsatØØ-y	*RED-ɬaɗkʷa-y	1
1. *ɬ > ts; *ɗ > t; ə-epenthesis; *y > Øʸ; +Y: ts > tʃ; +Y: ə > i; +Y: *a > e					

SUKUR

Sukur	*səɓək*	*sɓk < *smʔk	*mØ-sʔkØ	*ma-ɬɗkʷa	1
1. *kʷ > k; *ɬ > s; *ɗ > ʔ > Øˀ; metathesis msʔ > smʔ; fusion mʔ > ɓ; ə-epenthesis					

HURZA

Mbuko	*sərok* səraʷk	*srakʷ	*srakʷØ	*ɬɗakʷa	1
1. *ɬ > s; *ɗ > r; ə-epenthesis; +W: *a > o					

MARGI

				√ C C Ca	
Bura	*ʃimtu* sʸəʸmtw	*smtw-Øʸ	*mØ-stwØ-y	*ma-ɬɗkʷa-y	1
				√ CaCCa	
Kilba	*ɬata*	*ɬata	*ɬatØa	*ɬaɗkʷa	2
1. *kʷ > w > u; *ɬ > s; *ɗ > t; ə-epenthesis; metathesis ms > sm; *y > Øʸ; +Y: s > ʃ; +Y: ə > i 2. *ɗ > t					

MANDARA

Matal	*małaɗ*	*ma-ɬaɗ	*ma-ɬaɗØØ	*ma-ɬaɗkʷa	
Podoko	*samata*	*samata	*ma-satØa		1
1. *ɬ > s; *ɗ > t; metathesis ms > sm					

MOFU

				√ C C Ca	
Zulgo	*sulukʷ* səʷləʷk	*slkʷ	*slkʷØ	*ɬɗkʷa	1
				√ C CaCa	
Ouldeme	*səlakʷ*	*slakʷ	*slakʷØ	*ɬɗakʷa(-y)	2
Mada	*səlakʷ*				2
Mofu North	*səlakʷ*				2
Gemzek	*sulok* səʷlaʷk				3
Merey	*sulok* səʷlaʷk				3
Moloko	*səlewk* səlaʸwk	*slawk-Øʸ	*slakwØ-y		4
Dugwor	*səleuk* səlaʸwk				4
				√ CaCaCa	
Mofu-Gudur	*salakʷ*	*salakʷ	*salakʷØ	*ɬaɗakʷa	5
1. *ɬ > s; *ɗ > l; ə-epenthesis; +W: ə > u 2. *ɬ > s; *ɗ > l; ə-epenthesis 3. *ɬ > s; *ɗ > l; ə-epenthesis; +W: ə > u: +W: *a > o 4. *ɬ > s; *ɗ > l; re-segmentalisation *kʷ > k+w > w+k; ə-epenthesis; w > u; *y > Øʸ; +Y: *a > e 5. *ɬ > s; *ɗ > l					

MAROUA

Giziga-Marva	*sulek* səʷlaʸk	*slakʷ-Øʸ	*slakʷØ-y	*ɬɗakʷa-y	1
1. *ɬ > s; *ɗ > l; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: *a > e					

LAMANG

Lamang	*switi* swəʸty	*swt-yʸ	*stwØ-y	*łdkʷa-y	1
	siwiti səʸwəʸty				1
Hdi	*su'it* swʔəʸt	*swʔt-Øʸ	*swdØ-y		2
1. *kʷ > w; *ł > s; *ɗ > t; metathesis tw > wt; ə-epenthesis; +Y: ə > i; *y > i 2. *kʷ > w > u; *ł > s; metathesis ɗw> wɗ; re-segmentalisation *ɗ > ʔ+t; ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i					

KOTOKO-NORTH

				√ C C Ca	
Afade	*witso* wəʸtsaʷ	*wʷtsa-Øʸ	*stwʷa-y	*łdkʷa-y	1
				√ CaC Ca	
Malgbe	*wałi* wałəʸ	*wała-Øʸ	*łaØwa-y	*ładkʷa(-y)	2
Mpade	*wos'o* waʷsʔaʷ	*wʷasʔa	*saʔwʷa		3
1. *kʷ > wʷ; *ł > s; *ɗ > t; multiple metathesis stw > wts; *y > Øʸ; +Y: ə > i; +W: lexical-final *a > o 2. *kʷ > w; metathesis łw > wł; lexical-final *a > ə; *y > Øʸ; +Y: ə > i 3. *kʷ > wʷ; *ł > s; *ɗ > ʔ; multiple metathesis sʔw > wsʔ; +W: *a > o					

MUSGUM

Muskum	*liha* ləʸxa	*lxa-Øʸ	*Ølxa-y	*łdkʷa(-y)	1
Vulum	*suruk* səʷrəʷk	*srkʷ	*srkʷØ		2
1. *kʷ (> k) > x; *ɗ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *ł > s; *ɗ > r; ə-epenthesis; +W: ə > u					

GIDAR

Gidar	*səlho* səlxaʷ	*slxʷa		*(ma-)łdkʷa	1
	sulhõ səʷlxaⁿʷ	*Øⁿ-slxʷa	*mⁿØ-slxʷa		2
1. *kʷ > xʷ; *ł > s; *ɗ > l; ə-epenthesis; +W: lexical-final *a > o 2. *kʷ > xʷ; *ł > s; *ɗ > l; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o; *m > Øⁿ; +N: lexical-final o > õ					

burn, to

Areal root *(ma-) **d(a)ra** (-a, -y, -kʷ)

MAFA

Mafa	ⁿ*dar* ndar	*n-dar	*mØ-darØ	*ma-dara	1
Cuvok	ⁿ*dala* ndala	*n-dala	*mØ-dala		2
1. homorganic assimilation *m > n/_d 2. *r > l; homorganic assimilation *m > n/_d					

MANDARA

Mandara	*dere* daʸraʸ	*dara-Øʸ	*dara-y	1
1. *y > Øʸ; +Y: *a > e				

MOFU

				√ C Ca	
Ouldeme	*dəl* dəl	*dlØ		*(ma-)dra(-kʷ)	1
Zulgo	*dul* dəʷl	*dl-Øʷ	*dlØ-kʷ		2
Mofu-Gudur	ⁿ*dəl* ndəl	*n-dl	*mØ-dlØ		3

				√ CaCa	
Ouldeme	*dalay* dalay	*dal-ay	*dalØ-a-y	*dara(-a-y)	4
Moloko	*dar* dar	*darØ			
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u 3. *r > l; ə-epenthesis; homorganic assimilation *m > n/_d 4. *r > l					

Maroua

Mbazla	*dili* dəʸly	*dl-yʸ	*dlØ-y	*(ma-)dra-y	1
	^{n}dili ndəʸly	*n-dl-yʸ	*mØ-dlØ-y		2
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i 2. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i; homorganic assimilation *m > n/_d					

Lamang

Lamang	*dra* dra	*dra	*dra(-a-y)	
Hdi	*dəray* dəray	*drØ-ay		1
1. ə-epenthesis				

butterfly

PCC *(k^{w}a-, ma-, ta-, na-, RED-) **p(a)ra** (-y, -k^{w}, -n; FV)

Bata

Gude	*pəripərinə* pərypəryna	*pry-prØ-y-na	*RED-pra-y-na	1
1. ə-epenthesis; *y > i; FV *a > ə				

Daba

Mbudum	*məpulpula* məpəʷlpəʷla	*mØ-pl-pla-Øʷ	*ma-RED-pra-k^{w}	1
1. *r > l; ə-epenthesis; k^{w} > Ø^{w}; +W: ə > u				

Tera

Tera	*pərmapər*	*ØØ-pr-ma-prØ	*RED-ma-pra	1
1. ə-epenthesis				

Sukur

Sukur	*(məɮə-)pərpər*	*pr-prØ	*RED-pra	1
1. ə-epenthesis; compound with unidentified preposed *ma(-)ɮa > *məɮə*				

Hurza

			√ C Ca	
Mbuko	*mapərok* mapəraʷk	*ma-pra-k^{w}	*ma-pra-k^{w}	1
			√ CaCa	
Vame	*pelpele* paʸlpaʸlaʸ	*pal-pala-Øʸ	*RED-para-y	2
1. ə-epenthesis; +W : *a > o 2. *r > l; *y > Øʸ; +Y: *a > e				

Margi

Bura	*pirpir* pəʸrpəʸr	*pr-pr-Øʸ	*pr-prØ-y	*RED-pra(-y)	1
Kilba	*pərpər*	*pr-prØ			2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis					

MANDARA

Malgwa	*napalapala*	*na-pala-pala	*na-RED-para	1
Glavda	*apalapa*	*Øa-pala-paØØ		1
1. *r > l				

MOFU

Mofu-Gudur	*mapəlapəla*	*ma-pla-pla	*ma-RED-pra	1
1. *r > l; ə-epenthesis				

MAROUA

			√ C Ca	
Giziga-Muturwa	*miplapla* məʸplapla	*mØ-pla-pla-Øʸ	*ma-RED-pra-y/-kʷ	1
	muplapla məʷplapla	*mØ-pla-pla-Øʷ		2
			√ CaCa	
	mapalapala	*ma-pala-pala	*ma-RED-para	3
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *r > l; ə-epenthesis; *kʷ > Øʷ; +W: ə > u 3. *r > l				

HIGI

			√ C Ca	
Bana	*pəlpəli* pəlpəly	*pl-plØ-y	*RED-pra-y	1
			√ CaCa	
Kamwe-Nkafa	*kʷapalpa*	*kʷa-pal-pa	*(kʷa-)pal-paØØ	2
Kamwe-Futu	*paləpa*	*pal-pa	*(kʷa-)RED-para	3
1. *r > l; ə-epenthesis; *y > i 2. *r > l 3. *r > l; ə-epenthesis				

GIDAR

Gidar	*motopolopolo* maʷtaʷpaʷlaʷpaʷlaʷ	*ma-ta-pala-pala-Øʷ	*ma-ta-RED-para-kʷ	1
1. *r > l; *kʷ > Øʷ; +W: *a > o				

camel[17]

Loan *(na-) **k(a)ɮ(a)g(a)m(a)wa** (-y, -kʷ, -t, -n; FV)

BATA

				√ C C C C Ca	
Tsuvan	*ɮəʸgume* ɮəⁿgwmaʸ	*Øⁿ-ɮgwma-Øʸ	*nⁿØ-Øɮgmwa-y	*na-kɮgmwa-y	1
				√ CaC C C Ca	
Sharwa	*ⁿgyaluba* ŋgʸalwba	*ŋ-galwba-Øʸ	*nØ-galØbwa-y	*na-kaɮgmwa-y	2

[17] This well-integrated word is doubtlessly a loan from one or more non-Chadic languages and has likely entered CC languages independently several times (cf. Wolff 2022: 131, 258ff.). We assume that non-Chadic *l has entered some CC languages as ɮ, others possibly directly as non-reconstructed l. Treating the item as a 'Pseudo-PCC' root, we reconstruct *ɮ at the ultimate proto-level.

				√ C C CaC Ca	
Bata	*luk^{w}apto* ləᵂkᵂaptaᵂ	*lkapØᵂ-ta	*ØlkapwØ-ta	*kɮgamwa-ta/-y-n	3
Jimi	*lig^{w}amən* ləʸgᵂaməˈn	*lgamØᵂ-Øʸ-n	*ØlgamwØ-y-n		4
1. *n > n^{n}; +N: g > ^{n}g; metathesis mw > wm; ə-epenthesis; *w > u; *y > Øʸ; +Y: *a > e 2. *ɮ > l; *k > g; *m > b; metathesis bw > wb; *w > u; homorganic assimilation *n > ŋ/_g; *y > Øʸ; +Y: g > gʸ 3. *ɮ > l; *g > k; *m (> b) > p; ə-epenthesis; *w > Øᵂ; +W : ə > u; +W: k > kᵂ; +W: *a > o 4. *ɮ > l; ə-epenthesis; *w > Øᵂ; +W: *g > gᵂ; *y > Øʸ; +Y: ə > i					

Daba

Daba	*ɮokomo* ɮaᵂkaᵂmaᵂ	*ɮakamaØᵂ	*ØɮakamawØ	*kɮagamawa	1
1. *g > k; *w > Øᵂ; +W; *a > o					

Tera

				√ C C CaC Ca	
Tera	*ɮimox* ɮəʸmaᵂx	*ɮmaxØᵂ-Øʸ	*ØɮxamwØ-y	*kɮgamwa-y	1
				√ CaC C C Ca	
Ga'anda	*^{n}gelupa* ŋgaʸlwpa	*n-galwpa-Øʸ	*nØ-galØpwa-y	*na-kaɮgmwa-y	2
1. *g > x; metathesis xm > mx; ə-epenthesis; *y > Øʸ; +Y: ə > i; *w > Øᵂ; +W: *a > o 2. *ɮ > l; *k > g; *m (> b) > p; homorganic assimilation *n > ŋ/_g; metathesis pw > wp; *w > u; *y > Øʸ; +Y: *a > e					

Sukur

Sukur	*ɮəgᵂam*	*ɮgamØᵂ	*ØɮgamwØ	*kɮgamwa	1
1. ə-epenthesis; *w > Øᵂ; +W: *g > gᵂ					

Hurza

				√ C C CaC Ca	
Mbuko	*ɮugᵂeme* ɮəᵂgᵂaʸmaʸ	*ɮgᵂama-Øʸ	*ØɮgamØᵂa-y	*kɮgamwa-y	1
				√ CaC CaC Ca	
Vame	*aɮəgᵂeme* aɮəgᵂaʸmaʸ	*aɮgᵂama-Øʸ	*ØaɮgamØᵂa-y	*kaɮgamwa-y	2
1. ə-epenthesis; *w > Øᵂ; +W: *g > gᵂ; +W: ə > u; *y > Øʸ; +Y: *a > e 2. ə-epenthesis; *w > Øᵂ; +W: *g > gᵂ; *y > Øʸ; +Y: *a > e					

Margi

Bura	*likamo* ləʸkamaᵂ	*lkamaØᵂ-Øʸ	*ØlkamawØ-y	*kɮgamwa(-y)	1
Margi-South	*ɮugᵂam* ɮəᵂgᵂam	*ɮgamØᵂ	*ØɮgamwØ		2
1. *ɮ > l; *g > k; ə-epenthesis; *y > Øʸ; +Y: ə > i; *w > Øᵂ; +W: lexical-final *a > o 2. ə-epenthesis; *w > Øᵂ; +W: *g > gᵂ; +W: ə > u					

Mandara

				√ C C C C Ca	
Matal	*ɮəgᵂməy* ɮəgᵂmay	*ɮgmØᵂ-ay	*ØɮgmwØ-ay	*kɮgmwa(-a)-y	1
	ɮəgᵂmi ɮəgᵂmy	*ɮgmØᵂ-y	*ØɮgmwØ-y		2
	ɮugmi ɮəᵂgmy				3
				√ C C CaC Ca	

Podoko	*ɮəgʷama*	*ɮgamØʷa	*Øɮgamwa	*kɮgamwa(-y)	4
Dghwede	*ɮugʷama* ɮəʷgʷama				5
Mandara	*ədhlugʷame* əɮəʷgʷamaʸ	*ɮgamØʷa-Øʸ	*Øɮgamwa-y		6
				√ CaCaCaC Ca	
Mandara	*eɮegʷame* aʸɮaʸgʷamaʸ	*a-ɮagamØʷa-Øʸ	*Øaɮagamwa-y	*kaɮagamwa(-y)	7
Glavda	*aɮagʷama* aɮagʷama	*aɮagamØʷa	*Øaɮagamwa		8

1. ə-epenthesis; *w > Øʷ; +W: *g > gʷ
2. ə-epenthesis; *w > Øʷ; +W: *g > gʷ; *y > i
3. ə-epenthesis; *w > Øʷ; +W: ə > u; *y > i
4. ə-epenthesis; *w > Øʷ; +W: *g > gʷ
5. ə-epenthesis; *w > Øʷ; +W: *g > gʷ; +W: ə > u
6. *ə-pro- & epenthesis; *w > Øʷ; +W: *g > gʷ; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e
7. *w > Øʷ; +W: *g > gʷ; *y > Øʸ; +Y: *a > e (except penultimate)
8. *w > Øʷ; +W: *g > gʷ

Mofu

				√ C C C C Ca	
Zulgo	*ɮigʷime* ɮəʸgʷəʸmaʸ	*ɮgmØʷa-Øʸ	*Øɮgmwa-y	*kɮgmwa-y	1
Gemzek	*ɮugme* ɮəʷgmaʸ				2
	ɮugme ɮwgmaʸ	*ɮwgma-Øʸ	*Øɮwgma-y		3
				√ C CaC C Ca	
Gemzek	*ɮegume* ɮaʸgəʷmaʸ	*ɮagmØʷa-Øʸ	*Øɮagmwa-y	*kɮagmwa-y	2
				√ C C CaC Ca	
Merey	*ɮəgʷeme* ɮəgʷaʸmaʸ	*ɮgamØʷa-Øʸ	*Øɮgamwa-y	*kɮgamwa-y	4
				√ C CaCaC Ca	
Mofu-Gudur	*ɬagʷama*	*ɬagamØʷa	*Øɬagamwa	*kɮagamwa(-y)	5
Dugwor	*ɮegʷeme* ɮaʸgʷaʸmaʸ	*ɮagamØʷa-y	*Øɮagamwa-y		6
				√ CaC CaC Ca	
Ouldeme	*aɮəgʷeme* aɮəgʷaʸmaʸ	*aɮgamØʷa-Øʸ	*Øaɮgamwa-y	*kaɮgamwa-y	4
Muyang	*eɮigʷemi* aʸɮəʸgʷaʸmy	*aɮgamØʷ-y	*ØaɮgamwØ-y		7
				√ C CaC CaCa	
Mofu-North	*ɮegiveme* ɮaʸgəʸvaʸmaʸ	*ɮagvama-Øʸ	*Øɮagwama-y	*kɮagmawa-y	8
				√ CaCaCaC Ca	
Moloko	*eɮegʷeme* aʸɮaʸgʷaʸmaʸ	*aɮagamØʷa-Øʸ	*Øaɮagamwa-y	*kaɮagamwa-y	9

1. ə-epenthesis; *w > Øʷ; +W: g > gʷ; *y > Øʸ; +Y : ə > i; +Y: lexical-final *a > e
2. ə-epenthesis; *w > Øʷ; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e
3. alternative analysis: multiple metathesis gmw > wgm; *w > u; *y > Øʸ; +Y: lexical-final *a > e
4. ə-epenthesis; *w > Øʷ; +W: g > gʷ; *y > Øʸ; +Y: *a > e
5. *ɮ > ɬ; *w > Øʷ; +W: g > gʷ
6. * *w > Øʷ; +W: *g > gʷ; *y > Øʸ; +Y: *a > e
7. *w > Øʷ; +W: g > gʷ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e; *y > i
8. metathesis mw > wm; *w > v; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e
9. *w > Øʷ; +W: g > gʷ; *y > Øʸ; +Y: *a > e

MAROUA

				√ CaC CaC Ca	
Mbazla	*'aɮgomo* ʔaɮgaʷmaʷ	*ʔaɮgamØʷa	*ʔaɮgamwa	*kaɮgamwa	1
				√ CaCaCaC Ca	
Giziga-Muturwa	*(a)ɮogomo(ŋ)* aɮaʷgaʷmaʷŋ	*aɮagamØʷa-ŋ	*Øaɮagamwa-kʷ-n	*kaɮagamwa-kʷ-n	1
1. *w > Øʷ; +W *a > o; (kʷ > k; fusion kn > ŋ)					

LAMANG

Lamang	*ɮgʷama*	*ɮgamaØʷØ	*ØɮgamawØ	*kɮgamawa	1
Hdi	*ngalibwa* ngaləʸbwa	*ŋ-galbwa-Øʸ	*nØ-galØbwa-y	*na-kaɮgmwa-y	2
	ŋalibuwa ŋaləʸbəʷwʷa				3
1. *w > Øʷ; +W: *g > gʷ 2. *ɮ > l; *m > b; homorganic assimilation *n > ŋ/_g; ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *ɮ > l; *m > b; homorganic assimilation *n > ŋ/_g (> ŋ); ə-epenthesis; *y > Øʸ; +Y: ə > i; +W: ə > u; homorganic assimilation and fusion n+g > ŋ					

HIGI

				√ C C CaC Ca	
Kamwe-Futu	*thəgʷami* ɬəgʷamy	*ɬgamØʷ-y	*ØɬgamwØ-y	*kɮgamwa-y	1
				√ CaC C C Ca	
Bana	*ᵑgaluba* ŋgalwba	*n-galwba	*nØ-galØbwa	*na-kaɮgmwa	2
				√ CaCaC C Ca	
Kirya	*nyaloba* nʸalaʷba	*n-ØalabØʷa-Øʸ	*nØ-galaØbwa-y	*na-kaɮagmwa-y	3
1. *ɮ > ɬ ; ə-epenthesis; *w > Øʷ; +W: *g > gʷ; *y > i 2. *ɮ > l; *m > b; homorganic assimilation *n > ŋ/_g; metathesis bw > wb; w > u 3. *ɮ > l; *m > b; *y > Øʸ; +Y: n > nʸ; *w > Øʷ; +W: *a > o					

KOTOKO-ISLAND

Buduma	*loguəme* laʷgʷəmaʸ	*lagmaØʷa-Øʸ	*Ølagmawa-y	*kɮagmawa-y	1
1. *ɮ > l; ə-epenthesis; *w > Øʷ; +W: *g > gʷ; +W: *a > o; *y > Øʸ; +Y: lexical-final *a > e					

KOTOKO-NORTH

				√ C C C C Ca	
Afade	*girgimu* gəʸrgəʸmw	*grgmw-Øʸ	*grgmwØ-y	*kɮgmwa-y	1
Maltam	*girdʒimu* gəʸrdzʸəʸmw				2
				√ CaC C CaCa	
Mpade	*galdʒimo* galdzʸəʸmaʷ	*galgmaØʷ-Øʸ	*galgmawØ-y	*kaɮgmawa-y	3
				√ C CaCaCCa	
Malgbe	*logome* laʷgaʷmaʸ	*lagamØʷa-Øʸ	*Ølagamwa-y	*kɮagamwa-y	4
1. *k > g; *ɮ > r; *w > u; ə-epenthesis; *y > Øʸ; +Y: ə > i~i 2. *k > g; *ɮ > r; *w > u; ə-epenthesis; *y > Øʸ; +Y: *gʸ > ʤ; +Y: ə > i~i 3. *ɮ > l; *k > g; ə-epenthesis; +Y: *gʸ > ʤ; *y > Øʸ; +Y: ə > i; *w > Øʷ; +W: lexical-final *a > o 4. *ɮ > l; *w > Øʷ; +W: *a > o; *y > Øʸ; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*kurguma* kəʷrgəʷma	*krgmaØʷ	*krgmawØ	*kɮgmawa	1
Mser	*gurguma* gəʷrgəʷma	*grgmaØʷ			2
1. *ɮ (> l?) > r; ə-epenthesis; *w > Øʷ; +W: ə > u 2. *k > g; *ɮ (> l?) > r; ə-epenthesis; *w > Øʷ; +W: ə > u					

KOTOKO-SOUTH

Mazera	*kurguma* kəʷrgəʷma	*krgmaØʷ	*krgmawØ	*kɮgmawa	1
1. *ɮ (> l?) > r; ə-epenthesis; *w > Øʷ; +W: ə > u					

MUSGUM

Mbara	*lukma* lwkma	*lwkma	*Ølkmwa	*kɮgmwa	1
1. *ɮ > l; *g > k ; multiple metathesis *lkmw > lwkm; *w > u					

GIDAR

Gidar	*logomo* laʷgaʷmaʷ	*lagamØʷa	*Ølagamwa	*kɮagamwa	1
1. *ɮ > l; *w > Øʷ; +W: *a > o					

change/alter/exchange, to

PCC *(RED-, ma-) **b(a)ɗa** (-a, -y, -kʷ, -n, -t, -d, -r; FV)

DABA

Buwal	*ᵐbaɗ* mbaɗ	*m-baɗ	*mØ-baɗØ	*ma-baɗa	
Gavar	*ᵐbaɗ* mbaɗ				

SUKUR

Sukur	*ᵐbəɗa* mbəɗa	*m-bɗ	*mØ-bɗØ	*ma-bɗa	1
1. ə-epenthesis					

HURZA

Mbuko	*ᵐbəɗa* mbəɗa	*m-bɗ	*mØ-bɗØ	*ma-bɗa(-y-da)	1
Vame	*ᵐbəɗede* mbəɗaʸdaʸ	*m-bɗa-Øʸ-da	*mØ-bɗa-y-da		2
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: *a > e					

MANDARA

				√ C Ca	
Matal	*mabədla*	*ma-bdØ-la		*ma-bdâ(-ra)	1
Podoko	*ᵐbəda* mbədà	*m-bdâ	*mØ-bdâ		2
Dghwede	*ᵐbət'a* mbədà				2
				√ CaCa	
Malgwa	*ᵐbada* mbadâ	*m-badâ	*mØ-badâ	*ma-badâ(-y)	
Mandara	*ᵐbada* mbadâ				
	ᵐbeda mbaʸdâ	*m-badâ-Øʸ	*mØ-badâ-y		3
1. *r > l; ə-epenthesis 2. ə-epenthesis 3. y > Øʸ; +Y: *a > e					

MOFU

				√ C Ca	
Zulgo	*ᵐbəɗ* mbəɗ	*m-bɗ	*mØ-bdØ	*(RED-)ma-bdâ (-a-y-kʷ-n)	1
Gemzek	*ᵐbəɗ* mbəɗ				1
Mofu-Gudur	*ᵐbəɗ* mbəɗ				1
Dugwor	*məᵐbədeŋ* məmbədâʸŋ	*mØ-m-bdâ-Øʸ-ŋ < *ma-mØ-bdâ-y-k-n			2
	məᵐbədey məmbədâʸy	*mØ-m-bɗ-ayʸ < *ma-mØ-bdØ-a-y			3
Mofu North	*məᵐbədey* məmbədâʸy				3
				√ CaCa	
Ouldeme	*ᵐbaɗ* mbaɗ	*m-baɗ	*mØ-baɗØ	*ma-badâ	
Moloko	*ᵐbaɗ* mbaɗ				
1. ə-epenthesis 2. ə-epenthesis; *kʷ > k; fusion kn > ŋ; *y > Øʸ; +Y: *a > e 3. ə-epenthesis; *y > yʸ; +Y: *a > e					

MAROUA

Giziga-Muturwa	*ᵐbidi* mbəʸdỳ	*m-bɗ-yʸ	*mØ-bdØ-y	*ma-bdâ-y	1
Giziga-Marva	*ᵐbide* mbəʸdâʸ	*m-bdâ-Øʸ	*mØ-bdâ-y		2
1. ə-epenthesis; +Y: ə > i; *y > i 2. ə-epenthesis; +Y: ə > i; +Y: lexical-final *a > e					

LAMANG

Lamang	*ᵐbəda* mbədâ	*m-bdâ	*mØ-bdâ	*ma-bdâ(-a-y)	1
Hdi	*ᵐbəday* mbədây	*m-bɗ-ay	*mØ-bdØ-a-y		1
1. ə-epenthesis					

HIGI

Kamwe-Nkafa	*ᵐbərəntə* mbərəntə	*m-br-n-ta	*mØ-brØ-n-ta	*ma-bdâ(-n-ta)	1
Kirya	*ᵐbəra* mbəra	*m-bra	*mØ-bra		2
Bana	*ᵐbərə* mbərə				3
1. *ɗ > r; ə-epenthesis; FV *a > ə 2. *ɗ > r; ə-epenthesis 3. *ɗ > r; ə-epenthesis; lexical-final *a > ə					

charcoal

PCC *(ma-) **ɣ^{w}(a)v(a)na** (-y, -k^{w}, -n, -t; FV)

BATA

Gude	*ivənyinə* əʸvənʸynə	*vn-yʸ-na	*ØvnØ-y-na	*ɣʷvna-y(-na)	1
Sharwa	*avihi* avəʸxy	*vx-yʸ	*xvØØ-y		2
1. ə-prothesis; *y > yʸ; +Y: ə > i; +Y: n > nʸ; *y > i; FV *a > ə 2. *ɣʷ > x; metathesis xv > vx; a-prothesis; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

DABA

Mbudum	*ŋguvoŋ* ŋgʷəʷvaʷŋ	*ŋ-gʷvaŋ-Ø	*mØ-gʷvanØ-k	*ma-ɣʷvana-kʷ	1
Daba	*ŋgəvan*ʔ	*n-gvan-ʔ	*mØ-gvanØ-ʔ		2
1. *ɣʷ > gʷ; *kʷ > k; ə-epenthesis; +W: ə > u; +W: *a > o; fusion *nk > ŋ; homorganic assimilation *m > ŋ/_gʷ 2. *ɣʷ (> gʷ) > g; *kʷ (> k) > ʔ; ə-epenthesis; homorganic assimilation *m > ŋ/_g					

MAFA

Mafa	*vaŋ*	*vaŋ-Ø	*ØvanØ-k	*ɣʷvana-kʷ	1
1. *kʷ > k; fusion *nk > ŋ					

SUKUR

Sukur	*vin* vəʸn	*vn-Øʸ	*ØvnØ-y	*ɣʷvna-y	1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i					

HURZA

Mbuko	*uvon* wvaʷn	*wʷvan	*wʷvanØ	*ɣʷvana	1
Vame	*huvan* xʷəʷvan	*xʷvan	*xʷvanØ		2
1. *ɣʷ > wʷ > u; +W: *a > o 2. *ɣʷ > xʷ; ə-epenthesis; +W: ə > u					

MARGI

Bura	*vina* vəʸna	*vna-Øʸ	*Øvna-y	*ɣʷvna-y(-kʷa)	1
Margi	*vunyi* vʷəʷnʸy	*vʷn-yʸ	*ØʷvnØ-y		2
Margi South	*uvʷunyi* wvʷəʷnʸy	*wʷvn-yʸ	*wʷvnØ-y		3
	uvʷiᵑgi wvʷəʸⁿgəʸ	*wvʷØⁿ-Øʸ-ga	*wʷvnⁿØ-y-ka		4
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis; *ɣʷ > Øʷ; +W: ə > u; *y > yʸ; +Y: *n > nʸ; *y > i 3. ə-epenthesis; *ɣʷ > wʷ > u; +W: *v > vʷ; +W: ə > u; +Y: *n > nʸ; *y > i 4. ə-epenthesis; *ɣʷ > wʷ; *+W: *v > vʷ; w > u; kʷ > g; FV *a > ə; *y > Øʸ; +Y: ə > i; *n > nⁿ > Øⁿ; +N: g > ᵑg					

MANDARA

				√ C C Ca	
Glavda	*ʁuvra* ɣʷəʷvra	*ɣʷvra		*ɣʷvna	1
				√ C CaCa	
Podoko	*uvara* wvara	*wvara		*ɣʷvana	2
				√ CaCaCa	
Matal	*aval*	*aval	*ØavalØ	*ɣʷavana	3
1. *n > r; ə-epenthesis; +W: ə > u 2. *ɣʷ > w > u; *n > r 3. *n > l					

Mofu

Moloko	*dever* də̀ʸvaʸr	*də̀avar-Øʸ	*də̀avarØ-y	*ɣʷavana-y/-kʷ	1
Zulgo	*aver* avaʸr	*avar-Øʸ	*ØavarØ-y		2
Gemzek	*aver* avaʸr				2
Mofu-Gudur	*avaŋʷ*	*avaŋʷ	*ØavanØ-kʷ		3
1. *ɣʷ > (ʔ >) d̀ (back formation?); *n > r; *y > Øʸ; +Y: a > e 2. *n > r; *y > Øʸ; +Y: a > e 3. fusion *nkʷ > ŋʷ					

Maroua

				√ C C Ca	
Giziga-Muturwa	*vu* vw	*vw	*wvØØ	*ɣʷvna	1
				√ CaC Ca	
Giziga-Marva	*avu* avw	*av-w	*ØavØØ-kʷ	*ɣʷavna-kʷ	2
				√ CaCaCa	
	avoŋ avaʷŋ	*avaŋʷ	*ØavanØ-kʷ	*ɣʷavana-kʷ	3
1. *ɣʷ > w > u; metathesis wv > vw 2. *kʷ > w > u 3. fusion *nkʷ > ŋʷ; +W: *a > o					

Lamang

				√ C C Ca	
Lamang	*ɣuvini* ɣʷəʷvəʸny	*ɣʷvn-yʸ	*ɣʷvnØ-y	*ɣʷvna-y	1
				√ C CaCa	
Hdi	*vwani* vwany	*vwan-y	*wvanØ-y	*ɣʷvana-y	2
1. ə-epenthesis; +W: ə > u; +Y: ə > i; *y > i 2. *ɣʷ > w; metathesis wv > vw; *y > i					

Higi

				√ C C Ca	
Kamwe-Nkafa	*vyə*	*v-ya	*ØvØØ-ya	*ɣʷvna(-y(a/-kʷ))	1
Kamwe-Futu	*vəno* vənaʷ	*vna-Øʷ	*Øvna-kʷ		2
Bana	*və'i* vəʔy	*vʔ-y	*ʔvØØ-y		3
1. FV *a > ə 2. *kʷ > Øʷ; +W: lexical-final *a > o 3. *ɣʷ > ʔ; metathesis ʔv > vʔ; ə-epenthesis; *y > i					

Kotoko-North

Afade[18]	*f'anfaʔn*	*fʔan-fʔan	*RED-ʔfanØ	*RED-ɣʷvana	1
Mpade	*fonfon* faʷnfaʷn	*ʷfan-ʷfan	*RED-ØʷfanØ		2
Malgbe	*fanfan*	*fan-fan	*RED-ØfanØ		
1. *ɣʷ > ʔ; *v > f; metathesis/fusion of ʔf > fʔ 2. *ɣʷ > Øʷ; *v > f; +W: *a > o					

Kotoko-Central

Mser	*uvan* wvan	*wvanØ	*ɣʷvana	1
1. *ɣʷ > w > u				

[18] Transcription error (*f'anf'an* instead of *f'anfaʔn*)?

Musgum

				√ C C Ca	
Muskum	*vet* vaʸt	*va-Øʸ-t	*ØvØa-y-t	*ɣʷvna-y-t	1
				√ C CaCa	
Vulum	*aŋveŋ* aᵑvaʸŋ	*ŋ-vaŋ-Øʸ	*mØ-ɣvanØ-y-k	*ma-ɣʷvana-y-kʷ	2
				√ CaCaCa	
Vulum	*aveŋ* avaʸŋ	*avaŋ-Øʸ	*ØavanØ-y-k	*ɣʷavana-y-kʷ	3
1. *y > Øʸ; +Y: lexical-final *a > e 2. a-prothesis; *ɣʷ > ɣ; fusion *mɣ > ŋ; *y > Øʸ; +Y: *a > e; *kʷ > k; fusion nk > ŋ 3. *y > Øʸ; +Y: *a > e; kʷ > k; fusion nk > ŋ					

cheek

Areal root/loan? *(ma-) **ɣʷ(a)r(a)ma**[19] (-RED, -a, -y, -kʷ, -n)

Sukur

Sukur	*ɣulum* ɣʷəʷləʷm	*ɣʷlmØ	*ɣʷrma	1
1. *r > l; ə-epenthesis; +W: ə > u				

Hurza

				√ C C Ca	
Vame	*mula* məʷla	*mØʷla	*ɣʷmla	*ɣʷrma	1
				√ C CaCa	
Mbuko	*məhulom* məxʷəʷlaʷm	*m-xʷlam	*mØ-xʷlamØ	*ma-ɣʷrama	2
1. *r > l; multiple metathesis ɣʷlm > ɣʷml > mɣʷl; *ɣʷ > Øʷ; ə-epenthesis; +W: ə > u 2. *ɣʷ > xʷ; *r > l; ə-epenthesis; +W: ə > u; +W: *a > o					

Mandara

Glavda	*uum* əʷwm	*wʷm	*ɣʷØmØ	*ɣʷrma	1
1. *ɣʷ > wʷ > uʷ; ə-prothesis; +W: ə > u					

Mofu

				√ CaC Ca	
Zulgo	*mahalum* maxaləʷm	*ma-xʷalm	*ma-xʷalmØ	*ma-ɣʷarma	1
				√ CaCaCa	
Gemzek	*maholom* maxʷaʷlaʷm	*ma-xʷalam	*ma-xʷalamØ	*ma-ɣʷara(RED)ma	2
Merey	*maholom* maxʷaʷlaʷm				2
	maholololom maxʷaʷlaʷlaʷm		*ma-xʷala-la-ma		2
1. *ɣʷ > xʷ; *r > l; ə-epenthesis; +W: ə > u 2. *ɣʷ > xʷ; *r > l; +W: *a > o					

[19] Since all available examples from the database contain /l/ in C_2 position of the simple root, we might wish to reconstruct */l/. Clearly, this cannot be a PCC-level reconstruction, because the proto-language is reconstructed without ˣ/l/. Therefore, this root must be either a loan (of unidentified origin) or a later areal innovation after /l/ had been established as a phonemicisation of the allophone [l] of PCC */r/. In any case, as a PCC root we would need to reconstruct ***ɣʷ(a)r(a)ma** and assume that all reconstructed *r in this root have shifted to /l/ in all languages where the root occurs synchronically.

LAMANG

Lamang	*lageŋ* laga^{y}ŋ	*lagaŋ-Ø^{y}	*lagamØ-y-k	*ɣ^{w}arama-y-k^{w}	1
	legeŋ la^{y}ga^{y}ŋ				1
1. *ɣ^{w} > g; *r > l; *k^{w} > k; fusion mk > ŋ; metathesis gl > lg; *y > Ø^{y}; +Y: *a > e					

HIGI

Kirya	*ɣulum* ɣ^{w}ə^{w}lə^{w}m	*ɣ^{w}lm	*ɣ^{w}lmØ	*ɣ^{w}rma	1
Bana	*ɣ^{w}əlmə*	*ɣ^{w}lma			2
1. *r > l; ə-epenthesis; +W: ə > u 2. *r > l; ə-epenthesis; lexical-final *a > ə					

MUSGUM

Mbara	*galay*	*galØ-ay	*galØa-a-y	*ɣ^{w}arma-a-y	1
1. *ɣ^{w} (> ɣ) > g; *r > l					

GIDAR

Gidar	*galiin* galə^{y}yn	*galØ-y^{y}-n	*galØa-y-n	*ɣ^{w}arma-y-n	1
1. *ɣ^{w} > g; *r > l; ə-epenthesis; +Y: ə > i; *y > i					

chicken

PCC *(ma-) **g^{w}(a)ts(a)k^{w}(a)ra** (-y)

MAFA

Mafa	*watʃak* wats^{y}ak	*watsak-Ø^{y}	*watsakØØ-y	*g^{w}atsak^{w}ra-y	1
1. *g^{w} > w; *k^{w} > k; *y > Ø^{y}; +Y: *ts > tʃ					

SUKUR

Sukur	*takur* tak^{w}ə^{w}r	*tak^{w}r	*Øtak^{w}rØ	*g^{w}tsak^{w}ra	1
1. *ts > t; ə-epenthesis; +W: ə > u					

HURZA

Mbuko	*nzəkar*	*n-zkar	*mØ-ØzkarØ	*ma-g^{w}tsk^{w}ara	1
Vame	*nzugurak* nzə^{w}g^{w}ə^{w}rak	*n-zg^{w}rak	*mØ-g^{w}zkarØ		2
1. *ts > z; *k^{w} > k; ə-epenthesis; homorganic assimilation *m > n/_z 2. *ts > z; *k^{w} > k; ə-epenthesis; homorganic assimilation *m > n/_z; metathesis g^{w}z > zg^{w}; metathesis kr > rk; +W: ə > u					

MANDARA

				√ C C C Ca	
Podoko	*utsəka* wtsəka	*wtska	*wtskØa	*g^{w}tsk^{w}ra	1
				√ CaCaC Ca	
Matal	*g^{w}atsak*	*g^{w}atsak	*g^{w}atsakØØ	*g^{w}atsak^{w}ra	2
1. *g^{w} > w > u; *k^{w} > k; ə-epenthesis 2. *k^{w} > k					

MOFU

				√ C C C Ca	
Zulgo	*me^{n}dzik^{w}ir* ma^{yn}dzə^{y}k^{w}ə^{y}r	*ma-^{n}dzk^{w}r-Ø^{y}	*m^{n}a-Ødzk^{w}rØ-y	*ma-g^{w}tsk^{w}ra-y	1
				√ C C CaCa	
Ouldeme	*wutskar* wə^{w}tskar	*w^{w}tskar	*w^{w}tskarØ	*g^{w}tsk^{w}ara(-y)	2
Dugwor	*wutʃəker* wə^{w}ts^{y}əka^{y}r	*w^{w}tskar-Ø^{y}	*w^{w}tskarØ-y		3

				√ C CaCaCa	
Moloko	*aⁿdʒakar* aⁿdzʸakar	*Øa-ⁿdzakar-Øʸ	*mⁿa-ØdzakarØ-y	*ma-gʷtsakʷara-y	4
Gemzek	*meⁿdzekʷer* maʸⁿdzaʸkʷaʸr	*ma-ⁿdzakʷar-Øʸ	*mⁿa-ØdzakʷarØ-y		5
Merey	*maⁿdzekʷer* maⁿdzaʸkʷaʸr				5
1. *ts > dz; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e; *m > mⁿ; +N: dz > ⁿdz 2. *gʷ > wʷ; ə-epenthesis; +W: ə > u 3. *gʷ > wʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e 4. *ts > dz; *y > Øʸ; +Y: *dz > dʒ; *m > mⁿ; +N: dʒ> ⁿdʒ 5. *ts > dz; *y > Øʸ; +Y: *a > e; *m > mⁿ; +N: dz > ⁿdz					

MAROUA

Giziga-Marva	*kətʃikar* kətsʸəʸkar	*ktskar-Øʸ	*ktskarØ-y	*(ma-)gʷtskʷara-y	1
Mbazla	*mutʃukor* məʷtsʸəʷkʷaʷr	*m-tskʷar-Øʸ	*mØ-ØtskʷarØ-y		2
1. *gʷ > k; *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +W: ə > u; +W: *a > o					

LAMANG

Lamang	*ɣatakʷala*	*ɣatakʷala		*gʷatsakʷara	1
	ɣatalakʷ	*ɣatalakʷ	*ɣatakʷalØ		2
1. *gʷ > ɣ; *ts > t; *r > l 2. *gʷ > ɣ; *ts > t; *r > l; metathesis kʷl > lkʷ					

KOTOKO-SOUTH

				√ C C C Ca	
Mazera	*tʃikre* tsʸəʸkraʸ	*tskra-Øʸ	*Øtskra-y	*gʷtskʷra-y	1
				√ C CaCaCa	
	tʃakar tsʸakar	*tsakar-Øʸ	*ØtsakarØ-y	*gʷtsakʷara-y	2
Zina	*tʃakara* tsʸakara	*tsakara-Øʸ	*Øtsakara-y		2
1. *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i; +Y: lexical-final *a > e 2. *kʷ > k; *y > Øʸ; +Y: *ts > tʃ					

MUSGUM

Muskum	*miskir* məʸskəʸr	*m-skr-Øʸ	*mØ-ØskrØ-y	*ma-gʷtskʷra-y	1
1. *; *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

child[20]

PCC *(ma-, RED-) **z(a)gʷ(a)na** (-y, -kʷ; FV)

BATA

Jimi	*zegən* zaʸgən	*zagn-Øy	*zagnØ-y	*zagʷna-y	1
1. *gʷ > g; *y > Øʸ; +Y: *a > e					

[20] Gravina (2015) considers this root "difficult to reconstruct" and obviously does not include all potential cognates in his database: "There are several roots in other languages which look similar and may be cognate, e.g. Bura /bzər/ and Mbuko /wan/." We consider these to indeed be cognates and include those explicitly mentioned in our sample.

HURZA

Mbuko	*wan*	*wan	*ØwanØ	*zg^{w}ana	1
1. *g^{w} > w					

MARGI

Bura	*bzər* z^{w}r	*z^{w}r	*zØ^{w}rØ	*zg^{w}na	1
1. *n > r; *g^{w} > Ø^{w}; +W *z > z^{w} (= orthographic bz)					

MANDARA

Podoko	*udzəra* wdzəra	*wdzra	*dzwra		1
Dghwede	*vdʒire* vdz^{y}ə^{y}ra^{y}	*vdzra-Ø^{y}	*dzvra-y		2
Malgwa	*əgza*	*gza	*zgØa	*zg^{w}na(-y)	3
Glavda	*zra*	*zra	*zØra		4
	zə	*zə	*zØØa		5
1. *z > dz; *g^{w} > w > u; *n > r; metathesis dzw > wdz; ə-epenthesis 2. *z > dz; *g^{w} (> b) > v; *n > r; metathesis dzv > vdz; ə-epenthesis; *y > Ø^{y}; +Y: dz > dʒ; +Y: ə > i; +Y: lexical-final *a > e 3. *g^{w} > g; metathesis zg > gz; ə-prothesis 4. *n > r 5. lexical-final *a > ə					

MOFU

Ouldeme	*zezeŋ* za^{y}za^{y}ŋ	*za-zaŋ-Ø^{y}	*RED-zagnØ-y	*RED-zag^{w}na-y	1
1. *g^{w} > g; fusion gn > ŋ; *y > Ø^{y}; +Y: *a > e					

MAROUA

Giziga-Marva	*zun* zwn	*zwn	*zg^{w}nØ		1
Giziga-Muturwa	*zuŋ* zə^{w}ŋ	*zŋ^{w}		*(ma-)zg^{w}na(-y)	2
Mbazla[21]	*ziŋ* zə^{y}ŋ	*zŋ-Ø^{y}	*zgnØ-y		3
	nzil nzə^{y}l	*n-zl-Ø^{y}	*mØ-zØlØ-y		4
1. *g^{w} > w 2. fusion g^{w}n > ŋ^{w}; ə-epenthesis; +W: ə > u 3. *g^{w} > g; fusion gn > ŋ; ə-epenthesis; *y > Ø^{y}; +Y: *ə > i 4. *n (> r) > l; homorganic assimilation *m > n/_z; ə-epenthesis; *y > Ø^{y}; +Y: *ə > i					

LAMANG

Lamang	*uz* wz	*wz < *zw	*zwØØØ		1
	uzaŋa wzaŋa	*wzaŋa	*zwanØ-ka	*zg^{w}ana(-k^{w}(a))	2
Hdi	*zwaŋ*	*zwaŋ	*zwanØ-k		3
1. *g^{w} > w > u; metathesis zw > wz 2. *g^{w} > w > u; metathesis zw > wz; *k^{w} > k; fusion nk > ŋ 3. *g^{w} > w; *k^{w} > k; fusion nk > ŋ					

HIGI

Kamwe-Nkafa	*zəg^{w}i* zəg^{w}y	*zg^{w}-y	*zg^{w}ØØ-y	*zg^{w}na(-y)	1
Kamwe-Futu	*zəg^{w}i* zəg^{w}y				1

[21] Our reconstruction of *{ma-} here is arbitrary and motivated by intuitive analogy. We could also have reconstructed *{na-} for lack of any comparative evidence as to the original nature of the initial nasal of the augmental prefix.

Bana	*z(ə)ɣʷə*	*zɣʷə	*zɣʷØa		2
Kirya	*zwəga*	*zwga	*zgwØa		3
Psikye	*wuzəgə* wəʷzəgə	*wʷzgə	*zgwØa		4
1. *y > i 2. *gʷ > ɣʷ; lexical-final *a > ə 3. re-segmentalisation *gʷ > g+w; metathesis gw > wg; ə-epenthesis 4. re-segmentalisation *gʷ > g+wʷ; multiple metathesis zgw > wzg; ə-epenthesis; +W: ə > u; lexical-final *a > ə					

claw, fingernail

PCC *(na-, xa-)[22] **ɗ(a)k(a)na** (-y, -kʷ)

Mafa

Cuvok	*rəheŋ* rəxaʸŋ	*rxaŋ-Øʸ	*rxanØ-y-k	*ɗkana-y-kʷ	1
1. *ɗ > r; radical *k > x; suffixal *kʷ > k; fusion *nk > ŋ; ə-epenthesis; *y > Øʸ; +Y: *a > e					

Maroua

Mbazla	*dîkiŋ* dəʸkəʸŋ	*ɗkŋ-Øʸ	*ɗknØ-y-k	*ɗkna-y-kʷ	1
	likiŋ ləʸkəʸŋ	*lkŋ-Øʸ	*lknØ-y-k		2
1. suffixal *kʷ > k; fusion *nk > ŋ; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *ɗ (> r) > l; suffixal *kʷ > k; fusion *nk > ŋ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

Lamang

				√ CaC Ca	
Hdi	*ɗahəŋ* ɗəxəŋ	*ɗəxŋ	*ɗəxnØ-k	*ɗəkna-kʷ	1
				√ CaCaCa	
Lamang	*ɗahaŋ* ɗəxaŋ	ɗəxaŋ	*ɗəxanØ-k	*ɗəkana-kʷ	2
1. radical *k > x; suffixal *kʷ > k; fusion *nk > ŋ; ə-epenthesis 2. radical *k > x; suffixal *kʷ > k; fusion *nk > ŋ					

Kotoko-North

				√ C C Ca	
Malgbe	*nk'in* nkʔəʸn	*n-ʔkn-Øʸ	*nØ-ʔknØ-y	*na-dkna-y	1
				√ C CaCa	
Afade	*nk'an* nkʔan	*n-ʔkan	*nØ-ʔkanØ	*na-dkana(-y)	2
Mpade	*nk'an* nkʔan				2
Maltam	*ᵑgare* ŋgaraʸ	*ŋ-gara-Øʸ	*nØ-Øgara-y		3
1. *ɗ > ʔ; fusion ʔk > k'; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *ɗ > ʔ; fusion ʔk > k' 3. *k > g; *n > r; *y > Øʸ; +Y: lexical-final a > e; homorganic assimilation *n > ŋ/_g					

Kotoko-Central

Lagwan	*nk'ini* nkʔəʸny	*n-ʔkn-yʸ	*nØ-ʔknØ-y	*na-dkna-y	1
Mser	*nk'ir* nkʔəʸr	*n-ʔkr-Øʸ	*nØ-ʔkrØ-y		2

[22] Our reconstruction of *{na-} here is arbitrary and motivated by intuitive analogy. We could also have reconstructed *{ma-} for lack of any comparative evidence as to the original nature of the initial nasal of the augmental prefix.

1. *ɗ > ʔ; fusion ʔk > k'; ə-epenthesis; *y > y^y; +Y: ə > i; *y > i
2. *ɗ > ʔ; *n > r; fusion ʔk > k'; ə-epenthesis; *y > $Ø^y$; +Y: ə > ɨ

KOTOKO-SOUTH

				√ C C Ca	
Mazera	*hikine* xə^{y}kə^{y}na^y	*xØ-kna-Ø^y	*xa-Økna-y	*xa-dkna-y	1
				√ C CaCa	
	hakane xakana^y	*xa-kana-Ø^y	*xa-Økana-y	*(xa-)dkana-y(-k^w)	2
	k^{w}are k^{w}ara^y	*kara-Ø^y-Ø^w	*Økara-y-k^w		3
1. ə-epenthesis; *y > $Ø^y$; +Y: ə > i; +Y: lexical-final *a > e					
2. *y > $Ø^y$; +Y: lexical-final *a > e					
3. *n > r; *k^w > Ø^w; +W: radical *k > k^w; *y > $Ø^y$; +Y: lexical-final *a > e					

cold, to be

PCC *(ma-) **t(a)ɬa** (-a, -y, -k^w, -n; FV)

MAFA

Mafa	*mətaɬ*	*m-taɬ	*mØ-taɬØ	*ma-tała	1
Cuvok	*matała*	*ma-tała			
1. ə-epenthesis					

MARGI

Bura	*mtaɬi* mtaɬy	*m-taɬ-y	*mØ-taɬØ-y	*ma-tała-y/-k^{w}a	1
	mtałaku mtałak^{w}ə^w	*m-tała-k^{w}ə	*mØ-tała-k^{w}a		2
1. *y > i					
2. FV *a > ə; +W: ə > u					

MANDARA

Podoko	*mətała*	*m-tała	*mØ-tała	*ma-tała	1
Dghwede	*^{n}dała* ndała	*n-dała	*mØ-dała		2
1. ə-epenthesis					
2. *t > d; homorganic assimilation *m > n/_d					

MOFU

Moloko	*^{n}dałay* ndalay	*n-dał-ay	*mØ-dałØ-a-y	*(ma-)tała(-a-y)	1
Gemzek	*mətaɬ*	*m-taɬ	*mØ-taɬØ		2
Merey	*mətaɬ*				2
	tała	*tała			
1. *t > d; homorganic assimilation *m > n/_d					
2. ə-epenthesis					

MAROUA

Giziga-Marva	*mutełaŋ* mə^{w}ta^{y}łaŋ	*m-tała-Ø^y-ŋ^w	*mØ-tała-y-k^w-n	*ma-tała-y-k^w-n	1
1. *y > $Ø^y$; +Y: *a > e; ə-epenthesis; fusion *k^{w}n > ŋ^w; +W: ə > u					

LAMANG

Lamang	*mtała*	*m-tała	*mØ-tała	*ma-tała	
Hdi	*mətaɬ*	*m-taɬ	*mØ-taɬØ		1
1. ə-epenthesis					

HIGI

Bana	*talɨ* tały	*tał-y	*tałØ-y	*tała-y	1
1. *y > i					

KOTOKO-CENTRAL

Lagwan	*talɨ* talə^{y}	*talə-Ø^{y}	*talə-y	*tała-y	1
1. lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ					

compound, house, home

PCC *(ta-/tsa-/xa-) **ɣ(a)ya** (-k^{w})

BATA

Sharwa	*hayə*	*xaya	*ɣaya	1
1. *ɣ > x; lexical-final *a > ə				

DABA

Buwal	*ge* ga^{y}	*gØ^{y}a	*gya	*ɣya	1
Mbudum	*ge* ga^{y}				1
1. *ɣ > g; *y > Ø^{y}; +Y: lexical-final *a > e					

MAFA

Mafa	*gay*	*gayØ	*ɣaya	1
1. *ɣ > g				

SUKUR

Sukur	*yi* ɣy	*ɣyØ	*ɣya	1
	yəi ɣəy			2
1. *y > i 2. ə-epenthesis; *y > i				

HURZA

Mbuko[23]	*(a)ga*	*gØa	*ɣya	1
1. *ɣ > g				

MANDARA

Matal	*gay*	*gayØ	*ɣaya	1
Podoko	*kaya*	*kaya		2
Mandara	*ha*	*xØØa		3
Glavda[24]	*xa(:wa)*			3
1. *ɣ > g 2. *ɣ (> g) > k 3. *ɣ > x				

MOFU

Ouldeme	*ɣay*	*ɣayØ	*(Ca-)ɣaya	
Muyang[25]	*ahay*	*Øa-xayØ		1

[23] The full Mbuko expression translates as 'at the house of'.

[24] The full Glavda expression translates as 'entrance hut'. i.e. 'house-mouth/opening', where *wa* represents 'mouth'.

[25] The nature of the assumed initial prefix consonant in Muyang remains obscure for lack of conclusive comparative evidence other than from the LAMANG group, which in itself is somewhat inconclusive, see footnote 26.

Moloko	*hay*	*xayØ		1
Gemzek	*ga*			2
Dugwor	*gay*	*gayØ		2
Merey	*gay*			2
	gə	*gØØa		3
Mofu North	*ʔay*	*ʔayØ		4
Mofu-Gudur	*way*	*wayØ		5
1. *ɣ > x 2. *ɣ > g 3. *ɣ > g; lexical-final *a > ə 4. *ɣ (> g) > ʔ 5. *ɣ (> g) > w				

MAROUA

Mbazla	*gai* gay	*gayØ	*ɣaya	1
1. *ɣ > g				

LAMANG [26]

Lamang	*xga*	*x-ga	*xØ-gØØa		1
Hdi	*xga*	*x-ga	*xØ-gØØa		1
Lamang	*tgha*	*t-ɣa	*tØ-ɣØØa	*(ta-~tsa-/xa-)ɣaya	
Hdi	*dzagha*	*dza-ɣa	*tsa-ɣØØa		2
1. *ɣ > g 2. *t (> ts) > dz					

HIGI

				√ C Ca	
Bana	*ɣyi* $ɣ^{y}y$	$*ɣy^{y}Ø$		*ɣya(-k^{w})	1
Psikye	*ge* ga^{y}	$*gØ^{y}a$	*gya		2
Kamwe-Futu	$ɣ^{w}o$ $ɣ^{w}a^{w}$	$*ɣa-Ø^{w}$	*ɣØa-k^{w}		3
				√ CaCa	
Kirya	*ɣay*	*ɣayØ		*ɣaya	
1. *y > y^{y}; +Y: *ɣ > $ɣ^{y}$; *y > i 2. *ɣ > g; *y > $Ø^{y}$; +Y; lexical-final *a > e 3. $*k^{w}$ > $Ø^{w}$; +W: *ɣ > $ɣ^{w}$; lexical-final *a > o					

KOTOKO-NORTH

Malgbe	*ha*	*xØØa			1
Mpade	*ho xa*^{w}	$*xa-Ø^{w}$	*xØa-k^{w}	*ɣya(-k^{w})	2
Afade	*ho xa*^{w}				2
1. *ɣ > x 2. $*k^{w}$ > $Ø^{w}$; +W: lexical-final *a > o					

[26] Not contained in Gravina (2015). Both languages of this group appear to have a double reflex of the same (?) PCC root that reflects semantic differences, i.e. *tɣa/dzaɣa* 'home/place of residence' and *xga* 'compound/house'. Note the different sound correspondences of the initial root consonant *ɣ = ɣ, *ɣ > g, and the – somewhat disturbing assumption of – unusual prefixal root augments that no other languages of the sample share – if at all we are dealing with cognates stemming from the same root. Note that a parallel case of a 'double reflex' of possibly the same PCC root is provided by the pair 'belch' and 'cough'.

KOTOKO-CENTRAL

Lagwan	*yaa*	*ɣaØa	*ɣaya	

KOTOKO-SOUTH

Mazera	*ɣe* ɣa^{y}	*ɣØ^{y}a	*ɣya	1
1. *y > Ø^{y}; +Y: lexical-final *a > e				

cook, to

PCC *(k^{w}a-, ma-, RED) **da** (-a, -y, -k^{w}; FV)

DABA

Buwal	*da*	*da		*(k^{w}a-, RED-) da(-k^{w})	
Gavar	*da*				
Mbudum	*kəda* kəda	*kØ-da			1
	kəduda kədə^{w}da	*kØ-d-da-Ø^{w}	*ka-RED-da-k^{w}		2
Daba	*ta*	*ta			3
1. prefixal *k^{w} > k; ə-epenthesis 2. prefixal *k^{w} > k; ə-epenthesis; suffixal *k^{w} > Ø^{w}; +W: ə > u 3. *d > t					

SUKUR

Sukur	*də* də	*da		*da	1
1. lexical-final *a > ə					

HURZA

Mbuko	*da*	*da		*da	

MARGI

Margi	*ta*	*ta	*da(-y)	1
Kilba	*ta*			1
Bura	*ta*			1
	ti ty	*tØ-y		2
1. *d > t 2. *d > t; *y > i				

MANDARA

Malgwa	*gya* d^{y}a	*da-Ø^{y}	*da-y	*(ma-)da(-a,-y)	1
Podoko	*ta*	*ta			2
Glavda	*ta*				2
Matal	*matay*	*ma-t-ay	*ma-dØ-a-y		2
1. *y > Ø^{y}; +Y: d^{y} > g^{y} 2. *d > t					

MOFU

Zulgo	*da*	*da		*(ma-)da(-a,-y)	
Merey	*da*				
Ouldeme	*di* dy	*d-y	*dØ-y		1
Muyang	*di* dy				1
Moloko	*de* da^{y}	*da-Ø^{y}	*(ma-)da-y		2
Gemzek	*mede* ma^{y}da^{y}	*ma-da-Ø^{y}			2
Mada	*mede* ma^{y}da^{y}				2

Dugwor	*maday*	*ma-d-ay	*ma-dØ-ay		
Mofu North	*metey* ma^{y}ta^{y}y	*ma-t-ay^{y}			3
Mofu-Gudur	*t-*	*ta	*da		4
1. *y > i 2. *y > Ø^{y}; +Y: *a > e 3. *d > t; *y > y^{y}; +Y: *a > e 4. *d > t					

MAROUA

Giziga-Muturwa	*di* dy	*d-y	*dØ-y	*da-y	1
Giziga-Marva	*di* dy				1
Mbazla	*di* dy				1
1. *y > i					

LAMANG

Lamang	*da*	*da	*da	

HIGI

Kamwe-Nkafa	*ta*	*ta	*da	*da(-y-k^{w}a)	1
Kirya	*ta*				1
Bana	*ta*				1
Psikye	*take* taka^{y}	*ta-Ø^{y}-ka	*da-y-k^{w}a		2
1. *d > t 2. *d > t; *k^{w} > k; *y > Ø^{y}; +Y: FV *a > e					

KOTOKO-NORTH

Mpade	*da*	*da	*da	

KOTOKO-SOUTH

Mazera	*udo* wda^{w}	*w^{w}da	*da-w	*da-k^{w}	1
1. *k^{w} > w^{w}; metathesis dw > wd; +W: lexical-final *a > o					

MUSGUM

Mulwi	*di* dy	*d-y	*dØ-y	*da-y	1
Mbara	*tii* tə^{y}y	*t-y^{y}			2
1. y > i 2. *d > t; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i					

GIDAR

Gidar	*ida* ə^{y}da	*da-Ø^{y}		*da-y	1
1. ə-prothesis; *y > Ø^{y}; +Y: ə > ɨ					

cough, to

PCC *(ma-) **x^{w}(a)ɗ(a)ɬa** (-y, -k^{w}, -n, -x; FV)

MAFA

Mafa	*wuɬa* w^{w}ə^{w}ɬa	*w^{w}ɬa	*wØɬa	*x^{w}ɗa	1
1. *x^{w} > w^{w}; ə-epenthesis; +W: ə > u					

TERA

Tera	*kuɮa* k^{w}ə^{w}ɮa	*k^{w}ɮa	*k^{w}ØɮA	*x^{w}ɗa	1

1. *x^{w} > k^{w}; *ɬ > ɮ; ə-epenthesis; +W: ə > u					

SUKUR

Sukur	*ɮyar* ɮ^{y}ar	*ɮar-Ø^{y}	*ØraɮØ-y	*x^{w}ɗaɬa-y	1
1. *ɗ > r; *ɬ > ɮ; metathesis rɮ > ɮr; *y > Ø^{y}; +Y: ɮ > ɮ^{y}					

HURZA

Mbuko	*ɮəɬe(h)* ɮəɬa^{y}(x)	*ɮ-ɮa-Ø^{y}-x	*RED-ØØɮa-y-x	*RED-x^{w}ɗɬa-y-x	1
1. *ɬ > ɮ; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e					

MARGI

Kilba	*'uɬa* ʔwɬa	*ʔwɬa	*wʔɬa	*x^{w}ɗɬa	1
Bura	*buɬa* b^{w}ə^{w}ɬa	*b^{w}ɬa	*w^{w}Øɬa		2
1. *x^{w} > w > u ; *ɗ > ʔ; metathesis wʔ > ʔw 2. *x^{w} (> w^{w}) > b^{w} ; ə-epenthesis; +W: ə > u					

MANDARA

Podoko	*kuɬaha* k^{w}ə^{w}ɬaxa	*k^{w}ɬa-xa	*k^{w}Øɬa-xa	*(ma-)x^{w}ɗɬa (-y,-xa (-k^{w}a))	1
Dghwede	*wuɮaxa* wə^{w}ɮaxa	*w^{w}ɮa-xa	*wØɮa-xa		2
Glavda	*wuçᵊga* wə^{w}çga	*wɬ-ga	*w^{w}ØɬØ-k^{w}a		3
Mandara	*uhya* wx^{y}a	*wx^{y}a	*wØx^{y}a		4
Malgwa	*ŋ^{w}ihya* ŋ^{w}ə^{y}x^{y}a	*ŋ^{w}x^{y}a-Ø^{y}	*mØ-x^{w}Øɬa-y		5
Matal	*mabəɮəh^{w}ay* mabəɮəx^{w}ay	*ma-b^{w}ɮ-xa-y	*ma-b^{w}ØɮØ-y-xa		6
1. *x^{w} > k^{w}; ə-epenthesis; +W: ə > u 2. *x^{w} > w; *ɬ > ɮ; ə-epenthesis; +W: ə > u 3. *x^{w} > w; *ɬ > X; *k^{w} (> k) > g; ə-epenthesis; +W: ə > u 4. *x^{w} > w > u; *ɬ > x^{y} 5. *ɬ > x^{y}; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; fusion *mx^{w} > ŋ^{w} 6. *x^{w} (> w^{w}) > b^{w}; *ɬ > ɮ; irregular metathesis yxa > xay involving vowel /a/; ə-epenthesis; +W: x > x^{w}					

MOFU

				√ C C Ca	
Ouldeme	*dəɬay* dəɬay	*dɬ-ay	*ØdɬØ-a-y	*x^{w}ɗɬa ((-a)-y, -x)	1
Muyang	*ɓəɬay* ɓəɬay	*ɓɬ-ay	*wdɬØ-a-y		2
Moloko	*ɓəɬay* ɓəɬay				2
Gemzek	*ɮəɬah* ɮəɬax	*ɮ-ɮa-x	*RED-ØØɮa-xØ		3
Merey	*ɮəɬeh* ɮəɬa^{y}x	*ɮ-ɮa-Ø^{y}-x	*RED-ØØɮa-y-x		4
Dugwor	*ɮəllɛ* ɮəllɮa^{y}	*ɮɬ-ɮØa-Ø^{y} *ɮɗ-ɮɗa-y	*RED-Øɮɗaɗa-y		5
				√ C CaCa	
Zulgo	*aɮah* aɮax	*aɮa-x	*ØØaɮa-xØ	*x^{w}ɗaɬa-xa	6
1. ə-epenthesis 2. *ɗ > ʔ; *x^{w} > w; fusion wɗ > ɓ; ə-epenthesis 3. *ɬ > ɮ; ə-epenthesis 4. *ɬ > ɮ; ə-epenthesis ; *y > Ø^{y}; +Y: lexical-final *a > e 5. *ɬ > ɮ; *ɗ > l (in reduplication); ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 6. *ɬ > ɮ					

MAROUA

Giziga-Muturwa	*hirłe* xəʸrłaʸ	*xrła-Øʸ	*xrła-y	*xʷɗła-y	1
Giziga-Marva	*irłe* əʸrłaʸ	*rła-Øʸ	*Ørła-y		2
1. *xʷ > x; *ɗ > r; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 2. *ɗ > r; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

LAMANG

Lamang	*wułda* wəʷłda	*wʷłda	*wʷɗła	*xʷɗła	1
1. *xʷ > wʷ; metathesis ɗł > łɗ; ə-epenthesis; +W: ə > u					

HIGI

				√ C C Ca	
Psikye	*'yiła* ʔʸəʸła	*ʔła-Øʸ	*ØʔɬaØʸ	*xʷɗła-y	1
Bana	*'yiła* ʔʸəʸła				1
				√ C CaCa	
Kamwe-Nkafa	*'yała* ʔʸała	*ʔała-Øʸ	*ØʔałaØʸ	*xʷɗała-y	2
Kamwe-Futu	*tsaiła* tsayła	*tsayła	*Øtsała-y		3
1. *ɗ > ʔ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: ʔ > ʔʸ 2. *ɗ > ʔ; *y > Øʸ; +Y: ʔ > ʔʸ 3. *ɗ (> t) > ts; metathesis ły > ył					

KOTOKO-NORTH

				√ C C Ca	
Afade	*dła* dəʸła	*dła-Øʸ	*Ødła-y	*xʷdła-y(-kʷ-n)	1
	dłaun dəʸławn	*dła-Øʸ-w-n	*Ødła-y-kʷ-n		2
				√ C CaCa	
Mpade	*k'ʷafan* kʷʔasʸan	*kʷʔasa-Øʸ-n	*kʷʔasa-y-n	*xʷɗała((-y/-kʷ)-n)	3
Malgbe	*dała* ɗała	*Ødała			
	daławun ɗaławəʷn	*dała-w-n	*Ødała-kʷ-n		4
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *kʷ > w > u; ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *xʷ > kʷ; *ɗ > ʔ; *ɬ > s; *y > Øʸ; +Y; s > sʸ/ʃ 4. *kʷ > w; ə-epenthesis; +W: ə > u					

KOTOKO-CENTRAL

				√ C C Ca	
Lagwan	*uławun* wławəʷn	*wʷła-w-n	*wØła-kʷ-n	*xʷdła-kʷ-n	1
				√ C CaCa	
Mser	*dasa* ɗasa	*ɗasa	*Ødasa	*xʷɗała	2
1. *xʷ > wʷ > u; *kʷ > w; ə-epenthesis; +W: ə > u 2. *ɬ > s					

KOTOKO-SOUTH

Zina	*wasya* wasya	*was-ya	*wØasØ-ya	*xʷɗała-ya	1
1. *xʷ > w; *ɬ > s					

MUSGUM

				√ C C Ca	
Mulwi	*hułi* xʷəʷły	*xʷł-y	*xʷØłØ-y	*xʷdła-y	1
				√ C CaCa	
	hoł xʷaʷł	*xʷał	*xʷØałØ	*xʷɗała	2
Mbara	*'oł* ʔʷaʷł	*Øʷʔał	*xʷʔałØ		3

1. ə-epenthesis; +W: ə > u; *y > i 2. +W: *a > o 3. *x^w > Ø^w; *ɗ > ʔ; +W: *a > o

GIDAR

Gidar	*wərła* wərła	*wrła	*x^wdła	1
1. *x^w > w; *ɗ > r; ə-epenthesis				

cow

PCC *(k^{w}a-, na-) **ła** (-a, -y, -n; FV)

BATA

Gude	*la*	*ła	*ła(-n)	1
Sharwa	*la*			1
Jimi	*lan*	*la-n		1
Tsuvan	*ɮa*	*ɮa		2
1. *ł > l 2. *ł > ɮ				

DABA

Mazagway Hidi	*ɮa*	*ɮa	*ła	1
Daba				1
1. *ł > ɮ				

MAFA

Cuvok	*ɮa*	*ɮa	*ła	*ła(-y)	1
Mafa	*ɮe* ɮa^y	*ɮa-Ø^y	*ła-y		2
1. *ł > ɮ 2. *ł > ɮ; +Y: lexical-final *a > e					

TERA

Tera	*ɮa*	*ɮa	*ła	*ła(-y)	1
	ɮe ɮa^y	*ɮa-Ø^y	*ła-y		2
1. *ł > ɮ 2. *ł > ɮ; +Y: lexical-final *a > e					

SUKUR

Sukur	*ɮə* ɮə	*ɮa	*ła	*ła	1
1. *ł > ɮ; lexical-final *a > ə					

HURZA

Mbuko	*ła*	*ła		*(Ca-)ła	
Vame	*ała*	*Øa-ła			

MARGI

Margi	*ła*	*ła		*ła(-y)	
Margi-South	*ła*				
Kilba	*ła*				
Bura	*li* ły	*ł-y	łØ-y		1
1. *y > i					

MANDARA

Matal	*ła*			*(na-)ła(-y)	
Podoko	*ła*	*ła			
Glavda	*ła*				
Malgwa	*əthla* ała	*Øa-ła			1
Mandara	*eła* aʸła	*a-ła-Øʸ	*Øa-ła-y		2
1. prefixal *a > ə 2. *y > Øʸ; +Y: prefixal *a > e					

MOFU

Ouldeme	*ła*	*ła	*ła	
Moloko	*ła*			
Zulgo	*ła*			
Gemzek	*ła*			
Merey	*ła*			
Dugwor	*ła*			
Mofu North	*ła*			
Mofu-Gudur	*ła*			

MAROUA

Giziga-Muturwa	*ła*	*ła	*ła	
Giziga-Marva	*ła*			
Mbazla	*ła*			

LAMANG

Lamang	*ła*	*ła	*ła	
Hdi	*ła*			

HIGI

Kamwe-Nkafa	*ła*	*ła	*ła	
Kirya	*ła*			
Psikye	*ła*			
Bana	*ła*			

KOTOKO-ISLAND

Buduma	*ha*	*xa	*ła	1
1. *ɬ > x				

KOTOKO-NORTH

Afade	*ła*	*ła		*ła(-y)	
Malgbe	*ła*				
Mpade	*ʃa* sʸa	*sa-Øʸ	*ła-y		1
1. *ɬ > s; *y > Øʸ; +Y: s > ʃ					

KOTOKO-CENTRAL

Lagwan	*nła*	*nØ-ła	*(na-)ła	
Mser	*sa*	*ła		1
1. *ɬ > s				

KOTOKO-SOUTH

Zina	*asa*	*Øa-sa		*kʷa-ła(-y)	1
Mazera	*kisa* kəʸsa	*k-sa-Øʸ	*kØ-ła-y		2
1. *ɬ > s 2. *ɬ > s; *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

MUSGUM

Vulum	*ɬay*	* ɬ-ay	* ɬØ-a-y		
Mulwi	*ɬe* ɬa^{y}	*ɬa-Ø^{y}	*ɬa-y	*(k^{w}a-na-)ɬa(-a)-y	1
Mbara	*wurɮay* w^{w}ə^{w}rɮay	*w^{w}-r-ɮ-ay	*w^{w}Ø-rØ-ɮØ-a-y		2
1. *y > Ø^{y}; +Y: lexical-final *a > e 2. *ɬ > ɮ; *n > r; *k^{w} > w^{w}; ə-epenthesis; +W: ə > u					

GIDAR

Gidar	*wałiya* wałə^{y}ya	*wa-ɬØ-y^{y}a	*k^{w}a-ɬa-ya	1
1. *k^{w} > w; ə-epenthesis; *y > y^{y}; +Y: ə > i				

crocodile$_{1}$[27]

PCC/loan? ***k(a)d(a)ma ~ k^{w}(a)r(a)ma** (-y, -k^{w}, -n)

BATA

Gude	*kərəma*	*krma	*k^{w}rma(-n)	1
Jimi	*kərəmən*	*krma-n		2
1. *k^{w} > k; ə-epenthesis 2. *k^{w} > k; ə-epenthesis; lexical-final *a > ə				

MAFA

Cuvok	*gədam*	*gdam	*gdamØ	*kdama	1
Mafa	*kərdam*	*krdam[28]	*k^{w}ramØ/*kdamØ	*kdama/*k^{w}rama	2
1. *k > g; ə-epenthesis 2. merger of parallel forms: *k^{w}ram/*kdam > *krdam					

SUKUR

Sukur	*kəlum* kələ^{w}m	*k^{w}lm	*k^{w}lmØ	*k^{w}rma	1
	kələm	*klm	*klmØ		2
1. *r > l; ə-epenthesis; +W: ə > u 2. *k^{w} > k; *r > l; ə-epenthesis					

HURZA

Mbuko	*gədam*	*gdam	*gdamØ	*kdama	1
1. *k > g; ə-epenthesis					

MARGI

				√ C C Ca	
Margi	*həm*	*xm	*xØmØ	*k^{w}rma	1
Margi-South	*həm*				1
				√ CaCaCa	
Kilba	*karam*	*karamØ		*k^{w}arama	2
1. *k^{w} > k > x; ə-epenthesis 2. *k^{w} > k; or: re-loan from Kanuri *karam*					

[27] In the light of Kanuri *karam*, one wonders about the direction of probably very early borrowing, whether from Nilo-Saharan into Chadic or vice versa, and whether this happened once or several times, in the latter case reflecting different shapes of the original root, such as ***k^{w}(a)r(a)ma** and ***k(a)d(a)ma**, which may have coexisted in the area. Note the case of Mafa *kərdam*, which may be a rare conflation of the two parallel forms. While ***k(a)d(a)ma** would be the original Chadic root (cf. PC *kədam, Newman 1977), it was likely borrowed into Kanuri as *karam*, and has been re-imported into Central Chadic languages as 'Pseudo'-PCC root in the shape of ***k^{w}(a)r(a)ma**. We will, therefore, allow both shapes of the root to serve as etymological references.

[28] See footnote 27.

MANDARA

				√ C C Ca	
Matal	*kʷədəw*	*kdwʷ	*kdwʷØ	*kdma	1
	kudu kʷəʷdəʷ	*kdØʷ			2
Malgwa	*kirwe* kəʸrwaʸ	*krwa-Øʸ	*krwa-y	*kdma-y	3
Glavda	*kirwa* kəʸrwaʸ				4
	kir kaʸr	*krØØ-Øʸ			5
				√ CaC Ca	
Mandara	*kyerrue* kʸaʸrrwaʸ	*karwa-Øʸ	*karwa-y	*kadma-y	6

1. *m > wʷ; ə-epenthesis, +W: k > kʷ
2. *m > wʷ > Øʷ; ə-epenthesis; lexical-final *a > ə; +W: k > kʷ; +W: ə > u
3. *m > w; *d > r; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e
4. *m > w; *d > r; *ə-epenthesis; *y > Øʸ; +Y: ə > i
5. *d > r; ə-epenthesis; *y > Øʸ; +Y: ə > i
6. *m > w > u; *d > r; *y > Øʸ; +Y: k > kʸ; *a > e; (long rr unaccounted for)

MOFU

				√ C C Ca	
Zulgo	*kərəm*	*krm	*krmØ	*kʷrma	1
Muyang	*kurᵐbu* kʷəʷrᵐbəʷ	*kʷrᵐba			2
				√ C CaCa	
Gemzek	*kəram*	*kram	*kramØ	*kʷrama	1
Mada	*akram*				3
Moloko	*kəraᵐba* kəraᵐba	*kraᵐba	*kraᵐba		4
Dugwor	*gədam*	*gdam	*gdamØ	*kdama(-y)	5
Merey	*gədam*				5
Mofu North	*gədam*				5
Mofu-Gudur	*gədem* gədaʸm	*gdam-Øʸ	*gdamØ-y		6

1. *kʷ > k; ə-epenthesis
2. *m > ᵐb; ə-epenthesis; lexical-final *a > ə; +W: ə > u
3. *kʷ > k; a-prothesis
4. *kʷ > k; *m > ᵐb; ə-epenthesis
5. *k > g; ə-epenthesis
6. *k > g; ə-epenthesis; *y > Øʸ; +Y: *a > e

MAROUA

				√ C C Ca	
Giziga-Muturwa	*hurum* xʷəʷrəʷm	*xʷrm	*xʷrmØ	*kʷrma	1
Mbazla	*hurum* xʷəʷrəʷm				1
				√ C CaCa	
Giziga-Marva	*hurom* xʷəʷraʷm	*xʷram	*xʷramØ	*kʷrama	2

1. *kʷ > xʷ; ə-epenthesis; +W: ə > u
2. *kʷ > xʷ; ə-epenthesis; +W: ə > u; +W: *a > o

LAMANG

Lamang	*kəram*	*kram	*kramØ	*kʷrama	1
Hdi	*kəram*				1

1. *kʷ > k; ə-epenthesis

HIGI

Kamwe-Nkafa	*kəlmi* kəlmy	*klm-y	*klmØ-y	*kʷrma(-y/-kʷ-n)	1
Kamwe-Futu	*kələməᵑg* kələməŋ	*klma-ŋ	*klma-k-n		2
Bana	*kələᵐbə*	*klᵐba			3
Kirya	*hələmə*	*xlma			4

1. *k^{w} > k; *r > l; ə-epenthesis; *y > i
2. *k^{w} > k; *r > l; ə-epenthesis; lexical-final *a > ə; fusion *kn > ŋ
3. *k^{w} > k; *r > l; m > ^{m}b; ə-epenthesis; lexical-final *a > ə
4. *k^{w} > x; *r > l; ə-epenthesis; lexical-final *a > ə

Musgum

				√ C C Ca	
Mbara	*hurum* xʷəʷrəʷm	*xʷrm	*xʷrmØ	*kʷrma	1
				√ CaC Ca	
Vulum	*horum* xʷaʷrəʷm	*xʷarm	*xʷarmØ	*kʷarma	2
1. *k^{w} > x; *r > l; ə-epenthesis; +W: ə > u					
2. *k^{w} > x; *r > l; ə-epenthesis; +W: ə > u; +W: *a > o					

crocodile$_2$

Areal root[29] *(ma-) **rga** (-y, -k^{w})

Kotoko-Island

Buduma	*ligə* ləʸga	*lga-Øʸ	*lga-y	*rga-y	1
1. *r > l; ə-epenthesis; *y > Øʸ; +Y : ə > i; lexical-final *a > ə					

Kotoko-North

Afade	*ligo* ləʸgaʷ	*lga-Øʸ-Øʷ	*lga-y-kʷ	*rga-y(-kʷ)	1
Mpade	*ligɨ* ləʸgəʸ	*lga-Øʸ	*lga-y		2
Malgbe	*ligɨ* ləʸgəʸ				2
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > Øʷ; +W: lexical-final *a > o					
2. *r > l; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > i ~ ɨ					

Kotoko-Central

Lagwan	*midige* məʸdəʸgaʸ	*mØ-dga-Øʸ	*ma-rga-y	1
Mser	*mirge* məʸrgaʸ	*mØ-rga-Øʸ		2
1. *r > d; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e				
2. ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e				

Kotoko-South

Mazera	*liɣe* ləʸɣaʸ	* lɣa-Øʸ	*rga-y	1
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e				

crow

PCC *(ma-, RED-) **gʷ(a)r(a)x(a)ka** (-y)

Bata

				√ CaC C Ca	
Bata	*galike* galəʸkaʸ	*galka-Øʸ	*galØka-y	*gʷarxka-y	1
				√ CaC CaCa	
Gude	*məgʷa'akə*	*m-gʷaʔaka	*mØ-gʷaØʔaka	*(ma-)gʷarxaka	2
	ɣaaka	*ɣaaka	*ɣaØØaka		3
Sharwa	*kʷaa*	*kʷaa	*kʷaØØaØØ		4

[29] The restricted distribution of this word for 'crocodile' (Kotoko groups) could be an indication of its nature as an areal innovation or a loanword, with the donor language not (yet) identified.

1. *g^w > g; *r > l; ə-epenthesis; *y > $Ø^y$; +Y: ə > i; +Y: lexical-final *a > e
2. *x > ʔ; ə-epenthesis; lexical-final *a > ə
3. *g^w > ɣ
4. *g^w > k^w

DABA

				√ C CaC Ca	
Gavar	*ᵑgrak*	*ŋ-grak	*mØ-graØkØ	*(RED-)ma-g^wraxka	1
Daba	*ᵑgəranᵑgərak*	*ᵑgra-n-ᵑgrak	*(RED-)m^nØ-graØkØ		2
				√ CaC CaCa	
Mbudum	*məŋgarhax*	*m-ᵑgarxax	*m^nØ-garxakØ	*ma-g^warxaka	3

1. *g^w > g; homorganic assimilation *m > ŋ/_g
2. *g^w > g; *m > m^n; +N: g > ᵑg; partial assimilation *m > n/_ᵑg; ə-epenthesis
3. *g^w > g; *k > x; *m > m^n; +N: g > ᵑg; ə-epenthesis

MAFA

Cuvok	*maᵑgawak*	*ma-ᵑgawak	*m^na-gaØwakØ	*ma-g^warxaka	1

1. *g^w > g; *x > w; *m > m^n; +N: g > ᵑg

TERA

Tera	*k^wax*	*k^wax	*k^waØxØØ	*g^warxka	1

1. g^w > k^w

HURZA

Mbuko	*ᵑgahak* ŋgaxak	*ŋ-gaxak	*mØ-gaØxakØ	*ma-g^warxaka	1

1. *g^w > g; homorganic assimilation *m > ŋ/_g

MANDARA

				√ C C CaCa	
Podoko	*həhaka* xəxaka	*x-xaka	*RED-ØØxaka	*RED-g^wrxaka	1
				√ CaC CaCa	
Glavda	*ʁaʁaxra* ɣaɣaxra	*ɣa-ɣaxra	*RED-ɣarxaØØ	*RED-g^warxaka	2

1. ə-epenthesis
2. *g^w > ɣ; metathesis rx > xr

MOFU

				√ C C CaCa	
Merey	*maᵑgəhak*	*ma-ᵑgxak	*m^na-gØxakØ	*ma-g^wrxaka	1
Mofu North	*maᵑgəhak*				1
				√ CaC CaCa	
Moloko	*məᵑgahak*	*m-ᵑgaxak	*m^nØ-gaØxakØ	*ma-g^warxaka	1
Dugwor	*məᵑgahak*				1
Mofu-Gudur	*maᵑgahak*	*ma-ᵑgaxak	*m^na-gaØxakØ		2
Mada	*ᵑgawak* ŋgawak	*ŋ-gawak	*mØ-gaØwakØ		3
Gemzek	*ᵑgaʼak* ŋgaʔak	*ŋ-gaʔak	*mØ-gaØʔakØ		4
Zulgo	*ᵑgaak* ŋgaak	*ŋ-gaak	*mØ-gaØØakØ		5

1. *g^w > g; *m > m^n; +N: g > ᵑg; ə-epenthesis
2. *g^w > g; *m > m^n; +N: g > ᵑg
3. *g^w > g; *x > w; homorganic assimilation *m > ŋ/__g
4. *g^w > g; *x (> k) > ʔ; homorganic assimilation *m > ŋ/__g
5. *g^w > g; homorganic assimilation *m > ŋ/__g

MAROUA

Giziga-Marva	*məgahak*	*m-gaxak	*mØ-gaØxakØ		1
G.-Muturwa	*magaǵaķ*	*ma-ga-gak	*ma-RED-gaØØØkØ	*ma-(RED-)g^{w}arxaka	2
	magakgak	*ma-gak-gak			2
1. *g^{w} > g; prefixal *a > ə 2. *g^{w} > g					

KOTOKO-NORTH

Afade	*hagɨ* xagə^{y}	*xaga-Ø^{y}	*ØØxaga-y	*g^{w}rxaka-y	1
Malgbe	*hagɨ* xagə^{y}				1
Mpade	*hagɨ* xagə^{y}				1
1. *k > g; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ					

KOTOKO-CENTRAL

				√ CaC C Ca	
Mser	*^{ŋ}gaɣɨ* ŋgaɣə^{y}	*ŋ-gaɣa-Ø^{y}	*mØ-gaØɣØa-y	*ma-g^{w}arxka-y	1
				√ C C CaCa	
Lagwan	*nyaki* nyakə^{y}	*n-ɣaka-Ø^{y}	*mØ-ɣØØaka-y	*ma-g^{w}rxaka-y	2
1. *g^{w} > g; *x > ɣ; homorganic assimilation *m > ŋ/_g; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ 2. *g^{w} > ɣ; partial assimilation *m > n/_ɣ; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ					

GIDAR

Gidar	*ga^{ŋ}graka*	*ga-^{n}gØraka	*Ø^{n}Ø-ga-garØaka	*ma-RED-g^{w}arxaka	1
1. *g^{w} > g; *m > m^{n} > Ø^{n}; +N: g > ^{ŋ}g					

cry, to

PCC *(ma-) **ts(a)wa** (-a, -y, -k ; FV)

BATA

Bata	*tuu* tə^{w}w	*tw^{w}Ø	*twa	*tswa	1
Gude	*tuu* tə^{w}w				1
Sharwa	*tuwə* tə^{w}wa	*tw^{w}a			2
1. *ts > t; ə-epenthesis ; +W : ə > u; *w > w^{w} > u 2. *ts > t; ə-epenthesis ; *w > w^{w}; +W: ə > u; lexical-final *a > ə					

MARGI

Bura	*tuwa~tua* tə^{w}wa	*tw^{w}a		*tswa(-y)	1
Kilba	*tiwi* tə^{y}wy	*twØ-y^{y}	*twa-y		2
Margi-South	*tiwi* tə^{y}wy				2
Margi	*ti* ty	*t-y	tØØ-y		3
1. *ts > t; ə-epenthesis; *w > w^{w}; +W: ə > u 2. *ts > t; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 3. *ts > t; *y > i					

MANDARA

				√ C Ca	
Mandara	*k^{y}ua* t^{y}ua	*twa-Ø^{y}	*twa-y	*(ma-)tswa (-a, -y, -k^{w}a)	1
Malgwa	*k^{y}uwa* t^{y}ə^{w}wa	*tw^{w}a-Ø^{y}			2
Glavda	*tu:ga* tə^{w}wga	*tw^{w}-ka			3
Matal	*matəway* matəway	*ma-tw-ay	*ma-twØ-a-y		4
				√ CaCa	
Podoko	*tawa*	*tawa		*tsawa	4

1. *ts > t; *w > u; *y > Øʸ; +Y: t > tʸ > kʸ
2. *ts > t; *y > Øʸ; +Y: t > tʸ > kʸ ; ə-epenthesis; *w > wʷ ; +W: ə > u
3. *ts > t; *k > g; ə-epenthesis; *w > wʷ; +W: ə > u; *w > u
4. *ts > t

MOFU

Mofu-Gudur	*təw*	*twØ	*twa	*(ma-)tswa (-a, -y)	1
Zulgo	*tuwa* təʷwa	*twʷa			2
Ouldeme	*tuwo* təʷwaʷ				3
Moloko	*təwe* təwaʸ	*twa-Øʸ	*twa-y		4
Muyang	*tʉwi* təʷwy	*twʷØ-y			5
Dugwor	*mətuway* matəʷway	*ma-twʷ-ay	*ma-twØ-a-y		6
Gemzek	*metuwe* maʸtəʷwaʸ	*ma-twʷa-Øʸ	*ma-twa-y		7

1. *ts >t ; ə-epenthesis
2. *ts >t ; ə-epenthesis; *w > wʷ; +W: ə > u
3. *ts >t ; ə-epenthesis; *w > wʷ; +W: ə > u: +W: lexical-final *a > o
4. *ts >t ; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e
5. *ts >t ; ə-epenthesis; *w > wʷ; +W: ə > ʉ; *y > i
6. *ts >t ; ə-epenthesis; *w > wʷ; +W: ə > u
7. *ts >t ; ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *a > e

MAROUA

Giziga-Marva	*tuwa* təʷwa	*twʷa		*tswa((-a)-y)	1
	tuway təʷway	*twʷ-ay	*twØ-a-y		1
Mbazla	*tuway* təʷway				1
Giziga-Muturwa	*tuwuy* təʷwəʷy	*twʷØ-y	*twa-y		1

1. *ts > t; ə-epenthesis; *w > wʷ; +W: ə > u

LAMANG

Lamang	*tawa*	*tawa		*tsawa(-a, -y)	1
Hdi	*taway*	*taw-ay	*tawØ-a-y		1

1. *ts > t

KOTOKO-ISLAND

Buduma	*tʃiuy* tsʸwy	*tsw-yʸ	*tswØ-y	*tswa-y	1

1. *w > u; *y > yʸ; +Y: ts > tsʸ > tʃ; (*y > i)

KOTOKO-NORTH

Afade	*tsɨwe* tsəʸwaʸ	*tswa-Øʸ	*tswa-y	*tswa-y	1
Mpade	*swe* swaʸ	*swa-Øʸ	*swa-y		2
Malgbe	*sɨwe* səʷwaʸ	*swʷa-Øʸ			3

1. ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e
2. *ts > s; *y > Øʸ; +Y: lexical-final *a > e
3. *ts > s; ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e

KOTOKO-CENTRAL

Lagwan	*sɨwe* səʸwaʸ	*swa-Øʸ	*swa-y	*tswa-y	1
Mser	*swe* swaʸ	*swa-Øʸ			2

1. *ts > s; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e
2. *ts > s; *y > Øʸ; +Y: lexical-final *a > e

KOTOKO-SOUTH

Zina	*tʃuwya* tsʸəʷwya	*tswʷØ-yʸa	*tswa-ya	1
1. ə-epenthesis; *w > wʷ; +W: ə > u; *y > yʸ; +Y: *ts > tsʸ > tʃ				

MUSGUM

Mbara	*tuwa* təʷwa	*twʷa		*tswa(-y)	1
Mulwi	*tuwi* təʷwy	*twʷØ-y	*twʷa-y		2
1. ə-epenthesis; *w > wʷ; +W: ə > u 2. ə-epenthesis; *w > wʷ; +W: ə > u; *y > i					

cut, to

PCC *(kʷa-, ma-) **ɬa** (-y, -kʷ, -n, -r; FV)

BATA

Gude	*la*	*ła		*(ma-)ła((-kʷ)-n)	1
Sharwa	*la*				1
Jimi	*lan*	*ła-n			1
Tsuvan	*aɮakən*	*Øa-ɮa-k-n	*ma-ɮa-k-n		2
1. *ɬ > l 2. *ɬ > ɮ; *kʷ > k; ə-epenthesis					

DABA

Buwal	*ɮa*	*ɮa		*(kʷa-)ła(-kʷ)	1
Gavar	*ɮa*				1
Daba	*ɮa*				1
Mbudum	*kəɮa*	*kØ-ɮa			2
	ɮu ɮw	*ɮØ-w	*ɮa-kʷ		3
1. *ɬ > ɮ 2. *ɬ > ɮ; prefixal *kʷ > k; ə-epenthesis 3. *ɬ > ɮ; *kʷ > w > u					

TERA

Tera	*ɮa*	*ɮa	*ła	1
1. *ɬ > ɮ				

SUKUR

Sukur	*ɮə*	*ɮa	*ła	1
1. *ɬ > ɮ				

HURZA

Mbuko	*ła*	*ła		*ła(-kʷa)	
Vame	*ława*	*ła-wa	*ła-kʷa		1
1. *kʷ > w					

MARGI

Bura	*ła*	*ła		*ła(-kʷ)	
Margi	*łə*				1
Kilba	*ła*				
	łau *ław	*ła-w	*ła-kʷ		2
1. lexical-final *a > ə 2. *kʷ > w > u					

MANDARA

Podoko	*ła*	*ła	*ła	

MOFU

Mofu-Gudur	*ɬ*	*ɬØ	*ɬa	*(ma-)ɬa((-a)-y)	
Muyang	*ɬay*	*ɬ-ay	*ɬØ-a-y		
Ouldeme	*li* ɬy	*ɬ-y	*ɬØ-y		1
Dugwor	*maɬay*	*ma-ɬ-ay	*ma-ɬØ-a-y		
Mofu North	*meɬey* ma^{y}ɬa^{y}y	*ma-ɬ-ay^{y}			2
Zulgo	*ɮe* ɮa^{y}	*ɮa-Ø^{y}	*ɮa-y		3
1. *y > i 2. *y > y^{y}; +Y: *a > e 3. *ɬ > ɮ; y > Ø^{y}; +Y: lexical-final *a > e					

MAROUA

Mbazla	*ɬi* ɬy	*ɬ-y	*ɬØ-y	*ɬa-y	1
1. *y > i					

LAMANG

Lamang	*tsa*	*tsa	*ɬa	1
Hdi	*tsa*			1
1. *ɬ (> s) > ts				

HIGI

Kamwe-Futu	*ɬa*	*ɬa	*ɬa	
Kirya	*ɬa*			
Psikye	*ɬa*			
Bana	*ɬa*			

KOTOKO-NORTH

Afade	*s'el* s^{ʔ}a^{y}l	*s^{ʔ}a-Ø^{y}-l < *sa-y-l-Ø^{ʔ}	*sa-y-l-k	*(ma-)ɬa (-y(a),-r,-k^{w},-n)	1
	s'a	*sa-Ø^{ʔ} < *sa-ʔ	*sa-k		2
Mpade	*s'a*				2
	ns'a ns^{ʔ}a	*n-sa- Ø^{ʔ} < *n-sa-ʔ	*mØ-sa-k		3
Malgbe	*s'inyawun* s^{ʔ}ə^{yn}yawə^{w}n	*s-^{n}y^{y}a-Ø^{ʔ}w^{w}-n < *Ø^{n}-s-y^{y}a-ʔ+w^{w}-n	*m^{n}Ø-sØ-ya-k^{w}-n		4
	ɬawun ɬawə^{w}n	*ɬa-w^{w}-n	*ɬa-k^{w}-n		5
1. *ɬ > s; *r > l; *k^{w} (> k) > ʔ; *ʔ > Ø^{ʔ}; *+ʔ: s > s^{ʔ}; y > Ø^{y}; +Y: *a > e 2. *ɬ > s; *k^{w} > k > ʔ; *ʔ > Ø^{ʔ}; +ʔ: s > s^{ʔ} 3. *ɬ > s; *k^{w} > k > ʔ; homorganic assimilation *m > n/_s; *ʔ > Ø^{ʔ}; +ʔ: s > s^{ʔ} 4. *ɬ > s; ə-epenthesis; *y > y^{y}; +Y: ə > i; re-segmentalisation *k^{w} > ʔ+w^{w}; +W: ə > u; *ʔ > Ø^{ʔ}; +ʔ: s > s^{ʔ}; *m > Ø^{n}; +N: *y > ^{n}y 5. *k^{w} > w^{w}; ə-epenthesis; +W: ə > u					

KOTOKO-CENTRAL

Lagwan	*s'awun* s^{ʔ}awə^{w}n	*sa-Ø^{ʔ}w^{w}-n	*sa-ʔ+w^{w}-n	*ɬa(-y)-k^{w}(a)(-n)	1
Mser	*s'ia* s^{ʔ}ya	*s-y-Ø^{ʔ}a	*sØ-y-ʔa		2
1. *ɬ > s; ə-epenthesis; re-segmentalisation *k^{w} > ʔ+w^{w}; +W: ə > u; ʔ > Ø^{ʔ}; +ʔ: s > s^{ʔ} 2. *ɬ > s; *k^{w} > k > ʔ; ʔ > Ø^{ʔ}; +ʔ: s > s^{ʔ} +; *y > i					

MUSGUM

Mulwi	*ɬi* ɬy	*ɬ-y	*ɬØ-y	*ɬa-y	1
Mbara	*ɬii* ɬə^{y}y	*ɬ-y^{y}	*ɬØ-y		2
1. *y > i 2. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i; Cə^{y}y > Cii					

dance (to, spec.)

PCC *(ma-, k^{w}a-, RED-) **ɣ^{w}(a)tsa** (-a, -y, -k^{w}, -n)

BATA

Gude	*udzə* wdzə	*wdza		*ɣ^{w}tsa(-y, -k^{w}, -n)	1
Jimi	*udzən* wdzən	*wdza-n			1
Sharwa	*udz* wdz	*wdzØ			2
Tsuvan	*wədzekən* wədza^{y}kən	*wdza-Ø^{y}-k-n	*wdza-y-k-n		3
1. *ɣ^{w} > w > u; *ts > dz; lexical-final *a > ə 2. *ɣ^{w} > w > u; *ts > dz 3. *ɣ^{w} > w; *ts > dz; ə-epenthesis; *y > Ø^{y}; +Y: *a > e					

MAFA

Mafa	*getfe* ga^{y}ts^{y}a^{y}	*gatsa-Ø^{y}	*gatsa-y	*ɣ^{w}atsa-y	1
1. *ɣ^{w} > g; *y > Ø^{y}; +Y: *ts > tʃ; +Y: *a > e					

SUKUR

				√ C Ca	
Sukur	*dzu* dzw	*dzw	*wdzØ	*ɣ^{w}tsa	1
				√ CaCa	
	k^{w}atsak^{w}atsa	*k^{w}atsa-k^{w}atsa	*RED-k^{w}atsa	*RED-ɣ^{w}atsa	2
1. *ɣ^{w} > w > u; *ts > dz; metathesis wdz > dzw 2. *ɣ^{w} > k^{w}					

MARGI

Kilba	*utsa* wtsa	*wtsa	*ɣ^{w}tsa	1
1. *ɣ^{w} > w > u				

MOFU

Mofu North	*mekesewey* ma^{y}ka^{y}sa^{y}wa^{y}y	*ma-ka-saw-ay^{y}	*ma-ka-wasØ-a-y	*ma-k^{w}a-ɣ^{w}atsa-a-y	1
1. *ɣ^{w} > w; *k^{w} > k; *ts > s; metathesis ws > sw; *y > y^{y}; +Y: *a > e					

LAMANG

Lamang	*dzag^{w}adzag^{w}a*	*dzag^{w}a-dzag^{w}a	*RED-g^{w}adza	*RED-ɣ^{w}atsa	1
1. *ɣ^{w} > g^{w}; *ts > dz; metathesis g^{w}dz > dzg^{w}					

HIGI

Bana	*tsə*	*tsa	*Øtsa	*(k^{w}a-)ɣ^{w}tsa	1
Kirya	*tswə*	*tswa	*wtsa		2
Kamwe-Nkafa	*tswə*				2
Kamwe-Futu	*tso* tsa^{w}	*Ø^{w}tsa	*w^{w}tsa		3
Psikye	*kawutsə* kaw^{w}ə^{w}tsə	*ka-w^{w}tsa			4
1. lexical-final *a > ə 2. *ɣ^{w} > w; metathesis wts > tsw; lexical-final *a > ə 3. *ɣ^{w} > w^{w} > Ø^{w}; +W: lexical-final *a > o 4. *k^{w} > k; ə-epenthesis; *ɣ^{w} > w^{w}; +W: ə > u; lexical-final *a > ə					

KOTOKO-ISLAND

Buduma	*watfa* wats^{y}a	*watsa-Ø^{y}	*watsa-y	*ɣ^{w}atsa-y	1
1. *ɣ^{w} > w; *y > Ø^{y}; +Y: *ts > tʃ					

deaf

PCC *(ma-) **d(a)k(a)(+ɬ(a)ma)**[30] (-y, -k^{w}, -n)

MAFA

Mafa	*ⁿdakaɮam* ndakaɮam	*n-daka+ɮam	*mØ-daka+ɮamØ	*ma-daka+ɬama	1
	ⁿdaɓaɮam ndaɓaɮam	*n-daɓa+ɮam	*mØ-daɓa+ɮamØ		2
Cuvok	*madagaɮam* madagaɮam		*ma-daga+ɮamØ		3
1. *ɬ > ɮ; homorganic assimilation *m > n/__d 2. *ɬ > ɮ; *k > ɓ; homorganic assimilation *m > n/__d 3. *ɬ > ɮ; *k > g					

HURZA

Mbuko	*diʸᵑgiɮ* dəʸᵑgəʸɮ	*Ø-dⁿg+ɮ-Øʸ	*mⁿØ-dkØ+ɮØØØ-y	*ma-dka +ɬama-y/-k^{w}	1
	mədəᵑgaɮak	*m-dⁿga+ɮa-k	*mⁿØ-dka+ɮØØa-k		2
1. *ɬ > ɮ; *m > mⁿ; +N: *k > ᵑg; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 2. *ɬ > ɮ; +N: *g > ᵑg; *k^{w} > k; ə-epenthesis					

MANDARA

Matal	*madagaɮam*	*ma-daga+ɮamØ	*ma-daka+ɬama	1
1. *ɬ > ɮ; *k > g				

MOFU

			√ C Ca(+CaCa)	
Merey	*maⁿdək*	*mⁿa-dkØ	*(ma-)dka(+ɬama)	1
Moloko	*madəᵑgəɮa*	*mⁿa-dgØ+ɮaØØ		2
Mofu-Gudur	*dəgəɮam*	*dgØ+ɮamØ		3
			√ CaCa(+CaCa)	
Dugwor	*maⁿdak*	*mⁿa-dakØ	*(ma-)daka(+ɬama)	4
Mofu North	*maⁿdak*			4
Gemzek	*maⁿdak*			4
	maⁿdakaɮam	*mⁿa-daka+ɮamØ		5
Mofu-Gudur	*madakaɮam*	*ma-daka+ɮamØ		6
Mada	*madagaɮam*	*ma-daga+ɮamØ		7
Dugwor	*mədeᵑgəɮa* mədaʸᵑgəɮa	*mⁿØ-dagØ+ɮaØØ-Øʸ	*ma-daka+ɬama-y	8
1. *m > mⁿ; +N: *d > ⁿd; ə-epenthesis 2. *ɬ > ɮ; *k > g; *m > mⁿ; +N: *g > ᵑg; ə-epenthesis 3. *ɬ > ɮ; *k > g; ə-epenthesis 4. *m > mⁿ; +N: *d > ⁿd 5. *ɬ > ɮ; *m > mⁿ; +N: *d > ⁿd 6. *ɬ > ɮ 7. *ɬ > ɮ; *k > g 8. *ɬ > ɮ; *k > g; +N: *g > ᵑg; ə-epenthesis; *y > Øʸ; +Y: a > e				

[30] Gravina (2015) plausibly assumes that this root is a compound of a verb and a reflex of the word for 'ear' (PCC ***ɬ(a)ma**) and in some languages involving an old agentive nominaliser *ma-.

MAROUA

G.-Muturwa	*digiɬ* dəʸgəʸɬ	*dg+ɬ-Øʸ	*dgØ+ɬØØ-y	*(ma-) dka +ɬma-y	1
	midigiɮa məʸdəʸgəʸɮa	*m-dg-ɮa-Øʸ	*mØ-dgØ-ɮØa-y		2
G.-Marva	*mədigɮa* mədəʸgɮa				2
1. *k > g; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *k > g; *ɬ > ɮ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

LAMANG

Lamang	*matoŋ* mataʷŋ	*ma-ta-ŋʷ	*ma-tØa-kʷ-n	*ma-dka-kʷ-n	1
1. *d > t; fusion kʷn > ŋʷ; +W: lexical-final *a > o					

die, to

PCC *(kʷa-, ma-) **m(a)ta** (-a, -y, -kʷ, -n; FV)

BATA

Jimi	*mətən*	*mtØ-n		*mta(-y/-n)	1
Sharwa	*mitə* məʸtə	*mta-Øʸ	*mta-y		2
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: ə > i; lexical-final *a > ə					

DABA

				√ C Ca	
Gavar	*mtʃa* mtsʸa	*mtsa-Øʸ	*mtsa-y	*(kʷa-)mta-y	1
Daba	*mətʃ* mətsʸ	*mts-Øʸ	*(kʷa-)mtsØ-y		2
Mbudum	*kəmətʃ* kəmətsʸ	*kØ-mts-Øʸ			2
				√ CaCa	
Buwal	*matʃ* matsʸ	*mats-Øʸ	*matsØ-y	*mata-y	1
1. *t > ts; *y > Øʸ; +Y: ts > tsʸ > tʃ 2. *t > ts; ə-epenthesis ; *y > Øʸ; +Y: ts > tsʸ > tʃ 2. *kʷ > k; t > ts; ə-epenthesis; *y > Øʸ; +Y: ts > tsʸ > tʃ					

MAFA

Mafa	*mətsa*	*mtsa	*mta	1
Cuvok	*mətsa*			1
1. *t > ts; ə-epenthesis				

TERA

Tera	*mət* məɗ	*mdØ	*mɗa	*mta	1
1. *t > ɗ; *ɗ > [t] in final position; ə-epenthesis					

SUKUR

Sukur	*ŋus* ŋws	*mkʷs	*msØ-kʷ	*mta-kʷ	1
1. *t (> ts) > s; metathesis skʷ > kʷs; re-segmentalisation *kʷ > k+w; fusion *mk > ŋ; w > u					

HURZA

				√ C Ca	
Vame	*mətsa*	*mtsa		*mta	1
				√ CaCa	
Mbuko	*mats*	*matsØ	*matsa	*mata	2
1. *t > ts, ə-epenthesis 2. *t > ts					

MARGI

Bura	*mta*	*mta		*mta	

MANDARA

Malgwa	*mtsa*	*mtsa			1
Dghwede	*mtsa*				1
Podoko	*mitʃe* $mə^{y}ts^{y}a^{y}$	*mtsa-Ø^{y}	*mtsa-y	*(ma-)mta(-a,-y, -k^{w}a)	2
Glavda	*imts^{ə}ga* $ə^{y}$mtsga	*mts-Ø^{y}-ga	*mtsØ-y-k^{w}a		3
Matal	*mamtsay*	*ma-mts-ay	ma-mtsØ-a-y		1
1. *t > ts 2. *t > ts; ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: ə > ɨ ; +Y lexical-final *a > e 3. *t > ts; *k^{w} (> k) > g; ə-prothesis; *y > Ø^{y}; +Y: ə > ɨ					

MOFU

				√ C Ca	
Ouldeme	*mət*	*mtØ	*mta	*(ma-)mta(-a, -y)	1
Merey	*mət*				1
Zulgo	*mət*				1
Mada	*mamta*	*ma-mta	*ma-mta		
Gemzek	*meməte* $ma^{y}mətə^{y}$	*ma-mta-Ø^{y}	*ma-mta-y		2
Dugwor	*məmtay* mamtay	*mØ-mt-ay	*ma-mtØ-a-y		3
Mofu-Gudur	*məts*	*mtsØ			4
	memətsey $ma^{y}mətsa^{y}y$	*ma-mtsa-y^{y}	*(ma-)mtsa(-y)		5
				√ CaCa	
Moloko	*mat*	*matØ		*mata	
1. ə-epenthesis 2. ə-epenthesis; *y > Ø^{y}; +Y : *a > e 3. ə-epenthesis 4. *t > ts; ə-epenthesis 5. *t > ts; ə-epenthesis; *y > y^{y}; +Y: *a > e					

MAROUA

Giziga Muturwa	*mutʃ* $mə^{w}ts^{y}$	*mts-Ø^{y}-Ø^{w}	*mtsØ-y-k^{w}	*mta-y-k^{w}	1
Giziga Marva	*mutʃ* $mə^{w}ts^{y}$				1
Mbazla	*mutʃ* $mə^{w}ts^{y}$				1
	muitʃ $mə^{w}yts^{y}$	*my^{y}ts-Ø^{w}			2
1. *t > ts; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; *y > Ø^{y}; +Y: ts > ts^{y} > tʃ 2. *t > ts; metathesis tsy > yts; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; *y > y^{y}; +Y: ts > ts^{y} > tʃ; *y > i					

LAMANG

Lamang	*mta*	*mta		*mta(-a-y)	
Hdi	*mətay*	*mt-ay	*mtØ-a-y		1
1. ə-epenthesis					

HIGI

Kamwe-Nkafa	*mtə* mtə	*mta		*mta(-y/-k^{w})	1
Psikye	*mtə* mtə				1
Bana	*m(ə)ti* məty	*mtØ-y	*mta-y		2
Kamwe-Futu	*mto* mta^{w}	*mta-Ø^{w}	*mta-k^{w}		3
1. lexical-final *a > ə 2. ə-epenthesis; *y > i 3. *k^{w} > Ø^{w}; +W: lexical-final *a > o					

KOTOKO-ISLAND

Buduma	*matə* matə	*mata		*mata	1
1. lexical-final *a > ə					

KOTOKO-NORTH

Afade	*madɨ* madə^{y}	*mada-Ø^{y}	*mada-y	*mata-y	1
Mpade	*madɨ* madə^{y}				1
Malgbe	*madi* mady	*madØ-y			2
1. *t > d; lexical-final *a > ə; +Y: ə > ɨ 2. *t > d; *y > i					

KOTOKO-CENTRAL

			√ C Ca	
Lagwan	*miti* mə^{y}ty	*mtØ-y^{y}	*mta-y	1
			√ CaCa	
Mser	*mato* mata^{w}	*mata-Ø^{w}	*mata-k^{w}	2
1. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *k^{w} > Ø^{w}; +W: lexical-final *a > o				

KOTOKO-SOUTH

Zina	*mara*	*mara	*mata	1
1. *t > r				

MUSGUM

Vulum	*miri* mə^{y}ry	*mrØ-y^{y}	*mra-y	*mta-y(-k^{w}-n)	1
Mulwi	*miri* mə^{y}ry				1
Mbara	*mi'diŋ* mə^{y}dɗŋ	*mdɗ-y^{y}-ŋ	*mdØ-y-k-n		2
1. *t > r; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *t > ɗ; ə-epenthesis; *k^{w} > k; fusion kn > ŋ; +Y: ə > i; *y > i					

GIDAR

Gidar	*əmta*	*mta		*mta(-k^{w})	1
	umta ə^{w}mta	*mta-Ø^{w}	*mta-k^{w}		2
1. ə-prothesis 2. ə-prothesis; *k^{w} > Ø^{w}; +W: ə > u					

dig (up)/bury, to

PCC *(k^{w}a-, ma-) **ra** (-a, -y, -k^{w}, -n, -x; FV)

BATA

Bata	*ra*	*ra	*ra(-n)	
Gude	*ra*			
Jimi	*ran*	*ra-n		

DABA

Buwal	*ra*	*ra	*(k^{w}a-)ra	
Gavar	*ra*			
Mbudum	*kəra*	*kØ-ra		1
Daba	*la*	*la		2
Mazagway Hidi	*la*			2
1. ə-epenthesis; *k^{w} > k 2. *r > l				

Tera

Tera	*ra*	*ra		*ra	

Sukur

Sukur	*rə* rə	*ra		*ra	1
1. lexical-final *a > ə					

Hurza

Mbuko	*la*	*la		*ra-k^{w}a	1
Vame	*rawa*	*ra-wa	*ra-k^{w}a		2
	ra	*ra			
1. *r > l 2. *k^{w} > w					

Margi

Bura	*la*	*ra		*ra	1
Margi	*la*				1
Kilba	*la*				1
1. *r > l					

Mandara

Matal	*malay*	*ma-l-ay	*ma-lØ-a-y	*(ma-)ra-a-y/-xa	1
Podoko	*laha*	*la-xa			1
1. *r > l					

Mofu

Merey	*la*	*la		*(ma-)ra((-a)-y)	1
Moloko	*lay*	*l-ay	*lØ-a-y		1
Zulgo	*le* la^{y}	*la-Ø^{y}	*la-y		2
Ouldeme	*li* ly	*l-y	*lØ-y		3
Muyang	*li* ly				3
Gemzek	*mele*	*ma-la-Ø^{y}	*ma-la-y		4
Mada	*mele*				4
Dugwor	*maliy* malə^{y}y	*ma-l-y^{y}	*ma-lØ-y		5
	mala	*ma-la			1
1. *r > l 2. *r > l; *y > Ø^{y}; +Y: lexical-final *a > e 3. *r > l; *y > i 4. *r > l; y > Ø^{y}; +Y: *a > e 5. *r > l; ə-epenthesis; *y > y^{y}; +Y: ə > i					

Maroua

Giziga-Marva	*li* ly	*l-y	*lØ-y	*ra-y	1
1. *r > l; *y > i					

Lamang

Lamang	*la*	*la		*ra	1
Hdi	*la*				1
1. *r > l					

Higi

Kamwe-Futu	*lakə* lakə	*la-ka		*ra(-k^{w}a)	1
Kamwe-Nkafa	*la*	*la			2
Kirya	*la*				2

Psikye	*la*			2
Bana	*la*			2
1. *r > l; *k^{w} > k; FV *a > ə 2. *r > l				

KOTOKO-ISLAND

Buduma	*la*	*la	*ra	1
1. *r > l				

dog

PCC ***k(a)ra*** (-a, -y, -k^{w}; FV)

MAFA

Mafa	*kəda*	*kda	*kra	1
Cuvok	*gəda*	*gda		2
1. *r > d; ə-epenthesis 2. *k > g; *r > d; ə-epenthesis				

SUKUR

Sukur	*kəra*	*kra	*kra	1
1. ə-epenthesis				

HURZA

Mbuko	*kəla*	*kla	*kra	1
Vame	*kəla*			1
1. *r > l; ə-epenthesis				

MARGI

Bura	*kila* kə^{y}la	*kla-Ø^{y}	*kla-y	*kra-y	1
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

MANDARA

				√ C Ca	
Matal	*kəda*	*kda	*kda(-y)	*kra(-y)	1
Podoko	*kəda*				1
Dghwede	*gde* gda^{y}	*gda-Ø^{y}			2
Malgwa	*kəre* kəra^{y}	*kra-Ø^{y}	*kra-y		3
				√ CaCa	
Mandara	*kere* ka^{y}ra^{y}	*kara-Ø^{y}		*kara-y	4
1. *r > d; ə-epenthesis 2. *r > d; *k > g; *y > Ø^{y}; +Y: lexical-final *a > e 3. ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 4. *y > Ø^{y}; +Y: *a > e					

MOFU

Ouldeme	*kəra*	*kra	*kra(-a-y)	1
Muyang	*kəra*			1
Moloko	*kəra*			1
Zulgo	*kəra*			1

Gemzek	*kəra*				1
Dugwor	*kəra*				1
Mofu North	*gədey* gəd-a^{y}y	*gd-ay^{y}	*gdØ-a-y		2
Mofu-Gudur	*gədey* gəd-a^{y}y				2
1. ə-epenthesis 2. *k > g; *r > d; ə-epenthesis; *y > y^{y}; +Y: lexical-final *a > e					

MAROUA

Giziga-Muturwa	*kiri* kə^{y}ry	*kr-y^{y}	*krØ-y	*kra-y(-k^{w})	1
Giziga-Marva	*kre* kra^{y}	*kra-Ø^{y}	*kra-y		2
Mbazla	*kire* kə^{y}ra^{y}				3
	*krɛ*ʾ kra^{y}ʔ	*kra-Ø^{y}-ʔ	*kra-y-ʔ		4
1. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *y > Ø^{y}; +Y: lexical-final *a > e 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 4. *k^{w} > ʔ; *y > Ø^{y}; +Y: lexical-final *a > E					

LAMANG

Lamang	*kəre* kəra^{y}	*kra-Ø^{y}	*kra-y	1
Hdi	*kəri* kəry	*krØ-y		2
1. ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 2. ə-epenthesis; *y > i				

HIGI

Kamwe-Nkafa	*kəlyə* kəl^{y}a	*kla-Ø^{y}	*kra-y	1
Kamwe-Futu	*kəlye* kəl^{y}a^{y}			2
Kirya	*kəɽi* kər^{y}y	*krØ-y^{y}		3
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: l > l^{y}; lexical-final *a > ə 2. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: l > l^{y}; +Y: lexical-final *a > e 3. ə-epenthesis; *y > y^{y}; +Y: r > r^{y} > ɽ; *y > i				

KOTOKO-ISLAND

Buduma	*kəli(ə)* kəly(a)	*klØ-ya	*kla-ya	*kra-ya	1
1. *r > l; ə-epenthesis; *y > i; FV *a > ə					

KOTOKO-NORTH

Mpade	*kɨlew* kə^{y}la^{y}w	*kla-Ø^{y}-w	*kla-y-k^{w}	*kra-y-k^{w}	1
Afade	*gɨlew* gə^{y}la^{y}w	*gla-Ø^{y}-w	*gla-y-k^{w}		2
Malgbe	*gɨlew* gə^{y}la^{y}w				2
1. *r > l; *k^{w} > w; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *k > g; *r > l; *k^{w} > w; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*kɨle* kə^{y}la^{y}	*kla-Ø^{y}	*kra-y	1
	kle kla^{y}			2
Mser	*kle* kla^{y}			2
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *r > l; *y > Ø^{y}; +Y: lexical-final *a > e				

GIDAR

Gidar	*kra*	*kra	*kra	
	kəra			1
1. ə-epenthesis				

donkey$_1$

PCC *(ma-, xa-) **z(a)g^{w}a** (-y, -k^{w})

DABA

Mbudum	*zo^{ŋ}go* za^{wŋ}ga^{w}	*Ø-za^{n}g^{w}a	*m^{n}Ø-zag^{w}a	*ma-zag^{w}a	1
1. *m > Ø^{n}; +N: g^{w} > ^{ŋ}g^{w}; +W: *a > o					

MAFA

Cuvok	*za^{ŋ}gwa*	*Ø-za^{n}g^{w}a	*m^{n}Ø-zag^{w}a	*ma-zag^{w}a	1
1. *m > Ø^{n}; +N: g^{w} > ^{ŋ}g^{w}					

SUKUR

Sukur	*zu^{ŋ}g^{w}a* zə^{wŋ}g^{w}a	*Ø-z^{n}g^{w}a	*m^{n}Ø-zg^{w}a	*(ma-)zg^{w}a	1
	zəg^{w}a	*zg^{w}a			2
1. *m > Ø^{n}; +N: g^{w} > ^{ŋ}g^{w}; ə-epenthesis; +W: ə > u 2. ə-epenthesis					

HURZA

Mbuko	*zu^{ŋ}go* zə^{wŋ}ga^{w}	*Ø-z^{n}g^{w}a	*m^{n}Ø-zg^{w}a	*ma-zg^{w}a(-y)	1
Vame	*aziŋ^{w}a* azə^{y}ŋ^{w}a	*Øa-z^{n}g^{w}a-Ø^{y}	*m^{n}a-zg^{w}a-y		2
1. *m > Ø^{n}; +N: g^{w} > ^{ŋ}g^{w}; ə-epenthesis; +W: ə > u ; +W: lexical-final *a > o 2. *m > Ø^{n}; +N: g^{w} > ^{ŋ}g^{w} > ŋ^{w}; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

MANDARA

				√ C Ca	
Dghwede	*zu^{ŋ}g^{w}e* zə^{wŋ}g^{w}a^{y}	*Ø-z^{n}g^{w}a-Ø^{y}	*m^{n}Ø-zg^{w}a-y	*ma-zg^{w}a-y	1
Podoko	*ʒəŋ^{w}a* z^{y}əŋ^{w}a	*Ø-z^{n}g^{w}a-Ø^{y}			2
Malgwa	*əzuŋ^{w}a* azə^{w}ŋ^{w}a	*Øa-z^{n}g^{w}a	*m^{n}a-zg^{w}a-y		3
Glavda	*ayuŋ^{w}a* az^{y}ə^{w}ŋ^{w}a	*Øa-z^{n}g^{w}a-Ø^{y}			4
	aÿiŋ az^{y}ə^{y}ŋ	*Øa-z^{n}gØ-Ø^{y}			5
				√ CaCa	
Mandara	*ezeŋ^{w}a* a^{y}za^{y}ŋ^{w}a	*Øa-za^{n}g^{w}a-Ø^{y}	*m^{n}a-zag^{w}a-y	*ma-zag^{w}a-y(-k^{w})	6
Matal	*ʒaŋ^{w}əw* z^{y}aŋ^{w}əw	*Ø-zag^{nw}-Ø^{y}-w	*m^{n}Ø-zag^{w}Ø-y-k^{w}		7
	zeŋəw za^{y}ŋəw	*Ø-za^{n}g-Ø^{y}-w			8
	ʒaŋu z^{y}aŋw				9
	zeŋu za^{y}ŋw				10

1. *m > Øⁿ; +N: gʷ > ᵑgʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e
2. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; ə-epenthesis; *y > Øʸ; +Y: z > zʸ > ʒ
3. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; ə-epenthesis; +W: ə > u
4. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: *z > zʸ > y
5. *m > Øⁿ; gʷ > g; +N: g > ᵑg > ŋ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *z > zʸ > ỻ
6. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; *y > Øʸ; +Y: non-final *a > e
7. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; ə-epenthesis; *y > Øʸ; +Y: z > zʸ > ʒ
8. *m > Øⁿ; +N: g > ᵑg > ŋ; ə-epenthesis; *y > Øʸ; +Y: *a > e
9. *m > Øⁿ; +N: g > ᵑg > ŋ; *y > Øʸ; +Y: z > zʸ > ʒ; w > u
10. *m > Øⁿ; +N: g > ᵑg > ŋ; *y > Øʸ; +Y: *a > e; w > u

MOFU

				√ C Ca	
Ouldeme	*aziŋʷa* azəʸŋʷa	*Øa-zⁿgʷa-Øʸ	*mⁿa-zgʷa-y	*ma-zgʷa (-y/-kʷ)	1
Gemzek	*zuᵑgo* zəʷᵑgʷaʷ	*Ø-zⁿgʷa	*mⁿØ-zgʷa		2
Dugwor	*zuᵑgo* zəʷᵑgʷaʷ				2
Merey	*zəᵑgaw*	*Ø-zⁿga-w	*mⁿØ-zga-kʷ		3
Mofu-Gudur	*zəᵑgʷaw*	*Ø-zngʷa-w			3
				√ CaCa	
Moloko	*ozoŋgo* aʷzaʷᵑgʷaʷ	*Øa-zaⁿgʷa	*mⁿa-zagʷa	*(xa-)ma-zagʷa (-y/-kʷ)	4
Muyang	*azoᵑgu* azaʷᵑgʷw	*Øa-zaⁿgʷØ-w	*mⁿa-zagʷa-kʷ		5
Mofu-North	*zaᵑgaw*	*Ø-zaⁿga-w	*mⁿØ-zaga-kʷ		6
Zulgo	*hezʷeŋe* xaʸzʷaʸŋaʸ	*xa-Ø-zaⁿgʷa-Øʸ	*xa-mⁿØ-zagʷa-y		7

1. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ; ə-epenthesis; *y > Øʸ; +Y: ə > i
2. *m > Øⁿ; +N: gʷ > ᵑgʷ; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o
3. *gʷ > g; *m > Øⁿ; +N: g > ᵑg; ə-epenthesis; *kʷ > w
4. *m > Øⁿ; +N: gʷ > ᵑgʷ +W : *a > o
5. *m > Øⁿ; +N: gʷ > ᵑgʷ; +W: *a > o; *kʷ > w > u
6. *gʷ > g; *m > Øⁿ; +N: g > ᵑg; *kʷ > w
7. *m > Øⁿ; +N: gʷ > ᵑgʷ > ŋʷ > ŋ; +W: *z > zʷ; *y > Øʸ; +Y : *a > e

MAROUA

Giziga-Muturwa	*zuᵑgʷu* zəʷᵑgʷw	*Ø-zⁿgʷØ-w	*mⁿØ-zgʷa-kʷ	*ma-zgʷa(-kʷ)	1
Giziga-Marva	*zuᵑgo* zəʷᵑgaʷ	*Ø-zⁿgʷa	* mⁿØ-zgʷa		2

1. *m > Øⁿ; +N: gʷ > ᵑgʷ; ə-epenthesis; +W: ə > u; *kʷ > w > u
2. *m > Øⁿ; +N: gʷ > ᵑgʷ; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o

LAMANG

Lamang	*zuŋa* zəʷŋa	*Ø-zⁿgʷa	*mⁿØ-zgʷa	*ma-zgʷa	1

1. *m > Øⁿ; +N: *gʷ > ᵑgʷ > ŋʷ (> ŋ); ə-epenthesis; +W: ə > u

donkey$_2$

Loan?[31] *(ma-) **b(a)rdza** (-y, -k^w, -n)

BATA

Bata	*^{m}birse* mbəʸrsaʸ	*m-brsa-Øʸ	*mØ-brsa-y	*ma-brdza-y	1
1. *dz > s; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e					

DABA

Buwal	*berdʒeŋ* baʸrdzʸaʸŋ	*bardza-Øʸ-ŋ	*bardza-y-k-n	*bardza-y-k^w-n	1
1. *k^w > k; fusion kn > ŋ; *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e					

KOTOKO-NORTH

Afade	*ɓoro* ɓa^{w}ra^w	*bˀara-Ø^w	*bara-Øˀw	*barØa-ˀw	*bardza-k^w	1
1. re-segmentalisation *k^w > ˀ+w; w > Ø^w; +W: *a > o; ˀ > Øˀ; +ˀ: *b > ɓ						

KOTOKO-CENTRAL

Lagwan	*^{m}buri* mbə^{w}ry	*m-br-y-Ø^w	*mØ-brØØ-y-k^w	*ma-brdza-y-k^w	1
1. ə-epenthesis; *k^w > Ø^w; +W: ə > u; *y > i					

KOTOKO-SOUTH

Mazera	*^{m}buri* mbə^{w}ry	*mbr-y-Ø^w	*mØ-brØØ-y-k^w	*ma-brdza-y-k^w	1
1. ə-epenthesis; *k^w > Ø^w; +W: ə > u; *y > i					

donkey$_3$

Loan[32] ***k(a)w(a)ra** (-y, -t; FV)

BATA

Bata	*k^{w}aareeto* kwaraaʸta^w	*kw^{w}ara-Øʸa-ta	*kwara(-ya-ta)	1
Gude	*k^{w}ara* kwara	*kwara		
Jimi	*k^{w}ara* kwara			
Sharwa	*k^{w}ara* kwara			
1. *y > Øʸ; +Y: *a > e; *w > w^w; +W: FV *a > o ; (1st syllable vowel length unaccounted for)				

TERA

Tera	*koro* ka^{w}ra^w	*kaØ^{w}ra	*kawra	1
1. *w > Ø^w; +W: *a > o				

MARGI

Bura	*k^{w}ara* kwara	*kwara	*kwara	
Margi-South	*k^{w}ara* kwara			
Kilba	*k^{w}ara* kwara			

[31] If this word was a loan into some CC languages, as Gravina (2015) assumed, its donor language has not (yet) been identified. As a loan, it could have been borrowed with an initial prenasalised stop /^{m}b/. If it was an areal Central Chadic development (at the northern and southern periphery of the CC area), we would want to reconstruct it without prenasalisation, as we do here, postulating the presence of the ubiquitous *{ma-} prefix.

[32] This is an obvious loan from or via Kanuri (*koro*) and thus qualifies as a 'Pseudo'-PCC root insofar as it has been streamlined into Central Chadic phonology systems to the extent of being apparently 'reconstructable'. Central Chadic languages integrate this loan by reanalysing it as a triradical root ***k(a)w(a)ra** and allow for three root types √ CCCa ***kwra**, √ CaCCa ***kawra**, and √ CCaCa ***kwara**.

MAROUA

Giziga Muturwa	*kawra*	*kawra	*kawra	
	awra	*Øawra		

HIGI

Kamwe-Nkafa	*kʷara*	*kwara	*kwara	
Kamwe-Futu	*kʷara*			
Kirya	*kʷara*			
Psikye	*kʷara*			

KOTOKO-NORTH

				√ C C Ca	
Malgbe	*gro* graʷ	*gØʷra	*gwra	*kwra	1
				√ CaC Ca	
Mpade	*koro* kaʷraʷ	*kaØʷra		*kawra	2
1. *k > g; *w > Øʷ; +W: lexical-final *a > o 2. *w > Øʷ; +W: *a > o					

MUSGUM

Mbara	*kuro* kəʷraʷ	*kØʷra	*kwra	*kwra(-y, -t)	1
Vulum	*kʉre* kəʷraʸ	*kØʷra-Øʸ	*kwra-y		2
Muskum	*kʉret* kəʷraʸt	*kØʷra-Øʸ-t	*kwra-y-t		2
1. ə-epenthesis; *w > Øʷ; +W : ə > u; +W: lexical-final *a > o 2. ə-epenthesis; *w > Øʷ; +W : ə > ʉ; *y > Øʸ; +Y: lexical-final *a > e					

GIDAR

Gidar	*koro* kaʷraʷ	*kaØʷra	*kawra	1
1. *w > Øʷ; +W: *a > o				

dream

PCC *(ma-, RED-) **s(a)xʷ(a)na** (-a, -y, -kʷ, -n; FV)

BATA

Gude	*sənii* səməʸy	*sna-yʸ	*sØna-y	*sxʷna-y(-n, -kʷa)	1
Jimi	*sinin* səʸnyn	*sn-yʸ-n	*sØnØ-y-n		2
Sharwa	*ʃinə'ə* sʸəʸnəʔə	*sn-Øʸ-ʔa	*sØnØ-y-ka		3
Bata	*ʃiri* sʸəʸry	*sɾ-yʸ	*sØrØ-y		4
1. ə-epenthesis; lexical-final */a/ > ə; *y > yʸ; +Y: ə > i; *y > i 2. ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. ə-epenthesis; *kʷ > k > ʔ; ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i; lexical-final *a > ə 4. *n > r; ə-epenthesis; *y > yʸ; +Y: *s > ʃ; +Y: ə > i; *y > i					
DABA					
				√ C C Ca	
Daba	*sini* səʸny	*sn-yʸ	*sØnØ-y	*(RED-)sxʷna-y(-kʷ)	1
Mbudum	*səsin* sə-səʸn	*s-sn-Øʸ	*RED-sØnØ-y		2
Gavar	*ʃiŋʃiŋ* sʸəʸŋsʸəʸŋ	*sŋ-sŋ-Øʸ	*RED-sØnØ-y-k		3

				√ C CaCa	
Buwal	*seŋseŋ* saʸŋsaʸŋ	*saŋ-saŋ-Øʸ	*RED-sØanØ-y-k	*RED-sxʷana-y-kʷ	4
1. ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *kʷ > k; fusion nk > ŋ; ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i 4. *kʷ > k; fusion nk > ŋ; +Y: *a > e					
MAFA					
				√ C C Ca	
Mafa	*nfuwine* nsʸəʷwəʸnaʸ	*n-swʷna-Øʸ	*mØ-swʷna-y	*ma-sxʷna-y	1
				√ C CaCa	
Cuvok	*suwana* səʷwana		*swʷana	*sxʷana	2
1. *xʷ > wʷ; ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i; +Y: lexical-final *a > e; +W: ə > u 2. *xʷ > wʷ; ə-epenthesis; +W: ə > u					
TERA					
Tera	*ʒine* zʸəʸnaʸ	*zna-Øʸ	*zØna-y	*sxʷna-y	1
1. *s > z; *y > Øʸ; +Y: z > ʒ; +Y: ə > i; +Y: lexical-final *a > e					
HURZA					
Mbuko	*sune* swnaʸ	*swna-Øʸ		*sxʷna-y	1
1. *xʷ > w > u; *y > Øʸ; +Y: lexical-final *a > e					
MARGI					
Bura	*suni* swny	*swn-y	*swnØ-y	*sxʷna-y(-kʷ)	1
Kilba	*ʃi'uni* sʸəʸʔwny	*swn-yʸ-ʔ	*swnØ-y-k		2
1. *xʷ > w > u; *y > i 2. *xʷ > wʷ; ə-epenthesis; *kʷ > k > ʔ; multiple metathesis wnyʔ > ʔwny; *w > u; *y > yʸ; +Y: *s > ʃ; +Y: ə > i; *y > i					
MANDARA					
				√ C C Ca	
Malgwa	*ʃine* sʸəʸnaʸ	*sna-Øʸ	*sØna-y	*sxʷna-y(-kʷa)	1
Glavda	*siŋga* səʸŋga	*sŋ-Øʸ-ka	*sØnØ-y-kʷa		2
				√ C CaCa	
Podoko	*səhʷana*	*sxʷana		*sxʷana(-y)	3
Mandara	*ʃene* sʸaʸnaʸ	*sana-Øʸ	*sØana-y		4
				√ CaC Ca	
Matal	*masasiŋay* masasəʸŋay	*ma-sa-sŋ-ayʸ	*ma-sa-sØxnØ-ay	*ma-RED- saxʷna-a-y	5
	maʃaʃiŋay masʸaʸsʸəʸŋay				6
1. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i; +Y: lexical-final *a > e 2. ə-epenthesis; *kʷ > k; *y > Øʸ; +Y: ə > i; assimilation nk > ŋg 3. ə-epenthesis 4. *y > Øʸ; +Y: *s > ʃ; +Y: *a > e 5. *xʷ > x; fusion *xn > ŋ; ə-epenthesis; *y > yʸ; +Y: ə > i 6. *xʷ > x; fusion *xn > ŋ; ə-epenthesis; *y > yʸ; +Y: *s > ʃ; +Y: ə > i					

MOFU

Zulgo	*suna* swna	*swna		*(ma-)sx^{w}na(-a,-y)	1
Gemzek	*sʉne* sə^{w}na^{y}	*sØ^{w}na-Ø^{y}	*(ma-)swna-y		2
Merey	*məsune* məsə^{w}na^{y}	*mØ-sØ^{w}na-Ø^{y}			3
Dugwor	*məsne* məsna^{y}	*mØ-sna-Ø^{y}	*ma-sØna-y		4
Mofu North	*mesəney* ma^{y}səna^{y}y	*ma-sn-ay^{y}	*ma-sØnØ-ay		5

1. *x^{w} > w > u
2. *x^{w} > w^{w} > Ø^{w}; ə-epenthesis; +W: ə > ʉ; *y > Ø^{y}; +Y: lexical-final *a > e
3. *x^{w} > w^{w} > Ø^{w}; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e
4. ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e
5. ə-epenthesis; *y > y^{y}; +Y: *a > e

MAROUA

Giziga-Marva	*məsin* məsə^{y}n	*m-sn-Ø^{y}	*mØ-sØnØ-y	*ma-sx^{w}na-y	1

1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i

LAMANG

				√ C C Ca	
Hdi	*suni* swny	*swn-y	*swnØ-y	*sx^{w}na-y	1
				√ C CaCa	
Lamang	*sʉwaŋa* sə^{w}waŋa	*sw^{w}aŋa	*sw^{w}anØ-ka	*sx^{w}ana-k^{w}a	2

1. *x^{w} > w > u ; *y > i
2. *x^{w} > w^{w}; *k^{w} > k; fusion nk > ŋ ; ə-epenthesis; +W: ə > u

HIGI

Kamwe-Futu	*səwo* səwa^{w}	*sw^{w}a	*swØa(-y)	*sx^{w}na(-y)	1
Kirya (verb)	*fiwu* s^{y}ə^{y}wə^{w}	*sw^{w}a-Ø^{y}			2
Bana	*fiw* s^{y}ə^{y}w	*swØ-Ø^{y}			3
Kirya (noun)	*fin* s^{y}ə^{y}n	*sn-Ø^{y}	*sØnØ-y		4

1. *x^{w} > w^{w}; ə-epenthesis; +W: lexical-final *a > o
2. *x^{w} > w^{w}; ə-epenthesis; +W: lexical-final *a > ə; +W: ə > u; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i
3. *x^{w} > w; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i
4. ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i

KOTOKO-NORTH

				√ C CaCa	
Mpade	*sware* swara^{y}	*swara-Ø^{y}	*swara-y	*sx^{w}ana-y	1
				√ CaCaCa	
Malgbe	*yaware* yawara^{y}	*yawara-Ø^{y}	*yawara-y	*sax^{w}ana-y	2

1. *x^{w} > w; *n > r; *y > Ø^{y}; +Y: lexical-final *a > e
2. *x^{w} > w; *s > y; *n > r; *y > Ø^{y}; +Y: lexical-final *a > e

KOTOKO-CENTRAL

Lagwan	*swane* swana^{y}	*swana-Ø^{y}		*sx^{w}ana-y	1
Mser	*sware* swara^{y}	*swara-Ø^{y}	*swara-y		2

1. *x^{w} > w; *y > Ø^{y}; +Y: lexical-final *a > e
2. *x^{w} > w; *n > r; *y > Ø^{y}; +Y: lexical-final *a > e

Musgum

Mulwi[33]	*hiini* xəʸyny	*xwn-yʸ	*xwnØ-y	*sxʷna-y	1
1. *xʷ > w; *s > x; ə-epenthesis; *y > yʸ; +Y: (assimilation?)*w > y; +Y : ə > i; *y > i (2x)					
Gidar					
Gidar[34]	*issine* əʸssəʸnaʸ	*ssna-Øʸ	*swna-y	*sxʷna-y	1
1. ə-prothesis; ə-epenthesis; *xʷ > w; assimilation w > s /s_; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

drink, to

PCC *(ma-, kʷa-) **sa** (-a, -y, -kʷ, -n; FV)

Bata

Gude	*sa*	*sa	*sa(-n)	
Sharwa	*sa*			
Jimi	*san*	*sa-n		

Daba

Buwal	*sa*	*sa	*sa	
Gavar	*sa*			
Mbudum	*sa*			
Daba	*sa*			

Mafa

Mafa	*sə* sə	*sa	*sa	1
Cuvok	*sa*			
1. lexical-final *a > ə				

Tera

Tera	*za*	*za	*sa	1
1. *s > z				

Sukur

Sukur	*sə* sə	*sa	*sa	1
1. lexical-final *a > ə				

Hurza

Mbuko	*sa*	*sa		*sa(-kʷa)	
Vame	*sawa*	*sa-wa	*sa-kʷa		1
1. *kʷ > w					

Margi

Margi	*sa*	*sa	*sa	
Kilba	*sa*			
Bura	*sa*			

[33] For Mulwi, we presently leave open two reconstruction options subject to revision after clarity on two still open questions: (1) Is this a cognate in the first place, or rather a reflex of the word meaning 'sleep'? (2) If it is a cognate, is it plausible to assume a sound shift medial /w/ > /y/ under Y-prosody (or simply assimilation) to account for the internal long vowel?

[34] The internal reconstruction for Gidar rests on the ad hoc assumption of a local assimilation of sw > ss. This remains a guess and cannot be considered established.

MANDARA

Podoko	*sa*	*sa		*(ma-)sa((-a)-y)	1
Malgwa	*ʃa* sʸa	*sa-Øʸ	*sa-y		
Matal	*masay*	*ma-s-ay	*ma-sØ-a-y		
1. *y > Øʸ; +Y: *s > ʃ					

MOFU

Mofu-Gudur	*s*	*s	*sØ	*(ma-)sa((-a)-y)	
Zulgo	*sa*	*sa			
Merey	*sa*				
Ouldeme	*si* sy	*s-y	*sØ-y		1
Moloko	*se* saʸ	*sa-Øʸ	*sa-y		2
Mada	*mefe* maʸsʸaʸ	*ma-sa-Øʸ	*ma-sa-y		3
Gemzek	*mese* maʸsaʸ				4
Dugwor	*masay*	*ma-s-ay	*ma-sØ-a-y		
Mofu North	*mesey* maʸsaʸy	*ma-s-ayʸ			5
1. *y > i 2. *y > Øʸ; +Y: lexical-final *a > e 3. *y > Øʸ; +Y: *s > ʃ; +Y *a > e 4. *y > Øʸ; +Y *a > e 5. *y > yʸ; +Y *a > e					

MAROUA

Giziga-Marva	*si* sy	*s-y	*sØ-y	*sa-y(-kʷ)	1
Mbazla	*ʃi* sʸy	*s-yʸ			2
	sii' səʸyʔ	*sə-yʸ-ʔ	*sa-y-k		3
1. *y > i 2. *y > yʸ; +Y: *s > ʃ; *y > i 3. *kʷ > k > ʔ; lexical-final `*a > ə; *y > yʸ; +Y: ə > i; *y > i					

Lamang	*sa*	*sa	*sa(-y)	
Hdi	*sa*			
	say	*sa-y		

HIGI

Kamwe-Nkafa	*sa*	*sa	*sa	
Kamwe-Futu	*sa*			
Kirya	*sa*			
Bana	*sa*			

KOTOKO-ISLAND

Buduma	*xiə* xyə	*x-ya	*xØ-ya	*sa-y(a)	1
	xii xəʸy	*x-yʸ	*xØ-y		2
1. *s > x; *y > i; FV *a > ə 2. *s > x; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

KOTOKO-NORTH

Mpade	*se* saʸ	*sa-Øʸ	*sa-y	*sa(-y/-kʷ-n)	1
Afade	*se* saʸ				1
	sel saʸl	*sa-Øʸ-r	*sa-y-n		2
	saun sawn	*sa-w-n	*sa-kʷ-n		3
Malgbe	*yawun* yawəʷn	*ya-wʷ-n	*ya-kʷ-n		4

1. *y > Ø^{y}; +Y: lexical-final *a > e 2. *n (> r) > l; *y > Ø^{y}; +Y: lexical-final *a > e 3. *k^{w} > w > u 4. *s > y; *k^{w} > w^{w}; ə-epenthesis; +W: ə > u					
KOTOKO-CENTRAL					
Lagwan	*sawun* sawə^{w}n	*sa-w^{w}-n	*sa-k^{w}-n	*sa-y/-k^{w}-n	1
Mser	*se* sa^{y}	*sa-Ø^{y}	*sa-y		2
1. *k^{w} > w^{w}; ə-epenthesis; +W: ə > u 2. *y > Ø^{y}; +Y: lexical-final *a > e					
KOTOKO-SOUTH					
Zina	*sya*	*s-ya	*sØ-ya	*sa-ya	
MUSGUM					
Vulum	*si* sy	*s-y	*sØ-y	*sa-y	1
Mulwi	*si* sy				1
Mbara	*sii* sə^{y}y	*s-y^{y}	*sØ-y		2
1. *y > i 2. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i					
GIDAR					
Gidar	*wusa* wə^{w}sa	*w^{w}-sa		*k^{w}a-sa	1
	əəsa	*w-sa	*k^{w}Ø-sa		2
1. *k^{w} > w^{w}; ə-epenthesis; +W: ə > u 2. *k^{w} > w; ə-prothesis; assimilation əw > əə (?)					

drum$_{1}$

Onomatopoeic/loan?[35] *(RED-) **daŋa** (-k^{w}, -n; FV)

BATA

Gude	*daŋa* daŋa	*daŋa	*daŋa(-n)	
Jimi	*daŋən* daŋən	*daŋØ-n		1
1. ə-epenthesis				

[35] Gravina (2015) assumes technological import from "somewhere in Nigeria". The variant forms are likely onomatopoeic in origin rather than coming about by natural language change. Since we do not reconstruct ^{x}ŋ in PCC, we assume that the origin of ***daŋa*** (and also reduplicative ***daŋ-daŋ***) is onomatopoeic. As an alternative or parallel option, however, we could be dealing with cases of fusion of *n+k^{w} > nk > ŋ, which would allow us to reconstruct the original simple form as ***dan*** (and ***dan-dan***) and postulate the presence of a suffixal root augment *{-k^{w}(a)}; such analysis would be corroborated by MANDARA, LAMANG, and HIGI group forms.

Tera

Tera	*da^{n}g* daŋ	*daŋØ	*daŋa	

Sukur

Sukur	*daŋ*	*daŋØ	*daŋa	

Margi

Bura	*da^{n}g* daŋ	*daŋØ	*daŋa	
Kilba	*daŋ*			

Mandara

Podoko	*deŋu* da^{y}ŋw	*daŋ-Ø^{y}-w	*daŋØ-y-k^{w}Ø	*daŋa-y-k^{w}a	1
	deŋ^{w}e da^{y}ŋ^{w}a^{y}	daŋ-Ø^{y}-Ø^{w}a	*daŋØ-y-k^{w}a		2
1. *k^{w} > w > u; *y > Ø^{y}; +Y: lexical-final *a > e 2. *y > Ø^{y}; +Y: *a > e					

Lamang

Lamang	*dewdew* da^{y}wda^{y}w	*daw-daØ^{y}w	*RED-daØØ-y-w	*(RED-) daŋa-y-k^{w}	1
Hdi	*deghwdeghw* da^{y}ɣ^{w}da^{y}ɣ^{w}	*daɣ^{w}-daØ^{y}ɣ^{w}	*RED-daØØ-y-ɣ^{w}		2
1. *k^{w} > w; *y > Ø^{y}; +Y: *a > e 2. *k^{w} > ɣ^{w}; *y > Ø^{y}; +Y: *a > e					

Higi

Bana	*daŋ*	*daŋ	*daŋØ		
Kamwe-Nkafa	*da^{n}gyi* daŋg^{y}y	*daŋ-k-y^{y}	*daŋØ-y-kØ	*daŋa(-y(-k^{w}a))	1
Kamwe-Futu	*dya^{n}ga* d^{y}aŋga	*daŋ-g-Ø^{y}-a	*daŋØ-y-ka		2
1. *k^{w} > k; metathesis yk > ky; assimilation ŋk > ŋg; *y > y^{y}; +Y: *g > g^{y}; *y > i 2. *k^{w} > k; metathesis yk > ky; assimilation ŋk > ŋg; *y > Ø^{y}; +Y: *d > d^{y}					

drum$_{2}$

Loan/'pseudo'-PCC[36] *(RED-) **gaŋ ~ ga^{n}ga** (-k^{w}, -n; FV)

Bata

Gude	*ga^{n}ga*		*ga^{n}ga	
Sharwa	*ga^{n}ga*			

[36] Generic term or specifically referring to a small, medium-size or big (usually two-skinned and barrel-shaped) drum, that was widely introduced into the area; see also Kanuri *gàŋgá*, Hausa *gàŋgáa*. As a loan, the word could have been borrowed with the prenasalised stop /^{n}g/, and this is how we treat it in this study, namely as a loan and 'Pseudo'-PCC root. The word has undergone only little change in terms of composition regarding reduplicative and/or petrified root-augmental material. Arguably, the word has an onomatopoeic dimension, which would be seen in the full reduplicative variant forms like *gaŋ-gaŋ/ga^{n}gaŋ*. Note that, if Hausa was involved in the distribution of this term, it would have lost the final nasal of its reduplicative and potentially original source **gaŋ-gaŋ* > *ga^{n}ga.* Thus, the analysis and reconstruction presented here must remain provisional, and the true nature and history of this word in CC languages still remains to be unearthed.

DABA

Buwal	*kaᵑgaŋ* kaŋgaŋ	*kaŋ-gaŋ	*kaŋ-gaŋ	*RED-gaŋ	1
1. *g > k					

MAFA

Mafa	*gaᵑga*		*gaⁿga	
Cuvok	*gaᵑgaŋ* gaŋgaŋ	*gaŋ-gaŋ	*RED-gaŋ	

TERA

Tera	*guga*ᵑ*g* gʷəʷgaŋ	*gʷ-gaŋ	*RED-gaŋ	1
1. ə-epenthesis; +W: ə > u				

HURZA

Mbuko	*gaᵑgan*		*gaⁿga-n	
Vame	*gaŋka*	*gaŋ-ka	*gaŋ-kʷa	1
1. *kʷ > k				

MARGI

Bura	*gaᵑga*	*gaⁿga		*gaⁿga	
Margi	*kaᵑga* kaŋga	*kaŋ-gaØ	*kaŋ-gaŋ	*RED-gaŋ	1
1. *g > k					

MANDARA

Mandara	*gaᵑga*	*gaⁿga		*gaⁿga	
Malgwa	*gaᵑga*				
Glavda	*gaŋ*	*gaŋ		*gaŋ(-kʷa)	
Podoko	*gaŋəka*	*gaŋ-ka	*gaŋ-ka		1
1. ə-epenthesis, *kʷ > k					

MOFU

Moloko	*gəᵑgan*	*gəⁿga-n	*gØⁿga-n	*gaⁿga-n	1
Muyang	*gaŋ-gaŋ*	*gaŋ-gaŋ		*RED-gaŋ	
Mofu-North	*gaᵑgaŋ* gaŋgaŋ				
Mofu-Gudur	*gaᵑgaŋ* gaŋgaŋ				
Merey	*gaᵑgaŋ* gaŋgaŋ				
	gaŋaŋ	*gaŋ-Øaŋ			
Gemzek	*gaŋaŋ*				
	gagaŋ	*gaØ-gaŋ			
1. * ə-epenthesis					

MAROUA

Giziga-Marva	*gaᵑgaŋ* gaŋgaŋ	*gaŋ-gaŋ	*RED-gaŋ	

LAMANG

Lamang	*gaᵑga*	*gaⁿga	*gaⁿga	

HIGI

Kamwe-Nkafa	*gaᵑga*	*gaⁿga	*gaⁿga	
Kamwe-Futu	*gaᵑga*			

KOTOKO-ISLAND

Buduma	*gaᵑga*	*gaⁿga	*gaⁿga	

KOTOKO-NORTH

Afade	*gaⁿgan*	*gaⁿga-n	*gaⁿga-n	
Mpade	*kaⁿga*	*kaⁿga	*gaⁿga	1
1. *g > k				

KOTOKO-CENTRAL

Lagwan	*gaⁿga*	*gaⁿga	*gaⁿga	

MUSGUM

Mbara	*gaⁿga*	*gaⁿga	*gaⁿga	

GIDAR

Gidar	*gaⁿga*	*gaⁿga	*gaⁿga	

ear, name[37]

PCC *(ma-) **ɬ(a)ma** (-a, -y, -ɗ, -kʷ, -n; FV)

BATA

Gude	*ləma*	*lma		*ɬma(-y(-n))	1
Sharwa	*limi* ləʸmy	*lm-yʸ	*ɬmØ-y		2
Jimi	*limən* ləʸmən	*lm-Øʸ-n	*ɬmØ-y-n		3
Tsuvan	*ɮəme* ɮəmaʸ	*ɮma-Øʸ	*ɮma-y		4
1. *ɬ > l; ə-epenthesis 2. *ɬ > l; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. *ɬ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 4. *ɬ > ɮ; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e					

DABA

				√ C Ca	
Gavar	*ɮəm*	*ɮmØ		*ɬma(-y, -ɗ)	1
Mbudum	*ɮəm*				1
Mazagway Hidi	*ɮimi* ɮəʸmy	*ɮm-yʸ	*ɮmØ-y		2
Daba	*ɮimi'* ɮəʸmyʔ	*ɮm-yʸ-ʔ	*ɮmØ-y-ɗ		3
				√ CaCa	
Buwal	*ɮam*	*ɮamØ		*ɬama	4
1. *ɬ > ɮ; ə-epenthesis 2. *ɬ > ɮ; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. *ɬ > ɮ; *ɗ > ʔ; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 4. *ɬ > ɮ					

[37] In twelve of the eighteen CC language groups, both 'ear' and 'name' would appear to be the same root. In six language groups, different roots are used. In those languages that use the same root, a later secondary formal disambiguation may have occurred, leading to slightly different formal reflexes in the modern languages, which we here distinguish by using (a) for 'ear' and (b) for 'name'. This issue deserves closer scrutiny not least in the synchronic descriptions of the languages in question.

MAFA

Mafa	(a) *ɮəᵐbad*	*Øⁿ-ɮba-ɗ	*mⁿØ-ɮba-ɗ	*(ma-)łma(-a-y, -ɗ)	1
	(b) *nɮəᵐbad*	*nⁿ-ɮba-ɗ			2
Cuvok	(a) *ɮəmay*	*ɮm-ay	*ɮmØ-a-y		3
1. *ł > ɮ; ə-epenthesis; dissimilation *m > b; *m > Øⁿ; +N: b > ᵐb 2. *ł > ɮ; ə-epenthesis; dissimilation *m > b; *m > Øⁿ; +N: b > ᵐb; homorganic assimilation *m > n/_ɮ 3. *ł > ɮ; ə-epenthesis					

TERA

Tera	*ɮəm*	*ɮm	*ɮmØ	*łma(-y)	1
	ɮim ɮəʸm	*ɮm-Øʸ	*ɮmØ-y		2
1. *ł > ɮ; ə-epenthesis 2. *ł > ɮ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

SUKUR

Sukur	(a) *ɮəmay*	*ɮm-ay	*ɮmØ-a-y	*łma-a-y	1
	(a) *ɮəmai* ɮəmay				1
1. *ł > ɮ; ə-epenthesis					

HURZA

Mbuko	*łəmay*	*łm-ay	*łmØ-a-y	*łma-a-y	1
Vame	(a) *łəmay*				1
1. ə-epenthesis					

MARGI

Bura	*łim* łəʸm	*łm-Øʸ	*łmØ-y	*łma(-y)	1
Margi	(a) *łimi* łəʸmy	*łm-yʸ			2
Margi-South	(a) *himi* xəʸmy	*xm-yʸ	*xmØ-y		3
Kilba	(a) *hyimi* xʸəʸmy				4
	(b) *łəm*	*łmØ			5
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i 3. *ł > x; ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i 4. *ł > x; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: x > xʸ; *y > i 5. ə-epenthesis					

MANDARA

				√ C Ca	
Matal	*łəm*	*łmØ		*łma(-y(a))	1
Podoko	(a) *łəma*	*łma			1
Malgwa	(a) *hyima* xʸəʸma	*xʸma-Øʸ	*łma-y		2
Dghwede	*łəme* łəmaʸ	*łma-Øʸ			3
Glavda	(a) *çimya* çəʸmya	*çm-yʸa	*łmØ-ya		4
	(a) *çimi* çəʸmy	*çm-yʸ	*łmØ-y		5
				√ CaCa	
Mandara	(a) *hyama* xʸama	*xʸama		*łama	6
1. ə-epenthesis 2. *ł > xʸ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

3. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 4. *ɬ > ç; ə-epenthesis; *y > yʸ; +Y: ə > i 5. *ɬ > ç; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 6. *ɬ > xʸ

Mofu

				√ C Ca	
Zulgo	(a) *ɮəm*	*ɮm	*ɮmØ	*ɬma((-a)-y)	1
Merey	(a) *ɮəm*				1
Muyang	*ɬimi* ɬəʸmy	*ɬm-yʸ	*ɬmØ-y		2
Mada	*ɬme* ɬmaʸ	*ɬma-Øʸ	*ɬma-y		3
Moloko	*ɬəmay*	*ɬm-ay	*ɬmØ-a-y		4
Ouldeme	(a) *ɬəmay*				4
Mofu North	(a) *ɬəmay*				4
Mofu-Gudur	(a) *ɬəmay*				4
				√ CaCa	
Dugwor	*ɮam*	*ɮamØ		*ɬama	5
Gemzek	*ɮam*				

1. *ɬ > ɮ; ə-epenthesis 2. ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. *y > Øʸ; +Y: lexical-final *a > e 4. ə-epenthesis 5. *ɬ > ɮ

Maroua

Giziga-Muturwa	*ɬimiɗ(i)* ɬəʸmyʸdəʸ	*ɬm-yʸ-ɗa	*ɬmØ-y-ɗa	*ɬma(-a)-y(-ɗ(a))	1
Giziga-Marva	*ɬimeɗ* ɬəʸmaʸɗ	*ɬma-Øʸ-ɗ	*ɬma-y-ɗ		2
Mbazla	(a) *ɟimɛ'* sʸəʸmaʸʔ	*sma-Øʸ-ʔ			3
	(b) *səmai* səmay	*sm-ay	*ɬmØ-a-y		4
	ɬəmay	*ɬm-ay			5

1. ə-epenthesis; FV *a > ə; *y > yʸ; +Y: ə > i; *y > i 2. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 3. *ɬ > s; *ɗ > ʔ; ə-epenthesis; *y > Øʸ; +Y: s > ʃ; +Y: ə > i; +Y: lexical-final *a > E 4. *ɬ > s; ə-epenthesis 5. ə-epenthesis

Lamang

Lamang	(a) *ɬəmaŋ*	*ɬma-ŋ	*ɬma-k-n	*ɬma-kʷ-n	1
Hdi	(a) *ɬəməŋ*	*ɬm-ŋ	*ɬmØ-k-n		1

1. *kʷ > k; fusion kn > ŋ; ə-epenthesis

Higi

Kirya	*ɬəm*	*ɬmØ		*ɬma(-y-kʷ-n)	1
Bana	(a) *ɬəmə* ɬəmə	*ɬma			2
Kamwe-Nkafa	(a) *ɬəmə* ɬəmə				2
Kamwe-Futu	(a) *ɬimoᵑg* ɬəʸmaʷᵑg	*ɬma-Øʸ-ᵑgʷ	*ɬma-y-kʷ-n		3

1. ə-epenthesis 2. ə-epenthesis; lexical-final *a > ə 3. ə-epenthesis; *y > Øʸ; +Y: ə > i; fusion kʷn > ᵑgʷ; +W: *a > o

KOTOKO-ISLAND

Buduma	*həmu* xəmw	*xm-w	*xmØ-k^{w}	*łma-k^{w}(a)	1
	(a) *həmuə* xəmwə	*xm-wa	*xmØ-k^{w}a		2
1. *ł > x; *k^{w} > w > u; ə-epenthesis 2. *ł > x; *k^{w} > w > u; ə-epenthesis; FV *a > ə					

KOTOKO-NORTH [38]

Afade	*łim* łə^{y}m	*łm-Ø^{y}	*łmØ-	*łma-y(-k^{w})	1
Malgbe	*łim* łə^{y}m				1
Maltam	*łim* łə^{y}m				1
Mpade	*ʃimu* s^{y}ə^{y}mw	*sm-Ø^{y}-w	*smØ-y-k^{w}		2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. *ł > s; *k^{w} > w > u; ə-epenthesis; *y > Ø^{y}; +Y: s > ʃ; +Y: ə > ɨ					

KOTOKO-CENTRAL

Lagwan[39]	*łimi* łə^{y}my	*łm-y^{y}	*łmØ-y	*łma-y	1
Mser	*sim* sə^{y}m	*sm-Ø^{y}	*smØ-y		2
1. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *ł > s; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

KOTOKO-SOUTH

Zina	(b) *səm*	*smØ		*łma(-y)	1
Mazera	*sime* sə^{y}ma^{y}	*sma-Ø^{y}	*sma-y		2
1. *ł > s; ə-epenthesis 2. *ł > s; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

MUSGUM

Mbara	(a) *łumo* łə^{w}ma^{w}	*łma-Ø^{w}	*łma-k^{w}	*łma-y/-k^{w}	1
	(b) *łim* łə^{y}m	*łm-Ø^{y}	*łmØ-y		2
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; +W: lexical-final *a > o 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

GIDAR

Gidar	(a) *ləma*	*łma	*łma	1
1. ə-epenthesis				

earth

PCC *(RED-) **x^{w}(a)yɗa** (-k^{w}; FV)

DABA

Buwal	*hayak*	*xaya-k	*xayØa-k	*x^{w}ayɗa-k^{w}	1
Gavar	*hayak*	*xaya-k			1
Mbudum	*hayak*	*xaya-k			1
1. *x^{w} > x; *k^{w} > k					

[38] For 'name', the database occasionally gives extended structures: Afade *łim sewe* and *łim a tse*, *Maltam łim si wawun*, and *łim si hili (mawe / grim)*.

[39] For 'name', Lagwan also has a parallel extended structure *łimi* a *bilam*.

MAFA

Cuvok	*uyak* wyak	*wya-k	*x^wyØa-k	*x^wyɗa-k^w	1
1. *x^w > w > u; *k^w > k					

TERA

Tera	*ɣay*	*ɣayØØ	*x^wayɗa	1
1. *x^w (> $ɣ^w$) > ɣ				

SUKUR

Sukur	*haɗ*	*xaɗ	*xaØdØ	*x^wayɗa	1
1. *x^w > x					

HURZA

Mbuko	*yugo* ywga^w	*yw^w-ga	*wyØØ-k^wa	*x^wyɗa-k^w(a)	1
Vame	*higay* xə^{y}gay	*xgay^y	*xyØa-g		2
1. metathesis *x^wy > yx^w; *x^w > w > u; *k^w (> k) > g; +W: lexical-final *a > o 2. *k^w > g; metathesis *yg > gy; ə-epenthesis; *y > y^y; +Y: ə > i					

MARGI

Bura	*hi xy*	*xyØØ	*x^wyɗa	1
Kilba	*hə'i xəʔy*	* xyʔØ		2
1. *x^w > x; *y > i 2. x^w > x; *ɗ > ʔ; metathesis yʔ > ʔy; ə-epenthesis; *y > i				

MANDARA

Dghwede	*xaya*	*xaya	*xayØa	*(RED-)x^wayɗa	1
Mandara	*haha*	*xa-xa	*RED-xaØØØ		1
Malgwa	*haha*				1
1. *x^w > x					

MOFU

Zulgo	*ahəɗ*	*xɗ	*xØdØ	*x^wyɗa	1
1. x^w > x; a-prothesis; ə-epenthesis					

MAROUA

Mbazla	*hay*	*xay	*xayØØ	*x^wayɗa	1
1. x^w > x					

LAMANG

Lamang	*hodo* x^{w}a^{w}ɗa^w	*x^{w}aɗa	*x^{w}aØɗa	*x^wayɗa(-k^w)	1
Hdi	*haɗîk* xaɗyk	*xaɗy-k	*xaydØ-k^w		2
1. +W: *a > o 2. x^w > x; *k^w > k; metathesis yɗ > ɗy; *y > i					

HIGI

				√ C C Ca	
Kamwe-Futu	*hyidî* x^{y}ydə^y	*xy^{y}ɗə	*xyɗa	*x^wyɗa	1
Bana	*xyidî* x^{y}ydə^y	*xy^{y}də			
Psikye	*hədî* xəɗy	*xɗy	*xydØ		2
				√ CaC Ca	
Kirya	*hahay*	*xa-xay	*xa-xayØØ	*RED-x^wayɗa	3
1. x^w > x; *y > y^y; *y > i; lexical-final *a > ə; +Y: x > x^y; +Y: ə > i 2. x^w > x; ə-epenthesis; *y > i 3. x^w > x					

MUSGUM

Mbara	*yahay*	*ØØya-xayØ	*xaya-xayØa	*RED-x^{w}aydə̀	1
1. *x^{w} > x					

eat, to

PCC *(ma-) **z(a)ma** (-k^{w}, -n)

BATA

Bata	*sum* sə^{w}m	*sm-Ø^{w}	*smØ-k^{w}	*zma(-k^{w}/-n)	1
Jimi	*zəmən*	*zm-n	*zmØ-n		2
1. *z > s; *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u 2. ə-epenthesis					

DABA

				√ C Ca	
Gavar	*zəm*	*zm	*zmØ	*zma(-k^{w})	1
Mbudum	*zum* zə^{w}m	*zm-Ø^{w}	*zmØ-k^{w}		2
				√ CaCa	
Buwal	*zam*	*zam	*zamØ	*zama	
1. ə-epenthesis 2. *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u					

TERA

Tera	*zəmi* zəmy	*zm-y	*zmØ-y	*zma(-y)	1
	zəm	*zm	*zmØ		2
Ga'anda	*səm*	*sm	*smØ		3
1. ə-epenthesis; *y > i 2. ə-epenthesis 3. *z > s; ə-epenthesis					

MARGI

Kilba	*səma*	*sma		*zma(-y)	1
Margi	*səm*	*sm	*smØ		
Bura	*sim* sə^{y}m	*sm-Ø^{y}	*smØ-y		
1. *z > s; ə-epenthesis 2. *z > s; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

MANDARA

Mandara	*za*	*za	*zØa	*(ma-)zma (-a-y/-k^{w}(a))	
Malgwa	*za*				
Matal	*mazəway*	*ma-zw-ay	*ma-zwØ-a-y		1
	mazuway mazə^{w}way	*ma-zw^{w}-ay			2
Dghwede	*wuza* wə^{w}za	*w^{w}za	*zwa		3
Glavda	*z^{ə}ga*	*z-ga	*zØØ-k^{w}a		4
1. *m > w; ə-epenthesis 2. *m > w^{w}; ə-epenthesis; +W: ə > u 3. *m > w^{w}; metathesis zw > wz; ə-epenthesis; +W: ə > u 4. *k^{w} (> k) > g; ə-epenthesis					

Mofu

				√ C Ca	
Zulgo	*zəm*	*zm	*zmØ	*(ma-)zma(-y)	1
Mofu-Gudur	*zəm*				1
Mada	*mazma*	*ma-zma			
Gemzek	*mezəme* ma^{y}zəma^{y}	*ma-zma-Ø^{y}	*ma-zma-y		2
Mofu North	*mezəmey* ma^{y}zəma^{y}y	*ma-zma-y^{y}			3
				√ CaCa	
	zam	*zam	*zamØ	*zama(-k^{w})	
Moloko	*zom* za^{w}m	*zam-Ø^{w}	*zamØ-k^{w}		4
1. ə-epenthesis 2. ə-epenthesis; *y > Ø^{y}; +Y: a > e 3. ə-epenthesis; *y > y^{y}; +Y: a > e 4. *k^{w} > Ø^{w}; +W: *a > o					

Maroua

Giziga-Marva	*zuma* zə^{w}ma	*zma-Ø^{w}	*zma-k^{w}	*zma(-y, -k^{w})	1
Mbazla	*ʒimi* z^{y}ə^{y}my	*zm-y^{y}	*zmØ-y		2
	zimi' zə^{y}my^{ʔ}	*zm-y^{y}-ʔ	*zmØ-y-k		3
1. *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u 2. ə-epenthesis; *y > y^{y}; +Y: *z > ʒ; +Y: ə > i; *y > i 3. *k^{w} (> k) > ʔ; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i					

Lamang

Lamang	*za*	*za	*zØa	*zma	
Hdi	*za*				

Higi

Kamwe-Nkafa	*zəmə*	*zmə	*zma	*zma(-y-k^{w})	1
Psikye	*zəmə*				1
Bana	*zəmə*				1
Kamwe-Futu	*zimo* zə^{y}ma^{w}	*zma-Ø^{y}-Ø^{w}	*zma-y-k^{w}		2
1. ə-epenthesis, lexical-final *a > ə 2. ə-epenthesis; *k^{w} > Ø^{w}; +W: lexical-final *a > o; *y > Ø^{y}; +Y: ə > i					

Kotoko-Island

Buduma	*həm*	*xm	*smØ	*zma	1
1. *z (> s) > x; ə-epenthesis					

Kotoko-North

Afade	*sim* sə^{y}m	*sm-Ø^{y}	*smØ-y	*zma-y	1
Mpade	*sim* sə^{y}m				
1. *z > s; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

Kotoko-Central

Lagwan	*zim* zə^{y}m	*zm-Ø^{y}	*zmØ-y	*zma-y(-k^{w}-n)	1
	zimi zə^{y}my	*zm-y^{y}	*zmØ-y		2
	zimwun zə^{y}mwə^{w}n	*zm-Ø^{y}-w^{w}-n	*zmØ-y-k^{w}-n		3
Mser	*dʒim* dz^{y}ə^{y}m	*dzm-Ø^{y}	*dzmØ-y		4

1. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *y > i 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > w^{w}; +W: ə > u 4. *z > dz; ə-epenthesis; *y > Ø^{y}; +Y: dz > ʤ; +Y: ə > i					
KOTOKO-SOUTH					
Zina	*huma* xə^{w}ma	*xma-Ø^{w}	*sma-k^{w}	*zma-k^{w}	1
1. *z (> s) > x; *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u					
MUSGUM					
Mulwi	*simi* sə^{y}my	*sm-y^{y}	*smØ-y	*zma-y/-k^{w}	1
Mbara	*zum* zə^{w}m	*zm-Ø^{w}	*zmØ-k^{w}		2
1. *z > s; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					
GIDAR					
Gidar	*wəzəma*	*wzma	*zma-w	*zma(-k^{w})	1
	əzəma	*zma			2
1. *k^{w} > w; multiple metathesis zmw > wzm; ə-epenthesis 2. ə-prothesis; ə-epenthesis					

egg[40]

PCC *(ma-, k^{w}a-, RED-) **ɗ(a)ɬ(a)ya** (-t, -k^{w}, -n; FV)

BATA

				√ C C Ca	
Bata	*ɗuule* ɗə^{w}wla^{y}	*ɗw^{w}lØ^{y}a	*ɗlya-w^{w}	*ɗɬya-k^{w}	1
				√ CaC Ca	
Gude	*alinə* alynə	*aly-na	*ØalyØ-na	*ɗaɬya(-n(a))	2
Jimi	*alin* alyn	*aly-n	*ØalyØ-n		3
Sharwa	*alli* ally	*aly	*ØalyØ		4
1. *ɬ > l; *k^{w} > w^{w}; multiple metathesis lyw^{w} > w^{w}ly; ə-epenthesis; +W: ə > u; w > u; *y > Ø^{y}; +Y: lexical-final *a > e 2. *ɬ > l; *y > i; FV *a > ə 3. *ɬ > l; *y > i 4. *ɬ > l; *y > i; (consonant gemination unaccounted for)					

DABA

				√ C C Ca	
Mbudum	*miliɗ* mə^{y}ɬyɗ	*m-ɬy^{y}ɗ	*mØ-ɗlyØ	*ma-ɗɬya	1
Gavar	*anli* anɬy	*n-ØɬyØ	*mØ-ɗlyØ		2
				√ CaC Ca	
Daba	*neɮi'* na^{y}ɮy^{y}ʔ	*n-aɮy^{y}ʔ	*nØ-ʔaɮyØ	*ma-ɗaɬya	3
Buwal	*neɬe* na^{y}ɬa^{y}	*n-ØaɬØ^{y}a	*nØ-ɗaɬya		4

[40] Given a semantically plausible potential etymological relationship with the word for 'to hatch$_2$', which we reconstruct as PCC ***ɗ(a)ɬa**, this raises the legitimate question whether root-final ***...ya** is indeed to be reconstructed as such, or whether it should rather be considered to reflect the common suffixal augment *{-ya} (note the suspicious absence of the latter from the suffixal root augment material). Both analyses would appear to be feasible, which reflects a more general problem of PCC reconstruction. In the present study, we reconstruct both roots differently, because they have diffent reflexes in the modern languages.

1. multiple metathesis dɬy > ɬyɗ; ə-epenthesis; *y > y^y; +Y: ə > i; *y > i 2. a-prothesis; *y > i; homorganic assimilation *m > n/_ɗ 3. *ɗ > ʔ; *ɬ > ɮ; multiple metathesis ʔɮy > ɮyʔ; *y > y^y; +Y: *a > e; *y > i; homorganic assimilation *m > n/_ɗ 4. *y > $Ø^y$; +Y: *a > e; homorganic assimilation *m > n/_ɗ

MAFA

Mafa	*łałay* łałay	*ła-łay	*RED-ØłayØ	*RED-dłaya	
Cuvok	*łełey* ła^{y}ła^{y}y	*ła-łay^y			1
1. *y > y^y; +Y *a > e					

SUKUR

Sukur	*ɗa^{n}gaɮai* ɗà^{n}gaɮay	*$Ø^n$-ɗagaɮay	*m^{n}Ø-ga-ɗàɮayØ	*ma-k^{w}a-ɗałaya	1
	^{n}daŋaɮay ^{n}daŋaɮay	$Ø^n$-daŋaɮay	*m^{n}Ø-ka-ɗàɮayØ		2
1. *ɬ > ɮ; *k^w (> k) > g; metathesis gɗ > dg; *m > m^n; +N: g > ^{n}g 2. *ɬ > ɮ; *k^w > k; *m > m^n; +N: k > ^{n}k > ŋ; +N: *d > ^{n}d					

HURZA

Mbuko	*ɬay*	*ɬay	*ØɬayØ	*dłaya	
Vame	*ɮay*	*ɮay	*ØɮayØ		1
1. *ɬ > ɮ					

MARGI

Margi	*ihyi* ə^{y}xyə^y	*xy^{y}a	*Øxya	*dłya	1
Kilba	*hyihyi* xyə^{y}xyə^y	*xy^{y}a-xy^{y}a	*RED-Øxya		2
Bura	*hihi* xyxy	*xy-xy	*RED-ØxyØ		3
1. ə-prothesis; *ɬ > x; lexical-final *a > ə; *y > y^y; +Y: ə > i 2. *ɬ > x; lexical-final *a > ə; *y > $Ø^y$; +Y: ə > i 3. *ɬ > x; *y > i					

MANDARA

				√ C C Ca	
Podoko	*ɬɨɬe* łə^{y}ła^y	*ɬ-łØ^{y}a	*RED-Øłya	*(RED-)dłya	1
Dghwede	*łəɬe* łəła^y				2
Glavda	*çi* çy	*ØłyØ			3
	çi:ya çə^{y}ya	*ły^{y}a	*Øłya		4
				√ C CaCa	
Matal	*łałay*	*ła-łay	*RED-ØłayØ	*dłaya	
Mandara	*łaya*	*łaya	*Øłaya		
Malgwa	*thlaya* łaya				
1. ə-epenthesis; *y > $Ø^y$; +Y: ə > i; +Y: lexical-final *a > e 2. ə-epenthesis; +Y: lexical-final *a > e 3. *ɬ > ç; *y > i 4. *ɬ > ç; ə-epenthesis; *y > y^y; +Y: ə > i					

MOFU

				√ C C Ca	
Merey	*ɗəɬe* ɗəła^y	*dłØ^{y}a		*dłya	1
Gemzek	*ɗəɬe* ɗəła^y				1
Muyang	*eyɬi* a^{y}yłə^y	*y^{y}ła	*Øłya		2

				√ CaCaCa	
Dugwor	*ałay*	*ØałayØ		*ɗałaya	
Ouldeme	*łałay*	*ła-łay	*RED-ØØłayØ		
Zulgo	*łełe* łaʸłaʸ	*ła-łayʸ			3
Mofu North	*łeɬeɗ* łaʸłaʸɗ	*ła-łaØʸɗ	*RED-łayØdØ		4
Mofu-Gudur	*łeɬeɗ* łaʸłaʸɗ				4
1. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. a-prothesis; metathesis ły > ył; lexical-final *a > ə; *y > yʸ; +Y: ə > i; +Y: *a > e 3. *y > yʸ; +Y : *a > e 4. multiple metathesis dły > łyɗ; *y > Øʸ; +Y: *a > e					

MAROUA

				√ CaC Ca	
Giziga-Marva	*ateɬ* ataʸɬ	*a-taɬØʸ	*Øa-taɬyØ	*(ma-)ɗałya	1
Giziga-Muturwa	*ateɬ* ataʸɬ				1
	eteɬ aʸtaʸɬ				1
	teɬ(e) taʸłaʸ	*taɬØʸa	*taɬya		1
				√ CaCaCa	
Mbazla	*ałay*	*ałay	*ØałayØ	*ɗałaya	
1. *ɗ > t; +Y: *a > e					

LAMANG

Lamang	*łili* łyły	*ły-ły	*RED-ØłyØ	*dłya(-kʷ)	1
Hdi	*łiłik* łyłyk	*ły-ły-k	*RED-ØłyØ-kʷ		2
1. *y > i 2. *kʷ > k; *y > i					

HIGI

Kamwe-Futu	*yəłe* yəłaʸ	*yʸła	*Øłya	*(RED-/ma-kʷa-)dłya (-kʷa)	1
Kamwe-Nkafa	*łiłə* łəʸłə	*ł-łØʸa	*RED- Øłya		2
Bana	*łili* łyły	*ły-ły	*RED-ØłyØ		3
Kirya	*łili* łyły				3
Kirya[41]	*kontəka* kʷaʷⁿtəka	*Øⁿ-kʷa-t-ka	*mⁿØ-kʷa-tØØØ-kʷa		4
1. metathesis ły > ył; ə-epenthesis; +Y: lexical-final *a > e 2. *y > Øʸ; ə-epenthesis; +Y: ə > i; lexical-final *a > ə 3. *y > i 4. *ɗ > t; *kʷ > k; +W: *a > o; ə-epenthesis; *m > mⁿ; +N: t > ⁿt					

KOTOKO-NORTH

Malgbe	*enɬi* aʸnłəʸ	*n-ØłaØʸ	*nØ-dłya	*ma-dłya (-kʷ)	1
Afade	*enło* aʸnłaʷ	*n-ØłØʸa-Øʷ	*nØ-dłya-kʷ		2
Mpade	*enʃo* aʸnsʸaʷ	*n-ØsØʸa-Øʷ	*nØ-ɗsya-kʷ		3

[41] This highly different variant form in Kirya could still be related to the same PCC root, but suggests a probably borrowed form. Note certain parallels to DABA, SUKUR and MAROUA group forms further above and MUSGUM and GIDAR group forms below.

1. a-prothesis; homorganic assimilation *m > n/_d̰; lexical-final *a > ə; *y > Ø^{y}; +Y: *a > e; +Y: ə > ɨ
2. a-prothesis; homorganic assimilation *m > n/_d̰; *y > Ø^{y}; +Y: *a > e; *k^{w} > Ø^{w}; +W: lexical-final *a > o
3. a-prothesis; *ɬ > s; homorganic assimilation *m > n/_d̰; *y > Ø^{y}; +Y : s > ʃ̰; +Y: *a > e; *k^{w} > Ø^{w}; +W: lexical-final *a > o

KOTOKO-CENTRAL

Lagwan	*nɬɨ* nɬə^{y}	*n-ØɬØ^{y}a	*nØ-dɬya	*ma-dɬya2	1
Mser	*ensɨ* a^{y}nsə^{y}	*n-ØsØ^{y}a	*nØ-d̰sya		2

1. homorganic assimilation *m > n/_d̰; lexical-final *a > ə; +Y: ə > ɨ
2. *ɬ > s; a-prothesis; homorganic assimilation *m > n/_d̰; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ; +Y: *a > e

KOTOKO-SOUTH

Zina	*nsi* nsy	*n-Øsy	*nØ-d̰syØ	*ma-dɬya	1

1. *ɬ > s; homorganic assimilation *m > n/_d̰; *y > i

MUSGUM

Mbara	*ŋɮa*	*ŋ-ɮa	*mØ-kØ-ØɮØa	*(ma-k^{w}a-)dɬya(-t)	1
Vulum	*eŋɮe* a^{y}ŋɮa^{y}	*ŋ-ɮØ^{y}a	*mØ-kØ-Øɮya		2
Muskum	*ɮet* ɮa^{y}t	*ɮØ^{y}a-t	*ØɮØya-t		3

1. *ɬ > ɮ; *k^{w} > k; fusion *mk > ŋ
2. *ɬ > ɮ; *k^{w} > k; a-prothesis; fusion*mk > ŋ; *y > Ø^{y}; +Y: *a > e
3. *ɬ > ɮ; *y > Ø^{y}; +Y: lexical-final *a > e

GIDAR

Gidar	*de^{n}gɮe* d̰a^{y}^{n}gɮa^{y}	*Ø^{n}-d̰agɮØ^{y}a	*m^{n}Ø-ga-dɮya	*ma-k^{w}a-dɬya	1
	d̰eŋle d̰a^{y}ŋla^{y}	*Ø^{n}-d̰aklØ^{y}a	*m^{n}Ø-ka-dlya	2	

1. *ɬ > ɮ; *k^{w} (> k) > g; metathesis gd̰ > dg̰; *m > m^{n}; +N: g > ^{n}g; *y > Ø^{y}; +Y: *a > e
2. *ɬ > l; *k^{w} > k; metathesis kd̰ > dk̰; *m > m^{n}; +N: k (> ^{n}k) > ŋ; *y > Ø^{y}; +Y: *a > e

eight[42]

Pseudo-PCC *(ma-) **tɣ(a)sa** (-y, -k^{w})

BATA

Gude	*təɣəsə*	*tɣsa		*tɣsa(-y)	1
Jimi	*təɣis* təɣə^{y}s	*tɣs-Ø^{y}	*tɣsØ-y		2

1. ə-epenthesis; lexical-final *a > ə
2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i

SUKUR

Sukur	*təkəz*	*tkzØ	*tɣsa	1

1. *ɣ > k; *s > z; ə-epenthesis

[42] According to Gravina (2015), the word for 'eight' is unlikely to be reconstructable for PCC, but may be a later areal coinage or loan; it would, therefore, qualify as being a 'Pseudo'-PCC root.

MANDARA

Glavda	*tx̣sa*	*txsa		*(ma-)tɣsa(-y)	1
Mandara	*tise* təʸsaʸ	*tsa-Øʸ	*tØsa-y		2
Matal	*mtəgis* mtəgəʸs	*m-tgs-Øʸ	*mØ-tgsØ-y		3
	mtəgiʃ mtəgəʸsʸ				4
1. *ɣ > x 2. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 3. *ɣ > g; ə-epenthesis; *y > Øʸ; +Y: ə > i 4. *ɣ > g; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ					

LAMANG

Lamang	*tɣasa*	*tɣasa	*tɣasa	
Hdi	*tɣas*	*tɣasØ		

HIGI

				√ C C Ca	
Kirya	*təɣəs*	*tɣsØ		*tɣsa(-y)	1
Kamwe-Nkafa	*təkəse* təkəsaʸ	*tksa-Øʸ	*tksa-y		2
Psikye	*dəgəsə*	*dgsa			3
Bana	*d(ə)*ɣəsə	*dɣsa			4
				√ C CaCa	
Kamwe-Futu	*dəɣoso* dəɣaʷsaʷ	*dɣasa-Øʷ	*dɣasa-kʷ	*tɣasa-kʷ	
1. ə-epenthesis 2. ə-epenthesis; *ɣ > k; *y > Øʸ; +Y: lexical-final *a > e 3. *t > d; *ɣ > g; lexical-final *a > ə 4. *t > d; lexical-final *a > ə					

elephant$_1$

Areal root ***nva*** (-y, -kʷ)

KOTOKO-NORTH

Afade	*arfi* arfy	*rf-y	*rfØ-y	*nva(-y /-kʷ)	1
Malgbe	*arfɨ* arfəʸ	*rfa-Øʸ	*rfa-y		2
Mpade	*arfu* arfw	*rf-w	*rfa-kʷ		3
1. *n > r; *v > f; a-prothesis; *y > i 2. *n > r; *v > f; a-prothesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ 3. *n > r; *v > f; a-prothesis; *kʷ > w > u					

KOTOKO-CENTRAL

Lagwan	*nɨvi* nəʸvy	*nv-yʸ	*nvØ-y	*nva-y	1
Mser	*arvi* arvy	*rv-y	*rvØ-y		2
1. ə-epenthesis; *y > yʸ; +Y: ə > ɨ; *y > i 2. *n > r; a-prothesis; *y > i					

elephant$_2$

PCC *(xa-) **g(a)w(a)na** (-y, -k^{w}, -n)

BATA

				√ C C Ca	
Jimi	*ʤuunən* dz^{y}ə^{w}wnən	*dzw^{w}n-Ø^{y}-n	*dzwnØ-y-n	*gwna-y-n	1
				√ CaCaCa	
Gude	*ʧoona* ts^{y}a^{w}a^{w}na	*tsaØ^{w}ana-Ø^{y}	*tsaw^{w}ana-y	*gawana-y	2
1. *y > Ø^{y}; +Y: *g > ʤ; *w > u; ə-epenthesis; +W: ə > u 2. *y > Ø^{y}; +Y: *g > ʧ; *w > Ø^{w}; +W: *a > o					

TERA

Tera	*ʤuwan* dz^{y}ə^{w}wan	*dz^{y}wanØ	*gwana-Ø^{y}	*(xa-)gwana-y	1
	ʒuwan z^{y}ə^{w}wan	*z^{y}wanØ			2
Ga'anda	*ʧhuwena* ts^{y}xə^{w}wa^{y}na	*ts^{y}xwa^{y}na	*xØ-tswana-Ø^{y}		3
1. *y > Ø^{y}; +Y: *g > ʤ; ə-epenthesis; +W: ə > u 2. *y > Ø^{y}; +Y: *g > ʒ; ə-epenthesis; +W: ə > u 3. *y > Ø^{y}; +Y: *g > ʧ; metathesis xtʃ > tʃx; ə-epenthesis; +W: ə > u; +Y: *a > e					

SUKUR

Sukur	*ʤuwan* dz^{y}ə^{w}wan	*dz^{y}w^{w}anØ	*gwana-Ø^{y}	*gwana-y	1
	ʤiwan dz^{y}ə^{y}wan	*dz^{y}wanØ			2
1. *y > Ø^{y}; +Y: *g > ʤ; ə-epenthesis; +W: ə > u 2. *y > Ø^{y}; +Y: *g > ʤ; ə-epenthesis; +Y: ə > i					

MARGI

Margi	*ʧuwar* ts^{y}ə^{w}war	*tswar-Ø^{y}	*tswarØ-y	*gwana-y	1
Bura	*ʧiwar* ts^{y}ə^{y}war				2
Margi-South	*ʧiwar* ts^{y}ə^{y}war				2
1. *n > r; *y > Ø^{y}; +Y: *g > ʧ; +W: ə > u 2. *n > r; *y > Ø^{y}; +Y: *g > ʧ; +Y: ə > i					

MANDARA

				√ C C Ca	
Glavda	*guna* gwna	*gwna		*gwna(-y)	1
Malgwa	*guwe* gə^{w}wa^{y}	*gw^{w}a-Ø^{y}	*gwØa-y		2
Mandara	*gue* gwa^{y}	*gwa-Ø^{y}			3
				√ C CaCa	
Podoko	*g^{w}ihana* gwə^{y}xana	*gwxana-Ø^{y}	*xØ-gwana-y	*xa-gwana-y	4
				√ CaCaCa	
Matal	*gawan*	*gawanØ		*gawana	
1. *w > u 2. ə-epenthesis; *w > w^{w}; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 3. *y > Ø^{y}; +Y: lexical-final *a > e 4. metathesis xg > gx; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

LAMANG

Lamang	*giwaŋ* gə^{y}waŋ	*gwaŋ-Ø^{y}	*gwanØ-y-k^{w}	*gwana-y-k^{w}	1
Hdi	*gwi'yan* gwə^{y}ʔ^{y}an	*gwʔan-Ø^{y}	*gwanØ-y-ʔ		2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > k; fusion *nk > ŋ 2. *k^{w} (> k) > ʔ; metathesis nʔ > ʔn; ə-epenthesis; *y > Ø^{y}; +Y: ʔ > ʔ^{y}; +Y: ə > i					

Higi

Kirya	*tʃuunə* tsʸəʷwnə	*tswʷna-Øʸ	*tswna-y	*(xa-)gwna-y	1
Bana	*tʃiwə* tsʸəʸwə	*tswa-Øʸ	*tswØa-y		2
Kamwe-Nkafa	*tʃ'hiwə* tsʸxəʸwə	*tsxwa-Øʸ	*xØ-tswØa-y		3
Kamwe-Futu	*tʃ'hiwə* tsʸxəʸwə				3
1. *y > Øʸ; +Y: *g > tsʸ > tʃ; *w > u; ə-epenthesis; +W: ə > u; lexical-final *a > ə 2. *y > Øʸ; +Y: *g > tsʸ > tʃ; ə-epenthesis; +Y: ə > i; lexical-final *a > ə 3. *y > Øʸ; +Y: *g > tsʸ > tʃ; metathesis xts > tsx; ə-epenthesis; +Y: ə > i; lexical-final *a > ə					

Kotoko-South

Zina	*gʷagʷi* gwagwy	*gwa-gwØ-y	*RED-gwØa-y	*RED-gwna-y	1
Mazera	*gʷagʷe* gwagwaʸ	*gwa-gwa-y			2
1. *y > i 2. *y > Øʸ; +Y: lexical-final *a > e					

elephant$_3$

PCC/Areal root[43] *(ma-) **b(a)ɮa** (-RED, -y, -kʷ)

The reconstruction of prefixal */m/ is guided by analogy to the frequent occurrence of *{ma-} throughout the data corpus and, therefore, could be considered ad hoc for this particular example. Alternatively, we would have to accept a trilateral root ***mb(a)ɮa** under our assumption that PCC did not possess prenasalised x/ᵐb/.

Bata

Tsuvan	*ᵐbaɮa* mbaɮa	*m-baɮa	*mØ-baɮa	*ma-baɮa	

Hurza

				√ C Ca	
Mbuko	*ᵐbəle* mbəlaʸ	*m-bla-Øʸ	*mØ-bla-y	*ma-bɮa-y	1
				√ CaCa	
Vame	*ᵐbelelek* mbaʸlaʸlaʸk	*m-balala-Øʸ-k	*mØ-bala-la-y-k	*ma-baɮa-RED-y-kʷ	2
1. *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. *ɮ > l; *kʷ > k; *y > Øʸ; +Y: *a > e					

Mofu

				√ C Ca	
Moloko	*ᵐbəlele* mbəlaʸlaʸ	*m-blala-Øʸ	*mØ-bla-la-y	*ma-bɮa-RED-y	1
				√ CaCa	
Ouldeme	*ᵐbele* mbaʸlaʸ	*m-bala-Øʸ	*mØ-bala-y	*ma-baɮa-y	2
Muyang	*ᵐbeli* mbaʸly	*m-bal-yʸ	*mØ-balØ-y		3
1. *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: *a > e 2. *ɮ > l; *y > Øʸ; +Y: *a > e 3. *ɮ > l; *y > yʸ; +Y: *a > e; *y > i					

[43] Its limited areal distribution would make this a candidate for areal innovation or loan, even though the three language groups involved do not share contiguous territories (see Map 1). If we were dealing with a loan, the reconstruction of C_2 *l would be a plausible option, but requires the assumption of a somewhat counter-intuitive sound change l > ɮ in Tsuvan (Bata). If, however, we were indeed dealing with a PCC – possibly areal – reconstruction, then *ɮ would be the preferred C_2, later undergoing a more likely sound change *ɮ > l in the modern Hurza and Mofu languages.

extinguish, to[44]

PCC *(k^{w}a-, ma-) **m(a)ta** (-a, -y, -k^{w}, -n; FV)

BATA

Jimi	*miitən* məʸytən	*myʸt-n	*mytØ-n	*mta-y-n	1
1. metathesis *ty > yt; ə-epenthesis; *y > yʸ; +Y : ə > i; *y > i					

DABA

Daba	*mitʃi'n* məʸtsʸyʔn	*mts-yʸ-ʔ-n	*mtsØ-y-k-n	*(k^{w}a-)mta-y-k^{w}/-n	1
Mbudum	*kəmutʃ* kəməʷtsʸ	*k-mts-Øʸ-Ø^{w}	*k^{w}Ø-mts-y-k^{w}		2
1. *t > ts; *k^{w} > k > ʔ; ə-epenthesis; *y > yʸ; +Y: ts > tʃ; +Y : ə > i; *y > i 2. *t > ts; prefixal*k^{w} > k; ə-epenthesis; *y > Øʸ; +Y: ts > tʃ; suffixal*k^{w} > Ø^{w}; +W: ə > u					

MAFA

Cuvok	*mətsa*	*mtsa	*mta	1
1. *t > ts; ə-epenthesis				

HURZA

Vame	*mu^{n}dʒiya* məʷndzʸəʸya	*mØ-mdza-yʸ-Ø^{w}a	*ma-mta-y-k^{w}a	1
1. *t > dz; ə-epenthesis; lexical-final *a > ə; *k^{w} > Ø^{w}; +W: ə > u; *y > yʸ; +Y: dz > dʒ; +Y: ə > i; homorganic assimilation *m > n/__dz				

MANDARA

				√ C Ca	
Glavda	*imt͡sa* əʸmtsa	*mtsa-Øʸ		*mta-y	1
				√ CaCa	
Podoko	*metʃe* maʸtsʸaʸ	*matsa-Øʸ	*matsa-y	*(ma-)mata -y(-k^{w}-n)	2
Matal	*mamatsiŋ* mamatsəʸŋ	*ma-matsa-Øʸ-ŋ	*ma-matsa-y-k-n		3
1. *t > ts; ə-prothesis; *y > Øʸ; +Y : ə > ɨ 2. *t > ts; *y > Øʸ; +Y: *a > e 3. *t > ts; *k^{w} > k; fusion kn > ŋ; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > i					

MOFU

Muyang	*met* maʸt	*mat-Øʸ	*matØ-y	*(ma-)mata (-a)-y(-k^{w}-n)	1
Ouldeme	*meteŋ* maʸtaʸŋ	*mata-Øʸ-ŋ	*mata-y-k-n		2
Mofu North	*memtseʸ* maʸmtsaʸy	*ma-mts-ayʸ	*ma-mtsØ-ay		3
1. *y > Øʸ; +Y: *a > e 2. *k^{w} > k; fusion kn > ŋ; *y > Øʸ; +Y: *a > e 3. *t > ts; *y > yʸ; +Y: *a > e					

MAROUA

Giziga-Marva	*mutʃa* məʷtsʸa	*mtsa-Øʸ-Ø^{w}	*mtsa-y-k^{w}	*mta-y-k^{w}	1
Giziga-Muturwa	*mutʃ* məʷtsʸ	*mts-Øʸ-Ø^{w}	*mtsØ-y-k^{w}		1
1. *t > ts; *y > Øʸ; +Y: ts > tʃ; ə-epenthesis; *k^{w} > Ø^{w}; +W : ə > u					

LAMANG

Hdi	*mətay*	*mtØ-ay	*mta-a-y	1
1. ə-epenthesis				

[44] See the most likely cognate 'to die'.

eye$_1$

PCC *(dɗa-, ma-, xa-) **d(a)ya** (-t, -k^w, -n; FV)

BATA

Bata	*dito* dyta^w	*dy-t-Ø^{w}a	*dyØ-t-k^{w}a	*dya-t/-k^{w}a	1
Sharwa	*di* dy	*dy	*dyØ		2
Tsuvan	*adəŋ*	*a-d-ŋ	*Øa-dØØ-k-n	*Ca-dya-k^w-n	3

1. *y > i; *k^w > Ø^w; +W: FV *a > o
2. *y > i
3. *k^w > k; fusion kn > ŋ; lexical-final *a > ə

DABA

Daba	*həra'* xəraʔ	*x-ra-ʔ	*xØ-rØa-k^w	*(xa-)dya(-k^w)	1
Mazagway Hidi	*riya* rə^{y}ya	*ry^{y}a	*rya		2

1. *d > r; *k^w (> k) > ʔ; ə-epenthesis
2. *d > r; ə-epenthesis; *y > y^y; +Y: ə > i

MAFA

Mafa	*day*	*day	*dayØ	*(ma-)daya	
Cuvok	*^{n}dey* nda^{y}y	*n-day^y	*mØ-dayØ		1

1. homorganic assimilation *m > n/_d; *y > Ø^y; +Y: *a > e

TERA

Tera	*yitə* yə^{y}tə	*y^{y}ta	*tya	*dya	1
	yiti yə^{y}tə^y				2

1. *d > t; metathesis ty > yt; ə-epenthesis; *y > y^y; +Y: ə > i; lexical-final *a > ə
2. *d > t; metathesis ty > yt; ə-epenthesis; lexical-final *a > ə; *y > y^y; +Y: ə > i

HURZA

				√ C Ca	
Mbuko	*iɗe* yɗa^y	*y^{y}ɗa	*ɗya	*dya	1
				√ CaCa	
Vame	*aray*	*a-ray	*Øa-rayØ	*Ca-daya	2

1. *d > ɗ; metathesis dy > yɗ; *y > y^y; +Y: lexical-final *a > e; *y > i
2. *d > r

MARGI

Margi	*li* ly	*ly	*lyØ	*dya	1
Margi South	*li* ly				1
Kilba	*li* ly				1

1. *d > l; *y > i

MANDARA

				√ C Ca	
Matal	*di* dy	*dy	*dyØ	*dya	1
	di dy				1
	dəy dəy				2
				√ CaCa	

Podoko	*de da*^{y}	*daØ^{y}	*dayØ	*(ma-)daya	3
Dghwede	*^{n}de* nda^{y}	*n-daØ^{y}	*mØ-dayØ		4
1. *y > i 2. ə-epenthesis 3. *y > Ø^{y}; +Y: lexical-final *a > e 4. *y > Ø^{y}; +Y: lexical-final *a > e; homorganic assimilation *m > n/_d					

Mofu

				√ C Ca	
Dugwor	*re* ra^{y}	*rØ^{y}a	*rya	*dya	1
				√ CaCa	
Merey	*dəre* dəra^{y}	*d-raØ^{y}	*dØ-rayØ	*(da-)daya	2
Mofu-Gudur	*dey* da^{y}y	*day^{y}	*dayØ		3
				√ C Ca	
Muyang	*eri* a^{y}ry	*a-ry^{y}	*Øa-ryØ	*Ca-dya	4
Zulgo	*are* ara^{y}	*a-rØ^{y}a	*Øa-rya		2
Mada	*ere* a^{y}ra^{y}				2
Gemzek	*ere* a^{y}ra^{y}				2
Moloko	*ele* a^{y}la^{y}	*al-Ø^{y}a	*Øa-lya		5
				√ CaCa	
Ouldeme	*aray*	*a-ray	*Øa-rayØ	*Ca-daya	6
1. *d > r; *y > Ø^{y}; +Y: lexical-final *a > e 2. *d > r; *y > Ø^{y}; +Y: *a > e 3. *y > y^{y}; +Y: *a > e 4. *d > r; *y > y^{y}; +Y: *a > e; *y > i 5. *d > l; *y > Ø^{y}; +Y: *a > e 6. *d > r					

Maroua

Giziga-Marva	*re* ra^{y}	*raØ^{y}	*rayØ	*(Ca-)daya	1
Mbazla	ʾaray	*ʔa-ray	*ʔa-rayØ		2
1. *d > r; *y > Ø^{y}; +Y: *a > e 2. *x > ʔ; *d > r					

Lamang

Lamang	*ili* ə^{y}ly	*ly^{y}	*lyØ	*dya	1
Hdi	*iri* ə^{y}ry	*ry^{y}	*ryØ		2
1. *d > l; ə-prothesis; *y > y^{y}; +Y: ə > i; *y > i 2. *d > r; ə-prothesis; *y > y^{y}; +Y: ə > i; *y > i					

Kotoko-Island

Buduma	*yəl*	*yl	*lyØ	*dya	1
1. *d > l; metathesis ly > yl; ə-epenthesis					

Kotoko-South

Zina	*iri* ə^{y}ry	*ry^{y}	*ryØ	*dya	1
Mazera	*ade* ada^{y}	*a-dØ^{y}a	*Øa-dya	*Ca-dya	2
1. *d > r; ə-prothesis; *y > y^{y}; +Y: ə > i; *y > i 2. *y > Ø^{y}; +Y: lexical-final *a > e					

MUSGUM

				√ CaCa	
Mbara	*ree* ra^{y}a^{y}	*raØ^{y}a	*raya	*daya	1
				√ CaCa	
Vulum	*aray*	*a-ray	*Øa-rayØ	*Ca-daya	2
1. *d > r; *y > Ø^{y}; +Y: *a > e 2. *d > r					

GIDAR

Gidar	*hara* xara	*xa-ra	*xa-rØa	*xa-dya	1
1. *d > r					

eye$_2$

Areal root *(ma-) **y(a)tsa** (-n)

BATA

Jimi	*dʒən* dz^{y}ən	* Ø^{y}dz-n	*ydzØ-n	*ytsa-n	1
1. *ts > dz; *y > Ø^{y}; +Y: dz > dʒ; ə-epenthesis					

DABA

Mbudum	^{n}*dʒe* ndz^{y}a^{y}	*n-Ø^{y}dza	*mØ-ydza	*ma-ytsa	1
Buwal	^{n}*dʒe* ndz^{y}a^{y}				1
Gavar	^{n}*dʒa* ndz^{y}a				2
1. *ts > dz; homorganic assimilation *m > n/_dz; *y > Ø^{y}; +Y: dz > dʒ; +Y: lexical-final *a > e 2. *ts > dz; homorganic assimilation *m > n/_dz; *y > Ø^{y}; +Y: dz > dʒ					

SUKUR

Sukur	*is*	*ys	*ysØ	*ytsa	1
	'is ʔə^{y}s	*ʔ^{y}s			2
1. *ts > s; *y > i 2. *ts > s; *y > ʔ^{y}; ə-epenthesis; +Y: ə > i					

MARGI

Bura	*ntʃa* nts^{y}a	*n-Ø^{y}tsa	*mØ-ytsa	*ma-ytsa	1
1. homorganic assimilation *m > n/_ts; *y > Ø^{y}; +Y: ts > tʃ					

MANDARA

Mandara	*itʃa* yts^{y}a	*y^{y}tsa		*ytsa	1
Malgwa	*iitʃe* ə^{y}yts^{y}a^{y}				2
Glavda	*dʒ* dz^{y}	*Ø^{y}dz	*ydzØ		3
1. *y > y^{y}; +Y: ts > tʃ; *y > i 2. ə-prothesis; *y > y^{y}; +Y: ts > tʃ; *y > i 3. *ts > dz; *y > Ø^{y}; +Y: dz > dʒ					

HIGI

Bana	*m(ə)tsə*	*m-tsə	*mØ-Øtsa	*ma-ytsa	1
Kamwe-Nkafa	*ntsə*	*n-tsə	*mØ-Øtsa		2
Kamwe-Futu	*ntsi* ntsy	*n-tsy	*mØ-ytsØ		3
Kirya	*ntʃi* nts^{y}y	*n-tsy^{y}			4

Psikye[45]	*nʃi* nsʸy	*n-syʸ	*mØ-ysØ		5
1. ə-epenthesis; lexical-final *a > ə 2. homorganic assimilation *m > n/_ts; lexical-final *a > ə 3. homorganic assimilation *m > n/_ts; metathesis yts > tsy; *y > i 4. homorganic assimilation *m > n/_ts; metathesis yts > tsy; *y > yʸ; +Y: *ts > tʃ; *y > i 5. homorganic assimilation *m > n/_ts; *ts> s; metathesis ys > sy; *y > yʸ; +Y: *s > ʃ; *y > i					

Kotoko-North

Afade	*tsɨ* tsəʸ	*Øʸtsə		*ytsa	1
Mpade	*sɨ* səʸ	*Øʸsə	*ysa		2
Malgbe	*sɨ* səʸ				2
Maltam	*sɨ* səʸ				2
1. lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ 2. *ts > s; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ					

Kotoko-Central

Lagwan	*sɨ* səʸ	*Øʸsə	*ysa	*ytsa	1
Mser	*sɨ* səʸ				1
1. *ts > s; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ					

face

Areal root ***k^{w}(a)ma** (-k^{w}; FV)

Bata

Gude	*kunwa* k^{w}ə^{w}nwa	*k^{w}n-wa	*k^{w}mØ-wa	*k^{w}ma-k^{w}a	1
1. *m > n; suffixal *k^{w} > w; ə-epenthesis; +W: ə > u					

Sukur

Sukur	*kəma*	*kma	*k^{w}ma	1
1. *k^{w} > k; ə-epenthesis				

Margi

Bura	*kuma* k^{w}ə^{w}ma	*k^{w}ma	*k^{w}ma	1
1. ə-epenthesis; +W: ə > u				

Lamang

Lamang	*kəma*	*kma	*k^{w}ma	1
Hdi	*kəma*			1
1. *k^{w} > k; ə-epenthesis				

Higi

Kamwe-Nkafa	*kəma*	*kma	*k^{w}ma	1
Kamwe-Futu	*kəma*			1
Psikye	*kəma*			1
1. *k^{w} > k; ə-epenthesis				

[45] The source quoted in the database gives two forms meaning ‘eyes’, namely *nʃi* and *hsu*. While the first is an obvious cognate, the second currently defeats historical reanalysis (unless we are dealing with a copy error).

faeces$_1$

PCC *(da-, ma-) **ɣʷva** (-a, -y, -n)

BATA

Jimi	*vʷin* vwyn	*vw-y-n	*wvØ-y-n	*ɣʷva(-a)-y(-n)	1
Sharwa	*vʷay* vway	*vw-ay	*wvØ-a-y		2
1. *ɣʷ > w; metathesis *wv > vw; *y > i 2. *ɣʷ > w; metathesis *wv > vw					

DABA

Buwal	*ŋva*	*ŋ-Øva	*mØ-ɣʷva	*ma-ɣʷva	1
Gavar	*ŋva*				1
Mbudum	*ŋva*				1
1. homorganic assimilation *m > ŋ/_ɣʷ					

TERA

Tera	*ᵑgin* ŋgyn	*ŋ-g-y-n	*m-gØØ-y-n	*ma-ɣʷva-y-n	1
1. *ɣʷ > g; homorganic assimilation *m > ŋ/_g; *y > i					

SUKUR

Sukur	*vu* vw	*vw	*wvØ	*ɣʷva	1
1. *ɣʷ > w; metathesis *wv > vw; *w > u					

MARGI

Bura	*kivi* kəʸvy	*kv-yʸ	*kvØ-y	*ɣʷva-y	1
	tʃivi kʸəʸvy				2
Kilba	*ibi* əʸby	*ØbØ-yʸ			3
1. *ɣʷ (> ɣ > g) > k; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. *ɣʷ (> ɣ > g) > k; ə-epenthesis; *y > Øʸ; +Y: k > kʸ > tʃ; +Y: ə > i; *y > i 3. *v > b; ə-prothesis; *y > yʸ; +Y: ə > i; *y > i					

MANDARA

Glavda	*guva* gʷəʷva	*gʷva		*ɣʷva(-y)	1
Mandara	*ugve* əʷgvaʸ	*gʷva-Øʸ	*gʷva-y		2
Malgwa	*ugve* əʷgvaʸ				2
Dghwede	*gəve* gəvaʸ	*gva-Øʸ	*gʷva-y		3
1. *ɣʷ > gʷ; ə-epenthesis; +W: ə > u 2. *ɣʷ > gʷ; ə-prothesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e 3. *ɣʷ (> gʷ) > g; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e					

LAMANG

Lamang	*ɣuvi* ɣʷəʷvy	*ɣʷvØ-y	*ɣʷva-y	1
Hdi	*ɣuvi* ɣʷəʷvy			1
1. ə-epenthesis; +W: ə > u; *y > i				

HIGI

Kamwe-Nkafa	*gywə* gʸwə	*gwa-Øʸ	*ɣwØa-y	*ɣʷva(-y)	1
Kamwe-Futu	*wɣə*	*wɣa	*ɣwØa		2
Kirya	*vʷi* vwy	*vw-y	*wvØ-y		3
1. re-segmentalisation *ɣʷ > ɣ+w; ɣ > g; *y > Øʸ; +Y: g > gʸ; lexical-final *a > ə 2. re-segmentalisation *ɣʷ > ɣ+w; metathesis ɣw > wɣ; lexical-final *a > ə 3. *ɣʷ > w; metathesis wv > vw; *y > i					

KOTOKO-ISLAND

Buduma	*nuᵑgu* nəʷᵑgʷəʷ	*nⁿ-gʷa	*mⁿØ-gʷØa	*ma-ɣʷva	1
1. *ɣʷ > gʷ; *m > mⁿ; +N: gʷ > ᵑgʷ; partial assimilation *m > n/_ᵑgʷ; ə-epenthesis; lexical-final *a > ə; +W: ə > u					

KOTOKO-NORTH

Afade	*emɓo* aʸmɓʷaʷ	*m-ɓʷa-Øʸ	*mØ-gʷØa-y	*ma-ɣʷva-y	1
Malgbe	*emgbi* aʸmgbəʸ	*m-gba-Øʸ			2
Mpade	*eᵑgu* aʸŋgʷəʷ	*ŋ-gʷa-Øʸ			3
1. a-prothesis; *ɣʷ (> gʷ) > ɓʷ; +W: lexical-final *a > o; *y > Øʸ; +Y: *a > e 2. a-prothesis; *ɣʷ (> gʷ) > gb; *y > Øʸ; +Y: *ə > i; +Y: *a > e 3. a-prothesis; *ɣʷ > gʷ; homorganic assimilation *m > ŋ/_gʷ; lexical-final *a > ə; +W: ə > u; *y > Øʸ; +Y: *a > e					

KOTOKO-CENTRAL

Lagwan	*ᵑgu* ŋgʷəʷ	*ŋ-gʷa	*mØ-gʷØa	*ma-ɣʷva(-y)	1
Mser	*eᵑgo* aʸŋgʷaʷ	*ŋ-gʷa-Øʸ	*mØ-gʷØa-y		2
1. *ɣʷ > gʷ; homorganic assimilation *m > ŋ/_gʷ; lexical-final *a > ə; +W: ə > u 2. a-prothesis; *ɣʷ > gʷ; homorganic assimilation *m > ŋ/_gʷ; +W: lexical-final *a > o; *y > Øʸ; +Y: *a > e					

KOTOKO-SOUTH

Mazera	*duɣun* dəʷɣʷəʷn	*d-ɣʷ-n	*dØ-ɣʷØØ-n	*da-ɣʷva-n	1
1. ə-epenthesis; +W: ə > u					

faeces$_2$

Areal root/loan? *(ma-) **za**[46] (-y)

MAFA

Mafa	*zay*	*za-y		*za-y	
Cuvok[47]	*zay*				
HURZA					
Mbuko	*azay*	*a-za-y	*Øa-za-y	*Ca-za-y	
Vame	*azay*				
MANDARA					
Matal	*zay*	*za-y		*za-y	

[46] This would appear to be a rare monoradical root. Such analysis, however, raises the pertinent question of how to analyse the frequently occurring second consonant */y/. Should it be considered part of the simple root (note that Gravina (2015) considers this a biradical simple root ***zay**) or rather an augmented root containing the highly frequent petrified grammatical marker *{-y}? We assume the latter to be the case in our own reconstruction, but with no strong comparative evidence other than frequency. This item raises some general suspicion, because, quite untypically, (a) the root consonant */z/ does not undergo any diachronic changes, and (b) */y/ obviously does not create any prosodic effect in any of the languages in the available set of examples. This may be seen to point in the direction of a more recent loan in the languages where it occurs, yet with the potential donor language not (yet) identified.

[47] In Cuvok, this root translates as 'urine'.

MOFU

Zulgo	*za*	*za		*(Ca-)za(-y)	
Gemzek	*za*				
Mada	*za*				
	aza	*a-za	*Øa-za		
Muyang	*azay*	*a-za-y	*Øa-za-y		
Moloko	*azay*				
Ouldeme	*zay*	*za-y			
Merey	*zay*				
Dugwor	*zay*				
Mofu North	*zay*				
Mofu-Gudur	*zay*				

MAROUA

Giziga-Muturwa	*zay*	*za-y	*za-y	
Giziga-Marva	*zay*			
Mbazla	*zay*			

fear (, to)[48]

PCC *(ma-, RED-) **ɮ(a)w(a)na** (-a, -y, -k^{w}, -ts; FV)

MAFA

Mafa	*ɮaw*	*ɮaw	*ɮawØØ	*ɮawna	

HURZA

				√ C C Ca	
Vame[49]	*ɮ^{ŋ}gutsa* ɮəŋg^{w}ə^{w}tsa	*ɮŋ-g^{w}-tsa	*ɮØnØ-k^{w}-tsa	*ɮwna-k^{w}(a)-ts(a)	1
	ɮuŋg^{w}ats ɮə^{w}ŋg^{w}ats	*ɮŋ-g^{w}a-ts	*ɮØnØ-k^{w}a-ts		1
				√ CaCaCa	
Mbuko	*ɮawan*	*ɮawanØ		*ɮawana	
1. *k^{w} > g^{w}; ə-epenthesis; +W: ə > u; homorganic assimilation *n > ŋ/_g^{w}					

MANDARA

Podoko	*ɟiɮəwe* ɟə^{y}ɮəwa^{y}	*ɮ-ɮwa-Ø^{y}	*ɮ-ɮwØa-y	*RED-ɮwna-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

MOFU

				√ C C Ca	
Ouldeme[50]	*ɮəŋats*	*ɮŋ-Øa-ts	*ɮØnØ-ka-ts	*(ma-)ɮwna (-a, -y, -k^{w}a-ts)	1
Mofu-Gudur	*ɮur* ɮwr	*ɮwrØ			2
Mofu North	*meɮurey* ma^{y}ɮwra^{y}y	*ma-ɮwr-ay^{y}	*ma-ɮwrØ-a-y		3

[48] The database contains both nouns and verbs.

[49] The occurrence of /a/ (originally FV following *{-k^{w}}?) between final and pre-final consonants in the obviously augmented root ɮuŋg^{w}*ats* 'fear; be frightened' must presently be considered 'irregular' and to be explained by analogous secondary root-type creation. A similar case is found in Ouldeme (MOFU) – if we are not talking about borrowing in whatever direction.

[50] See footnote 49.

				√ C CaCa	
Merey	*ɮuwer* ɮəʷwʷaʸr	*ɮwʷar-Øʸ	*ɮwarØ-y	*ɮwana-y	4
Dugwor	*ɮuwer* ɮəʷwʷaʸr				4
				√ CaCaCa	
Moloko	*ɮaw*	*ɮaw	*ɮawØØØ	*(ma-)ɮawana	
Mada	*maɮawa*	*ma-ɮawa	*ma-ɮawaØØ		
	maɮawal	*ma-ɮawal	*ma-ɮawarØ		5
1. *kʷ > k; fusion nk* > ŋ; ə-epenthesis 2. *w > u; *n > r 3. *w > u; *n > r; *y > yʸ; +Y: *a > e 4. *n > r; ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *a > e 5. *n (> r) > l					

MAROUA

				√ C C Ca	
Giziga-Muturwa	*ɮuwun* ɮəʷwʷəʷn	*ɮwʷn	*ɮwnØ	*ɮwna	1
				√ C CaCa	
Giziga-Marva	*ɮuwan* ɮəʷwʷan	*ɮwʷan	*ɮwanØ	*ɮwana	1
				√ CaC Ca	
Mbazla	*ɮaw*	*ɮaw	*ɮawØØ	*ɮawna	
1. ə-epenthesis; *w > wʷ; +W: ə > u					

LAMANG

Lamang	*ɮuwini* ɮəʷwʷəʸny	*ɮwʷn-yʸ	*ɮwnØ-y	*ɮwna(-y(-kʷa))	1
	ɮuwiŋ ɮəʷwʷəʸŋ	*ɮwʷŋ-Øʸ	*ɮwnØ-y-kØ		2
Hdi	*ɮəŋ*	*ɮŋ	*ɮØnØ-kØ		3
	ɮəŋay	*ɮŋa-y	*ɮØnØ-y-ka		4
1. ə-epenthesis; *w > wʷ; +W: ə > u; *y > yʸ; +Y: ə > i; *y > i 2. ə-epenthesis; *kʷ > k; *w > wʷ; +W: ə > u; *y > yʸ; +Y: ə > i; fusion *nk > ŋ 3. ə-epenthesis; *kʷ > k; fusion *nk > ŋ 4. ə-epenthesis; *kʷ > k; metathesis yk > ky; fusion *nk > ŋ; note unusual metathesis involving the vowel */a/: *ɮØnØ-y-ka > *ɮn-ka-y > *ɮŋa-y					

field$_1$, farmland

PCC *(na-, RED-) **gʷ(a)v(a)xa** (-y, -kʷ; FV)

BATA

Gude[51]	*(uuzan) vʷa* vwa	*vwa	*wvØa	*gʷvxa	1
1. *gʷ > w; metathesis wv > vw					

HURZA

Mbuko	*guvo* gʷəʷvaʷ	*gʷvØa		*gʷvxa(-kʷ)	1
Vame	*kuvak* kʷəʷvak	*kʷvØa-k			2
1. ə-epenthesis; *gʷ > Øʷ; +W: ə > u; +W: lexical-final *a > o 2. *gʷ > kʷ; suffixal *kʷ > k; ə-epenthesis; +W: ə > u					

[51] The full Gude expression translates as 'communal farming'.

MARGI

Margi	*fa*	*fa	*ØvØa	*g^{w}vxa(-k^{w})	1
Margi- South	*fa*				1
Kilba	*fa*				1
Bura	*faku* fakw	*fa-kw	*ØvØa-kw		2
1. *v > f 2. *v > f; re-segmentalisation *k^{w} > k+w; w > u					

MANDARA

				√ C C Ca	
Mandara	*fe* fa^{y}	*fa-$Ø^{y}$	*ØfØa-y	*g^{w}vxa(-y)	1
Malgwa	*fe* fa^{y}				1
	ukfe $ə^{w}kfa^{y}$	*k^{w}fa-$Ø^{y}$	*k^{w}fØa-y		2
Matal	*g^{w}əf* g^{w}əf	*g^{w}f	*g^{w}fØØ		3
	guf $g^{w}ə^{w}$f				3
Glavda	*gif* $gə^{y}$f	*gf-$Ø^{y}$	*gfØØ-y		4
	g^{w}u $g^{w}ə^{w}$	g^{w}a	*g^{w}ØØa		5
Podoko	*vəh^{w}a* vəx^{w}a	*vx^{w}a	*$Ø^{w}$vxa		6
				√ C CaCa	
Glavda	*vaava*	*vaava < *vaØa-vaØØ	*vaxa-Øvaxa	*RED-g^{w}vaxa	
1. *v > f; *y > $Ø^{y}$; +Y: lexical-final *a > e 2. *v > f; *g^{w} > k^{w}; ə-prothesis; +W: ə > u; *y > $Ø^{y}$; +Y: lexical-final *a > e 3. *v > f; ə-epenthesis; +W: ə > u 4. *v > f; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i 5. lexical-final *a > ə; +W: ə > u 6. ə-epenthesis; *g^{w} > $Ø^{w}$; +W: x > x^{w}					

MOFU

				√ CaC Ca	
Ouldeme	*avuh^{w}* avə^{w}x^{w}	*avx^{w}	*$Ø^{w}$avxØ	*g^{w}avxa	1
				√ C CaCa	
Mada	*wvah* wvax	*wvaxØ		*g^{w}vaxa	2
Moloko	*gəvah* gəvax	*gvaxØ			3
Zulgo	*guvah* $g^{w}ə^{w}$vax	*g^{w}vaxØ			4
Gemzek	*guvah* $g^{w}ə^{w}$vax				4
Merey	*guvah* $g^{w}ə^{w}$vax				4
Dugwor	*guva* $g^{w}ə^{w}$va	*g^{w}vaØØ			4
1. *g^{w} > $Ø^{w}$; ə-epenthesis; +W: *x > x^{w}; +W: ə > u 2. *g^{w} > w 3. *g^{w} > g; ə-epenthesis 4. ə-epenthesis; +W: ə > u					

MAROUA

Giziga-Muturwa	*guva* $g^{w}ə^{w}$va	*g^{w}vaØØ	*g^{w}vaxa	1
Giziga-Marva	*guva* $g^{w}ə^{w}$va			1
1. ə-epenthesis; +W: ə > u				

Lamang

Lamang	*uvaha* wvaxa	*wvaxa		*g^wvaxa	1
Hdi	*vwah* vwax	*vwax	*wvaxØ		2
1. *g^w > w > u 2. *g^w > w; metathesis wv > vw					

Higi

Kamwe-Nkafa	*v^wə* v^wə	*v^wa	*Ø^{w}vØa	*(na-)g^wvxa(-k^wa)	1
Kirya	*nv^wəkə* nv^{w}əkə	*n-v^w-ka	*nØ-Ø^{w}vØØ-ka		2
	nvəkə nvəkə	*n-v-ka	*nØ-ØvØØ-ka		3
Psikye	*wuvə* w^{w}ə^{w}və	*w^{w}va	*w^{w}vØa		4
Bana	*vəxə* vəxə	*vxa	*Øvxa		5
1. *g^w > Ø^w; lexical-final *a > ə 2. *g^w > Ø^w; *k^w > k; ə-epenthesis; +W: *v > v^w; FV *a > ə 3. *k^w > k; ə-epenthesis; FV *a > ə 4. *g^w > w^w; ə-epenthesis; +W: ə > u, lexical-final a > ə 5. ə-epenthesis; lexical-final *a > ə					

field$_2$, cultivated bush, plot

PCC *(RED-) **ɣ^w(a)r(a)ya**[52]

Bata

				√ C C Ca	
Gude	*ra*	*ra	*ØrØa	*ɣ^{w}rya	
Sharwa	*rə*				1
				√ CaCaCa	
Tsuvan	*əle* əla^y	*alaØ^y	*ØalayØ	*ɣ^{w}araya	2
1. lexical-final *a > ə 2. *r > l; *y > Ø^y; +Y: lexical-final *a > e; (highly unusual *a > ə in 1st syllable remains unaccounted for)					

Daba

				√ C C Ca	
Buwal	*la*	*la	*ØlØa	*ɣ^{w}rya	1
Gavar	*la*				1
				√ C CaCa	
Mbudum	*lay*	*lay	*ØlayØ	*ɣ^{w}raya	1
Daba	*lay*				1
1. *r > l					

Mafa

Cuvok	*ley* la^{y}y	*lay^y	*ØlayØ	*ɣ^{w}raya	1
1. *r > l; *y > y^y; +Y: *a > e					

[52] Gravina (2015) keeps the two roots (*ɣ^{w}ir, *ray) distinct, suggesting that *ɣ^{w}ir could be cognate with *ray, "though there is insufficient evidence to establish this with confidence". Here, we do consider both to reflect a common root.

TERA

Tera	*gar*	*gar	*garØØ	*ɣʷarya	1
1. *ɣʷ > g					

SUKUR

Sukur	*ɣər*	*ɣr	*ɣrØØØ	*ɣʷraya	1
	ɣ*ur* ɣʷəʷr	*ɣʷr	*ɣwrØØØ		2
1. *ɣʷ > ɣ; ə-epenthesis 2. ə-epenthesis; +W: ə > u					

MOFU

				√ C C Ca	
Muyang	*gili* gəʸly	*glyʸ	*glyØ	*ɣʷrya	1
				√ C CaCa	
Mofu North	*ley* laʸy	*layʸ	*ØlayØ	*ɣʷraya	2
Mofu-Gudur	*ley* laʸy				2
1. *ɣʷ > g; *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. *r > l; *y > yʸ; +Y: *a > e					

KOTOKO-NORTH

Afade	*lala*	*la-la	*la-ØlØa	*RED-ɣʷrya	1
Mpade	*lala*				1
1. *r > l					

MUSGUM

Mbara	*wur* wʷəʷr	*wʷr	*wʷrØØ	*ɣʷrya	1
1. *ɣʷ > wʷ; ə-epenthesis; +W: ə > u					

GIDAR

Gidar	*guliyo* gʷəʷləʸyaʷ	*gʷlyʸa	*gʷlya	*ɣʷrya	1
1. *ɣʷ > gʷ; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o; *y > yʸ; +Y: ə > i					

fire

PCC *(va-, RED-) **x(a)kʷa**[53] (-y, -kʷ, -n; FV)

BATA

Jimi	*gun* gʷwn	*gʷ-w-n	*kʷ-ØkʷØ-n	*(RED-)xkʷa-(-y)-n(a)	1
Gude	*gunə* gʷwnə	*gʷ-w-na	*kʷ-ØkʷØ-na		2
Tsuvan	*gulkʷe* gʷəʷlkʷaʸ	*gʷ-lkʷa-Øʸ	*RED-Økʷa-y-r		3
Sharwa	*rugʷə* rəʷgʷə	*rgʷa	*Øgʷa-r		4
1. *kʷ > w > u (root); *kʷ > gʷ (RED) 2. *kʷ > w > u (root); *kʷ > gʷ (RED); FV *a > ə 3. *kʷ > gʷ (RED); *n > r > l; metathesis kʷl > lkʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; lexical-final *a > e 4. *kʷ > gʷ; *n > r; metathesis gʷr > rgʷ; ə-epenthesis; +W: ə > u: lexical-final a > ə					

[53] This root provides a challenge to the methodological principle (see Wolff 2022) of giving priority to phonological over morphological prosodies. In principle, all occurrences of labialisation prosodies could be attributed to the labialised velar in the simple root reconstructed as *kʷ. However, the pattern of occurrences and non-occurrences of prosodic effects on the vowel */a/ suggests, debatably and in a not fully conclusive way, an additional labialisation force likely stemming from the morphological element reconstructed as *{-kʷ}.

DABA

				√ C Ca	
Daba	*kuhu* kʷəʷxəʷ	*kʷxa		*xkʷa	1
				√ CaCa	
Buwal	*kʷahʷaw* kʷaxʷaw	*kʷaxa-wʷ	*xakʷa-wʷ	*xakʷa-kʷ	2
Mbudum	*kahaw* kaxaw	*kaxa-w	*xaka-w		3
Gavar	*kʷahu* kʷaxw	*kʷax-w	*xakʷØ-kʷ		4
1. metathesis xkʷ > kʷx; ə-epenthesis: lexical-final *a > ə; +W: ə > u 2. metathesis xkʷ > kʷx; suffixal *kʷ > wʷ; +W: x > xʷ 3. *kʷ > k; metathesis xk > kx; suffixal *kʷ > w 4. metathesis xkʷ > kʷx; suffixal *kʷ > w > u					

MAFA

Mafa	*vogʷa* vaʷgʷa	*va-gʷa	*va-Øgʷa	*va-/RED-xkʷa(-kʷ)	1
Cuvok	*kʷakʷaw*	*kʷa-kʷa-w	*kʷa-Økʷa-kʷ		2
1. *kʷ > gʷ; +W: *a > o 2. suffixal *kʷ > w					

SUKUR

Sukur	*ku* kʷw	*kʷ-w	*ØkʷØ-w	*xkʷa-kʷ	1
1. suffixal *kʷ > w > u					

HURZA

				√ C Ca	
Mbuko	*uko* əʷkʷaʷ	*kʷa-Øʷ	*Økʷa-kʷ	*xkʷa-kʷ	1
				√ CaCa	
Vame	*akʷa*	*akʷa	*Øakʷa	*xakʷa	
1. suffixal *kʷ > Øʷ; ə-prothesis; +W: ə > u; +W: lexical-final *a > o					

MARGI

Bura	*u'u* əʷʔʷəʷ	*ʔʷa	*ØʔʷaØʔʷa	*xkʷa	1
Margi	*u'u* əʷʔʷəʷ				1
Margi-South	*u'u* əʷʔʷəʷ				1
Kilba	*hu'u* xəʷʔʷəʷ	*xʔʷa			2
1. *kʷ > ʔʷ; ə-prothesis; lexical-final *a > ə; +W: ə > u 2. *kʷ > ʔʷ; ə-epenthesis; lexical-final *a > ə; +W: ə > u					

MOFU

Ouldeme	*aku* akw	*akw	*ØakʷØ	*xakʷa(-kʷ)	1
Muyang	*aku* akw				1
Zulgo	*akʷa*	*akʷa	*Øakʷa		
Dugwor	*akʷa*				
Gemzek	*ako* akʷaʷ	*akʷa-Øʷ	*Øakʷa-w		2
Merey	*ako* akʷaʷ				2
Moloko	*oko* aʷkʷaʷ				2
Mofu-Gudur	*awaw*	*awa-w	*Øawa-kʷ		3
1. re-segmentalisation *kʷ > k+w; w > u 2. suffixal *kʷ > (w >) Øʷ; +W: *a > o 3. *kʷ > w (root & suffix)					

MAROUA

Mbazla	*awu* awʷəʷ	*awʷa	*Øawʷa	*xakʷa	1
1. *kʷ > wʷ; lexical-final *a > ə; +W: ə > u					

LAMANG

Lamang	*uvu* əʷvw	*v-wʷ	*vØ-ØwʷØ	*va-xkʷa	1
Hdi	*vu* vw	*v-w	*vØ-ØwØ		2
1. *kʷ > wʷ > u; ə-prothesis; +W: ə > u 2. *kʷ > w > u					

HIGI

Psikye	*gʷu* gʷəʷ	*gʷa	*Øgʷa	*xkʷa(-y)	1
Kirya	*ɣu* ɣw	*ɣw	*ɣwØ		2
Bana	*ɣʷə* ɣwə	*ɣwa	*ɣwa		3
Kamwe-Nkafa	*ɣʷi* ɣwy	*ɣw-y	*ɣwØ-y		4
Kamwe-Futu	*ɣʷi* ɣwy				4
1. *kʷ > gʷ; lexical-final *a > ə; +W: ə > u 2. *x > ɣ; *kʷ > w > u 3. *x > ɣ; *kʷ > w; lexical-final *a > ə 4. *x > ɣ; *kʷ > w; *y > i					

KOTOKO-ISLAND

Buduma	*aw*	*aw	*ØawØ	*xakʷa	1
	aəw				2
1. *kʷ > w 2. *kʷ > w; ə-epenthesis(?)					

KOTOKO-NORTH

Malgbe	*u* w	*w	*ØwØ	*xkʷa(-y)	1
Afade	*hɨw* xəʸw	*xw-Øʸ	*xwØ-y		2
Maltam	*yau* yaw	*yaw	*Øwa-y		3
1. *kʷ > w > u 2. *kʷ > w; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 3. *kʷ > w; metathesis wy > yw					

KOTOKO-CENTRAL

Mser	*awu* awəʷ	*awʷa	*Øawʷa	*xakʷa	1
1. *kʷ > wʷ; lexical-final *a > ə; +W: ə > u					

KOTOKO-SOUTH

Mazera	*ago* agʷaʷ	*agʷa-Øʷ	*Øagʷa-w	*xakʷa-kʷ	1
1. radical *kʷ > gʷ; suffixal *kʷ > w > Øʷ; +W: lexical-final *a > o					

MUSGUM

				√ C Ca	
Mbara	*huu* xəʷw	*xwʷ	*xwʷØ	*xkʷa	1
				√ CaCa	
Muskum	*aku* akw	*akw	*ØakwØ	*xakʷa	2
1. *kʷ > wʷ; ə-epenthesis; +W: ə > u 2. re-segmentalisation *kʷ > k+w; w > u					

fish

PCC *(ma-) **k^{w}(a)r(a)f(a)ya**[54] (-y, -n; FV)

BATA

Sharwa	*kuryəfi* k^{w}ə^{w}r^{y}əfy	*k^{w}rfy^{y}	*k^{w}rfyØ	*k^{w}rfya(-ya/-n(a))	1
Bata[11]	*qərfyee* k^{w}ərfya^{y}a^{y}	*k^{w}rfy^{y}a-Øa	*k^{w}rfy^{y}a-ya		2
Gude	*hərəfinə* xərəfynə	*xrfy-na	*xrfyØ-na		3
Jimi	*həryəfən* xər^{y}əfən	*xrfØ^{y}-n	*xrfyØ-n		4
Tsuvan	*wulfin* w^{w}ə^{w}lfyn	*w^{w}lfy-n	*w^{w}lfyØ-n		5

1. ə-epenthesis; +W: ə > u; *y > y^{y}; +Y: *r > r^{y}; *y > i
2. ə-epenthesis; *k^{w} = q; *y > y^{y}; +Y: *a > e
3. *k^{w} > x; ə-epenthesis; *y > i; FV *a > ə
4. *k^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: *r > r^{y}
5. *k^{w} > w^{w}; *r > l; *y > i; +W: ə > u

DABA

				√ C C C Ca	
Gavar	*ŋkilif* ŋkə^{y}lyf	*ŋ-kly^{y}f	*mØ-klfyØ	*(ma-)k^{w}rfya	1
Mbudum	*kəl:if* kəl:yf	*klyf	*klfyØ		2
Daba	*kilif* kə^{y}lyf	*kly^{y}f			3
Mazagway Hidi	*kilif* kə^{y}lyf				3
				√ C CaC Ca	
Buwal	*ŋkəlef* ŋkəla^{y}f	*ŋ-klafØ^{y}	*mØ-klafyØ	*ma-k^{w}rafya	4

1. *k^{w} > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i; homorganic assimilation *m > ŋ/__k
2. *k^{w} > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > i; (consonant length unaccounted for)
3. *k^{w} > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i
4. *k^{w} > k; *r > l; ə-epenthesis; *y > y^{y}; +Y: *a > e; homorganic assimilation *m > ŋ/__k

MAFA

Mafa	*kilef* kə^{y}la^{y}f	*klafØ^{y}	*klafyØ	*k^{w}rafya	1
Cuvok	*kəlef* kəla^{y}f				2

1. *k^{w} > k; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e
2. *k^{w} > k; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *a > e

TERA

Tera	*yurvu* ywrvə^{w}	*yw^{w}rva	*w^{w}rvya	*k^{w}rfya	1

1. *k^{w} > w^{w} > u; *f > v; multiple metathesis wrvy > ywrv; lexical-final *a > ə; W: ə > u

[54] This is another case (cf. 'fly') where alternative analyses are plausible and feasible, namely whether to reconstruct */y/ as the final radical consonant of the simple root or as the rather common petrified suffixal augment {-y}. Again, we have here opted for the radical consonant solution. However, the analysis could be easily changed to the alternative solution – although this would present a problem with the analysis of the Bata form (see footnote 55).

[55] This is a rare example in which we are compelled to assume final radical */y/ to be followed by the petrified marker *{-y} in order to put forward a diachronic analysis for surface vowel length. Presently, however, we cannot exclude alternative explanations for vowel length from synchronic Bata phonology.

SUKUR

Sukur	*kirif* kəʸryf	*kryʸf	*krfyØ	*kʷrfya	1
1. *kʷ > k; metathesis fy > yf; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

HURZA

Mbuko	*kəlef* kəlaʸf	*klafØʸ	*klafyØ	*kʷrafya	1
1. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: *a > e					

MARGI

				√ C C C Ca	
Bura	*kilfa* kylfa	*kylfa	*klfya	*kʷrfya	1
Margi	*kyifi* kʸəʸfy	*kfyʸ	*kØfyØ		2
				√ CaC C Ca	
Margi-South	*kalfi* kalfy	*kalfyØ		*kʷarfya	3
Kilba	*kalfi* kalfy				3
1. *kʷ > k; *r > l; multiple metathesis lfy > ylf; *y > i 2. *kʷ > k; ə-epenthesis; *y > yʸ; +Y: k > kʸ; +Y: ə > i; *y > i 3. *kʷ > k; *r > l; *y > i					

MANDARA

				√ C C C Ca	
Matal	*kilfi* kəʸlfy	*klfyʸ	*klfyØ	*kʷrfya	1
	kilfəy kəʸlfəy				2
Glavda	*kil* kəʸl	*klØʸ	*klØyØ		3
	kiilfa kəʸylfa	*kyʸlfa	*klfya		4
Dghwede	*klfe* klfaʸ	*klfØʸa			5
Podoko	*kiləfe* kəʸləfaʸ				6
Malgwa	*kəlfe* kəlfaʸ				5
				√ CaC C Ca	
Mandara	*kelfe* kaʸlfaʸ	*kalfØʸa	*kalfya	*kʷarfya	5
1. *kʷ > k; *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. *kʷ > k; *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i 3. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 4. *kʷ > k; *r > l; multiple metathesis lfy > ylf; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 5. *kʷ > k; *r > l; *y > Øʸ; +Y: *a > e 6. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

MOFU

				√ C C C Ca	
Ouldeme	*kəlif* kəlyf	*klyf	*klfyØ	*kʷrfya	1
Zulgo	*kilif* kəʸlyf	*klyʸf			2
				√ C CaC Ca	
Moloko	*kəlef* kəlaʸf	*klafØʸ	*klafyØ	*kʷrafya	3
Gemzek	*kəlef* kəlaʸf				3
Merey	*kəlef* kəlaʸf				3
Dugwor	*kəlef* kəlaʸf				3
Mofu North	*kəlef* kəlaʸf				3
1. *kʷ > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > i 2. *kʷ > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: a > e					

MAROUA

				√ C C C Ca	
Giziga-Muturwa	*kilif* kəʸlyf	*klyʸf	*klfyØ	*kʷrfya	1
Mbazla	*kilif* kəʸlyf				1
	kiliv kəʸlyv	*klyʸv	*klvyØ		2
				√ C CaC Ca	
Giziga-Marva	*kileʃ* kəʸlaʸf	*klafØʸ	*klafyØ	*kʷrafya	3
1. *kʷ > k; *r > l; metathesis fy > yf; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. *kʷ > k; *r > l; *f > v; metathesis fy > yf; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 3. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

LAMANG

Lamang	*kəlpi* kəlpy	*klpy	*klpyØ	*kʷrfya	1
Hdi	*kəlipi* kələʸpy	*klpyʸ			2
1. *kʷ > k; *r > l; *f > p; ə-epenthesis; *y > i 2. *kʷ > k; *r > l; *f > p; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

HIGI

				√ C C C Ca	
Kamwe-Futu	*kələpə*	*klpØa	*klpya	*kʷrfya	1
Psikye	*kələpə*				1
Bana	*k(ə)lipə* kəlypə	*klypa			2
	kərpi kərpy	*krpyØ	*krpya		3
Kirya	*kəɽipə* kəʈypə	*krypa			4
				√ C CaC Ca	
	kərepə kəraʸpə	*krapØʸa	*krapya	*kʷrafya	5
1. *kʷ > k; *r > l; *f > p; ə-epenthesis; lexical-final *a > ə 2. *kʷ > k; *r > l; *f > p; metathesis fy > yf; *y > i; ə-epenthesis; lexical-final *a > ə 3. *kʷ > k; *f > p; ə-epenthesis; *y > i 4. *kʷ > k; *r > ʈ; *f > p; metathesis py > yp; *y > i; ə-epenthesis; lexical-final *a > ə 5. *kʷ > k; *f > p; ə-epenthesis; *y > Øʸ; +Y: *a > ə; lexical-final *a > ə					

KOTOKO-SOUTH

Zina	*həlfə*	*xlfa	*xlfØa	*kʷrfya	1
Mazera	*kilfa* kəʸlfa	*klfØʸa	*klfya		2
1. *kʷ > x; *r > l; ə-epenthesis; lexical-final *a > ə 2. *kʷ > k; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

MUSGUM

Vulum	*hilif* xəʸlyf	*xlyʸf	*xlfyØ	*kʷrfya	1
1. *kʷ (> k) > x; *r > l; metathesis fy > yf; *y > i; ə-epenthesis; *y > yʸ; +Y: ə > i					

GIDAR

Gidar	*kilfi* kəʸlfy	*klfyʸ	*klfyØ	*kʷrfya	1
1. *kʷ > k; *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

five$_1$

Areal root *(ma-) **x^{w} t(a)fa** (-y, -k^{w}; FV)

BATA

				√ C C Ca	
Bata	*tuf* twf	*twf	*wtfØ	*x^{w}tfa(-k^{w}a)	1
Gude	*tufə* twfə	*twfa	*wtfa		2
Sharwa	*təf(kə)* təf(ka)	*tf-ka	*ØtfØ-ka		3
				√ CaC Ca	
Jimi	*tef^{k}ə* ta^{y}fwə	*tafwa-Ø^{y}	*watfa-y	*x^{w}atfa-y	4

1. *x^{w} > w; metathesis wt > tw ; *w > u
2. *x^{w} > w; metathesis wt > tw ; *w > u; lexical-final *a > ə
3. *k^{w} > k; ə-epenthesis; FV *a > ə
4. *x^{w} > w; multiple metathesis wtf > tfw; *y > Ø^{y}; +Y: a > e; lexical-final *a > ə

MARGI

Kilba	*təfu* təfw	*tfw	*wtfØ	*(ma-)x^{w}tfa	1
Margi-South	*təffu* təfw				2
Bura	*ntufu* ntə^{w}fw	*n-tfw^{w}	*mØ-w^{w}tfØ		3

1. *x^{w} > w; multiple metathesis wtf > tfw; ə-epenthesis; *w > u
2. *x^{w} > w; multiple metathesis wtf > tfw; ə-epenthesis; *w > u; (consonant length unaccounted for)
3. *x^{w} > w^{w}; multiple metathesis wtf > tfw; ə-epenthesis; +W : ə > u; *w > u; homorganic assimilation *m > n/__t

LAMANG

Lamang	*h^{w}tafa*	*x^{w}tafa	*x^{w}tafa	
Hdi	*hutaf* xə^{w}taf	*x^{w}tafØ		1

1. ə-epenthesis: +W: ə > u

HIGI

				√ C C Ca	
Bana	*tʃifə* ts^{y}ə^{y}fa	*tsfa-Ø^{y}	*Øtsfa-y	*(ma-)x^{w}tfa-y	1
Kirya	*ntʃifə* ts^{y}ə^{y}fa	*n-tsfa-Ø^{y}	*mØ-Øtsfa-y		2
Kamwe-Nkafa	*ntʃufə* nts^{y}wfa	*n-tswfa-Ø^{y}	*mØ-wtsfa-y		3
				√ C CaCa	
Kamwe-Futu	*mtʃwafə* mts^{y}wafa	*m-tswafa-Ø^{y}	*mØ-wtsafa-y	*ma-x^{w}tafa-y	4
Psikye	*mtʃefə* mts^{y}a^{y}fa	*m-Øtsafa-Ø^{y}			5

1. *t > ts; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: ts > tʃ; lexical-final *a > ə
2. *t > ts; homorganic assimilation *m > n/_ts; *y > Ø^{y}; +Y: ts > tʃ; +Y: ə > i; lexical-final *a > ə
3. *t > ts; *x^{w} > w > u; homorganic assimilation *m > n/_ts; *y > Ø^{y}; +Y: ts > tʃ; lexical-final *a > ə
4. *t > ts; *x^{w} > w; metathesis wts > tsw; *y > Ø^{y}; +Y: ts > tʃ; lexical-final *a > ə
5. *t > ts; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e; lexical-final *a > ə

five$_2$

PCC *(ma-, sa-) **ɬ(a)ɗ(a)ma** (-s, -y, -k^{w})

MAFA

Mafa	*ɮam*	*ɮam	*ɮØamØ	*ɬɗama	1
Cuvok	*ɮam*				1
1. *ɬ > ɮ					

SUKUR

Sukur	*ɮam*	*ɮam	*ɮØamØ	*ɬɗama	1
1. *ɬ > ɮ					

MANDARA

				√ C C Ca	
Glavda	*ɮ^{a}ɓa*	*Ø-ɮʔba	*mØ-ɮɗma	*(ma-)ɬɗma-y	1
Dghwede	*ɮip'e* ɮ^{y}ɓa^{y}	*Ø-ɮʔba-Ø^{y}	*mØ-ɮɗma-y		2
Malgwa	*iidhləbe* ə^{y}yɮəba	*Ø-y^{y}ɮba-Ø^{y}	*mØ-ɮyma-y		3
Matal	*əɮu* əɮw	*ɮw	*ɮØwØ		4
	əɮəw				5
				√ CaC Ca	
Podoko	*ɮama*	*ɮaØma		*ɬadma(-y)	6
Mandara	*iɮebe* yɮa^{y}ɓa^{y}	*y^{y}ɮaɓa	*ɮaʔba-y		7
1. *ɬ > ɮ; *ɗ > ʔ; dissimilation *m > b; fusion bʔ > ɓ					
2. *ɬ > ɮ; *ɗ > ʔ; dissimilation *m > b; fusion bʔ > ɓ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					
3. *ɬ > ɮ; *ɗ > y; dissimilation *m > b; ə-prothesis; ə-epenthesis; metathesis ɮy > yɮ; *y > y^{y}; +Y: ə > i; +Y: lexical-final *a > e ; *y > i					
4. *ɬ > ɮ; *m > w; ə-prothesis					
5. *ɬ > ɮ; *m > w; ə-prothesis; ə-epenthesis					
6. *ɬ > ɮ					
7. *ɬ > ɮ; *ɗ > ʔ; dissimilation *m > b; fusion bʔ > ɓ; multiple metathesis ɮɓy > yɮɓ; *y > y^{y}; +Y: *a > e ; *y > i					

MOFU

				√ C C Ca	
Gemzek	*ɮəm*	*ɮm	*ɮØmØ	*ɬɗma	1
Zulgo	*əɮəm*				2
				√ CaC Ca	
Ouldeme	*ɮam*	*ɮam	*ɮaØmØ	*((ma-)sa-)ɬadma(-k^{w})	3
Muyang	*ɮam*				3
Merey	*ɮam*				3
Dugwor	*ɮam*				3
Mofu North	*ɮam*				3
Mofu-Gudur	*ɮam*				3
Moloko	*ɮom*	*ɮam-Ø^{w}	*ɮaØmØ-k^{w}		4
Mada	*zɮam*	*z-ɮam	*sØ-ɮaØmØ		5
	azɮama	*Øa-z-ɮama	*ma-sØ-ɮaØma		5
1. *ɬ > ɮ; ə-epenthesis					

2. *ɬ > ɮ; ə-prothesis; ə-epenthesis 3. *ɬ > ɮ 4. *ɬ > ɮ; *k^{w} > Ø^{w}; +W: *a > o 5. *ɬ > ɮ; *s > z					
Maroua					
				√ C C Ca	
Giziga-Muturwa	*ɮum* ɮəʷm	*ɮm-Ø^{w}	*ɮØmØ-k^{w}	*ɬɗ̃ma-k^{w}	1
				√ C CaCa	
Giziga-Marva	*ɮom* ɮaʷm	*ɮam-Ø^{w}	*ɮØamØ-k^{w}	*(ma-) ɬɗ̃ama(-y)(-k^{w})	2
Mbazla	*ɮi^{n}dam* ɮəʸⁿdam	*Ø^{n}-ɮdam-Ø^{y}	*m^{n}Ø-ɮdamØ-y		3
	lidamu' ləʸdamwʔ	*ɬdam-Ø^{y}-ʔw	*ɬdamØ-y-k^{w}		4
1. *ɬ > ɮ; *k^{w} > Ø^{w}; +W: *ə > u 2. *ɬ > ɮ; *k^{w} > Ø^{w}; +W: *a > o 3. *ɬ > ɮ; *ɗ > d; *m > Ø^{n}; +N: d > ^{n}d; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 4. *ɬ > l; *ɗ > d; re-segmentalisation *k^{w} > ʔ+w; metathesis ʔw > wʔ; w > u; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					
Kotoko-Island					
Buduma	*xi^{ŋ}gi* xəʸŋgy	*xŋ-g-y^{y}	*xØmØ-y-k	*ɬɗ̃ama-y-k^{w}	1
1. *ɬ > x; *k^{w} > k > g; metathesis yg > gy; homorganic assimilation *m > ŋ/_g; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i					
Kotoko-North					
Afade	*ɬ'entsi* ɬʔaʸntsy	*ɬʔan-ts-y^{y}	*ɬʔamØ-s-y	*ɬɗ̃ama-s-y	1
Mpade	*ʃensi* sʸaʸnsy	*san-s-y^{y}	*sØamØ-s-y		2
Malgbe	*ɬensi* ɬaʸnsy	*ɬan-s-y^{y}	*ɬØamØ-s-y		3
1. *ɗ > ʔ; *s > ts; homorganic assimilation *m > n/_ts; *y > y^{y}; +Y: *a > e; *y > i 2. *ɬ > s; homorganic assimilation *m > n/_ts; *y > y^{y}; +Y: *a > e; *y > i 3. homorganic assimilation *m > n/_ts; *y > y^{y}; +Y: *a > e; *y > i					
Kotoko-Central					
Lagwan	*ʃeʃi* sʸaʸsʸy	*sa-s-y^{y}	*sØaØØ-s-y	*ɬɗ̃ama-s-y	1
Mser	*ʃeʃi* sʸaʸsʸy				1
1. *ɬ > s; *y > y^{y}; +Y: s > ʃ; +Y: *a > e; *y > i					
Musgum					
Vulum	*ɬim* ɬəʸm	*ɬm-Ø^{y}	*ɬØmØ-y	*ɬɗ̃ma-y	1
Mbara	*'iɬim* ʔəʸɬəʸm	*ʔɬm-Ø^{y}	*ɬʔmØ-y		2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *ɗ > ʔ; metathesis ɬʔ > ʔɬ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					
Gidar					
Gidar	*ɬe'* ɬaʸʔ	*ɬaʔ-Ø^{y}	*ɬaʔØØ-y	*ɬaɗ̃ma-y	1
1. *ɗ > ʔ; *y > Ø^{y}; +Y: a > e					

flour

PCC *(ma-) **ɣ^{w}(a)pa** (-y, -k^{w}, -n; FV)

BATA

Gude	*əmpunə* əmpwnə	*m-pw-na	*mØ-wpØ-na	*(ma-)ɣ^{w}pa(-y/-n(a))	1
Jimi	*pun* pwn	*pw-n	*wpØ-n		2
Sharwa	*p^{w}ə* pwə	*pwa	*wpa		3
Tsuvan	*ahp^{w}e* axp^{w}a^{y}	*a-xp^{w}a-Ø^{y}	*Øa-x^{w}pa-y		4
1. ɣ^{w} > w > u; ə-prothesis; metathesis wp > pw; FV *a > ə 2. ɣ^{w} > w > u; metathesis wp > pw 3. ɣ^{w} > w; metathesis wp > pw; lexical-final *a > ə 4. *ɣ^{w} > x^{w} > x+^{w}; +W: p > p^{w}; *y > Ø^{y}; +Y: lexical-final *a > e					

DABA

Buwal	*ŋfa*	*ŋ-Øfa	*mØ-ɣ^{w}fa	*ma-ɣ^{w}pa	1
Gavar	*ŋfa*				1
Mbudum	*n̩fa*				1
1. *p > f; homorganic assimilation *m > ŋ/_ɣ^{w}					

MAFA

Mafa	*gufa* g^{w}ə^{w}fa	*g^{w}fa		*ɣ^{w}pa	1
Cuvok	*kəfa* kəfa	*kfa			2
1. *ɣ^{w} > g^{w}; *p > f; ə-epenthesis; +W: ə > u 2. *ɣ^{w} (> g^{w} > g) > k; *p > f; ə-epenthesis					

SUKUR

				√ C Ca	
Sukur	*p^{w}a* pwa	*pwa	*wpa	*ɣ^{w}pa	1
				√ CaCa	
	powa pa^{w}wa	*paw^{w}a	*w^{w}apa	*ɣ^{w}apa	2
1. ɣ^{w} > w; metathesis wp > pw 2. ɣ^{w} > w^{w}; metathesis w^{w}p > pw^{w}; +W: *a > o					

HURZA

Vame	*hə^{m}bəga* xə^{m}bəga	*Ø^{n}-xp-ga	*m^{n}Ø-xpØ-ka	*ma-ɣ^{w}pa-k^{w}a	1
1. *ɣ^{w} > x; *k^{w} (> k) > g; ə-epenthesis; *m > m^{n} > Ø^{n}; +N: p > ^{m}b					

MARGI

Margi-South	*upau* wpaw	*wpa-w	*wpa-k^{w}	*(ma-)ɣ^{w}pa(-k^{w})	1
Kilba	*up^{w}a* wp^{w}a	*w^{w}pa	*ɣ^{w}pa		2
	up wp	*wp	*wpØ		3
Margi	*əmpu* əmpw	*m-pw	*mØ-wpØ		4
Bura	*mp^{w}a* mpwa	*m-pwa	*mØ-wpa		5
1. *ɣ^{w} > w > u; *k^{w} > w > u 2. *ɣ^{w} > w^{w} > u; +W: p > p^{w} 3. *ɣ^{w} > w > u 4. *ɣ^{w} > w > u; metathesis wp > pw; ə-prothesis 5. *ɣ^{w} > w; metathesis wp > pw					

MANDARA

Matal	*phaw* pxaw	*pxa-w	*xpa-k^{w}	*(ma-)ɣ^{w}pa(-y(a)/-k^{w})	1
Podoko	*pəh^{w}a* pəx^{w}a	*px^{w}a	*x^{w}pa		2
Mandara	*ukpe* ə^{w}k^{w}pa^{y}	*k^{w}pa-Ø^{y}	*k^{w}pa-y		3
Malgwa	*ukpa* ə^{w}k^{w}pa	*k^{w}pa			4
Glavda	*ax*	Øa-xØØ	Øa-xpa		5
	ax^{w}piya ax^{w}pə^{y}ya	*a-x^{w}pa-y^{y}a	*Øa-x^{w}pa-ya		6

1. *ɣ^{w} (> x^{w}) > x; *k^{w} > w; metathesis xp > px
2. *ɣ^{w} > x^{w}; metathesis x^{w}p > px^{w}; ə-epenthesis
3. *ɣ^{w} (> g^{w}) > k^{w}; ə-prothesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e
4. ɣ^{w} (> g^{w}) > k^{w}; ə-prothesis; +W: ə > u
5. *ɣ^{w} (> ɣ) > x
6. *ɣ^{w} > x^{w}; lexical-final *a > ə; *y > y^{y}; +Y: ə > i

MOFU

Moloko	*hə^{m}bo* xə^{m}ba^{w}	*Ø^{n}-x^{w}pa	*m^{n}Ø-x^{w}pa	*(ma-)ɣ^{w}pa	1
Ouldeme	*hu^{m}bo* x^{w}ə^{wm}ba^{w}				2
Muyang	*hu^{m}bu* x^{w}ə^{wm}bə^{w}				3
Zulgo	*guʃa* g^{w}ə^{w}fa	*g^{w}fa			4
Gemzek	*guʃa* g^{w}ə^{w}fa				4
Merey	*gufo* g^{w}ə^{w}fa^{w}				5
				√ CaCa	
Moloko	*ho^{m}bo* x^{w}a^{wm}ba^{w}	*Ø^{n}-x^{w}apa	*m^{n}Ø-x^{w}apa	*(ma-)ɣ^{w}apa	6
Mofu North	*hapa*	*xapa			7
Mofu-Gudur	*hapa*				7

1. *ɣ^{w} > x^{w} > x; ə-epenthesis; *m > m^{n} > Ø^{n}; +N: p > ^{m}b; +W: lexical-final *a > o
2. *ɣ^{w} > x^{w}; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o; *m > m^{n} > Ø^{n}; +N: p > ^{m}b
3. *ɣ^{w} > x^{w}; ə-epenthesis; lexical-final *a > ə; +W: ə > u; *m > m^{n} > Ø^{n}; +N: p > ^{m}b
4. *ɣ^{w} > g^{w}; *p > f; ə-epenthesis; +W: ə > u
5. *ɣ^{w} > g^{w}; *p > f; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o
6. *ɣ^{w} > x^{w}; +W: *a > o; *m > m^{n} > Ø^{n}; +N: p > ^{m}b
7. *ɣ^{w} (> x^{w}) > x

MAROUA

Giziga-Muturwa	*hapa*	*xapa	*ɣ^{w}apa	1
Giziga-Marva	*hapa*			1

1. *ɣ^{w} (> x^{w}) > x

LAMANG

Lamang	*h^{w}po* x^{w}pa^{w}	*x^{w}pa	*ɣ^{w}pa	1
Hdi	*hupu* x^{w}ə^{w}pə^{w}			2

1. *ɣ^{w} > x^{w}; +W: lexical-final *a > o
2. *ɣ^{w} > x^{w}; ə-epenthesis; lexical-final *a > ə; +W: ə > u

HIGI

Kirya	*ɣupə* ɣ^{w}ə^{w}pə	*ɣ^{w}pa	*ɣ^{w}pa	1
Bana	*ɣ^{w}əpə*			2

1. ə-epenthesis; lexical-final *a > ə: +W: ə > u
2. ə-epenthesis; lexical-final *a > ə

GIDAR

Gidar	*gɨipa* gəʸypa	*gyʸpa	*gpa-y	*ɣʷpa-y	1
1. *ɣʷ (> gʷ) > g; metathesis py > yp; ə-epenthesis; *y > yʸ; +Y: ə > ɨ; *y > i; assimilation i > ɨ/ɨ_					

fly

PCC *(ma-, xa-, RED-) **dz(a)kʷ(a)ɗa**[56] (-y, -kʷ, -n, -t; FV)

BATA

Bata	*dʒitto* dzʸəʸttaʷ	*dzʸttʷa	*dzkʷØʸ-ta	*dzkʷyʸØ-ta		1
	dʒitto dzʸəʸttaʷ		*dzkʷta-Øʸ	*dzkʷta-y		2
Gude	*dʒi* dzʸy	*dzyʸ		*dzØyØ	*dzkʷɗa(-n/-ta)	3
Jimi	*dʒi'in* dzʸəʸʔyn	*dzʔyʸØ-n		*dzʔyØ(-n)		4
Sharwa	*dʒi'i* dzʸəʸʔy	*dzʔyʸØ				4
1. *ɗ > yʸ; ə-epenthesis; +Y: ə > i; +Y: *dz > ʤ; assimilation *kʷt > ttʷ; +W: FV *a > o; 2. Alternative analysis: *ɗ > t; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *dz > ʤ; assimilation *kʷt > ttʷ; +W: FV *a > o 3. *ɗ > yʸ; *y > i; +Y: *dz > ʤ 4. *ɗ > yʸ; *kʷ (> k) > ʔ; ə-epenthesis; +Y: ə > i; +Y: *dz > ʤ ; *y > i						

DABA

				√ C C Ca	
Gavar	*dʒiwiɗ* dzʸəʸwəʸɗ	*dzwɗ-Øʸ	*dzwdØ-y	*(RED-) dzkʷɗa-y	1
Mbudum	*dʒidʒiwəɗ* dzʸəʸdzʸəʸwəɗ	*dz-dzwɗ-Øʸ	*RED-dzwdØ-y		1
				√ C CaCa	
Daba	*tʃedi* tsʸaʸdy	tsØadØ-yʸ		*dzkʷaɗa-y	
				√ CaCaCa	2
Buwal	*dʒedʒəweɗ* dzʸaʸdzʸəwaʸɗ	*dza-dzwaɗ-Øʸ	*dza-dzØwadØ-y	*RED-dzakʷaɗa-y	3
1. *kʷ > w; ə-epenthesis; *y > Øʸ; +Y: *dz > ʤ; +Y: ə > i 2. *dz > ts; *ɗ > d; *y > yʸ; +Y: ts > tʃ; +Y: *a > e; *y > i 3. ə-epenthesis; *y > Øʸ; +Y: *dz > ʤ ; +Y: a > e					

[56] Note a particular challenge for reconstruction here. There is independent evidence for both C_3 */dʲ/ and root-augmental *{-y}, because both may co-occur in a fair number of languages. Also, there would appear to be a massively occurring sound change *ɗ > y in languages of the following groups: likely in BATA, certainly in MAFA, SUKUR, HURZA, MANDARA, MOFU, HIGI, KOTOKO-ISLAND, KOTOKO-NORTH (AFADE), AND KOTOKO-SOUTH (Zina). There are no examples of languages where both would co-occur, since prosodies cannot accumulate. Presently, it is impossible to tell whether the *ɗ > y change was triggered by morphological addition of *{-y} (as implied by Gravina 2015) and *{-y} was afterwards lost or deleted, or whether all occurrences of final /y/ in the absence of underlying *ɗ were indeed reflexes of *{-y}, with *ɗ having been deleted. In keeping with the methodological principles established for this study, we prioritise phonological prosodies over morphological prosodies, i.e. we will reconstruct *ɗ > y. This, however, could be a case of under-differentiation, if historically the sound change was indeed triggered by the presence of *{-y}, i.e., if we were dealing with morphological rather than phonological prosody.

MAFA

Mafa	*dzuway* dzəʷway	*dzwʷayØ	*dzkʷaɗa	1
1. *kʷ > wʷ; *ɗ > y; ə-epenthesis; +W : ə > u				

SUKUR

Sukur	*dʒuwi* dzʸəʷwy	*dzwʷyʸØ	*dzkʷɗa	1
	dʒui dzʸwy	*dzwyʸØ		2
1. *kʷ > wʷ; *ɗ > yʸ; ə-epenthesis; +Y: *dz > dʒ; +W : ə > u; *y > i 2. *kʷ > w > u; *ɗ > yʸ; +Y: *dz > dʒ; *y > i				

HURZA

Mbuko	*dzuway* dzəʷway	*dzwʷayØ	*dzkʷaɗa	1
Vame	*dzuway* dzəʷway			1
1. *kʷ > wʷ; *ɗ > y; ə-epenthesis; +W: ə > u				

MARGI

Margi	*tʃidî* tsʸəʸdy	*tsØdØ-yʸ	*dzkʷɗa-y	1
Kilba	*tʃədî* tsʸədy			2
Bura	*tʃiri* tsʸəʸry	*tsØrØ-yʸ		3
1. *dz > ts; ə-epenthesis; y > yʸ; +Y: ə > i; +Y: ts > tʃ; *y > i 2. *dz > ts; ə-epenthesis; y > yʸ; +Y: ts > tʃ; *y > i 3. *dz > ts; *ɗ > r; ə-epenthesis; y > yʸ; +Y: ə > i; +Y: ts > tʃ; *y > i				

MANDARA

				√ C C Ca	
Glavda	*ⁿğu* ndzʸw	*n-dzwØʸØ	*mØ-dzwØʸØ	*(ma-) dzkʷɗa(-kʷ-n)	1
	ⁿdzuya ndzwya	*n-dzwya	*mØ-dzwya		2
Malgwa	*ⁿdʒəŋʷa* ndzʸəŋwa	*n-dzŋwØʸa	*mØ-dzwya-k-n		3
				√ CaC Ca	
Mandara	*ⁿdʒaŋʷa* ndzʸaŋwa	*n-dzaŋwØʸa	*mØ-dzawya-k-n	*ma-dzakʷɗa-kʷ-n	4
				√ C CaCa	
Matal	*zway*	*zwayØ		*(ma-)dzkʷaɗa	5
	zəway				6
	zuway zəʷway	*zwʷayØ			7
Podoko	*ⁿdʒəwe* ndzʸəwaʸ	*n-dzwaØʸ	*mØ-dzwayØ		8
1. radical *kʷ > w > u; *ɗ > y > Øʸ; +Y: *dz > ğ 2. radical *kʷ > w > u; *ɗ > y 3. radical *kʷ > w; *ɗ > y > Øʸ; +Y: *dz > dʒ; suffixal kʷ > k; fusion kn > ŋ; metathesis wŋ > ŋw; ə-epenthesis 4. radical *kʷ > w; *ɗ > y > Øʸ; +Y: *dz > dʒ; suffixal kʷ > k; fusion kn > ŋ; metathesis wŋ > ŋw; 5. *dz > z; *kʷ > w; *ɗ > y 6. *dz > z; *kʷ > w; *ɗ > y; ə-epenthesis 7. *dz > z; *kʷ > w; *ɗ > y; ə-epenthesis; +W: ə > u 8. *kʷ > w; ə-epenthesis; *ɗ > y > Øʸ; +Y: *dz > dʒ; +Y: lexical-final *a > e					

MOFU

			√ C C Ca	
Muyang	*ezʉwi* aʸzəʷwy	*Øa-zwʷyʸØ	*ma-dzkʷɗa	1

			√ C CaCa	
Ouldeme	*zuway* zəʷway	*zwʷayØ	*dzkʷaɗa	2
Moloko	*dʒəway* dzʸəway	*dzwayʸØ		3
Zulgo	*dziwe* dzəʸwaʸ	*dzwaØʸØ		4
Gemzek	*dzuwe* dzəʷwaʸ	*dzwʷaØʸØ		5
Merey	*dzuway* dzəʷway	*dzwʷayØ		6
Mofu North	*dzuway* dzəʷway			6
Dugwor	*dʒuway* dzʸəʷway	*dzwʷayʸØ		7
			√ CaCaCa	
Mofu-Gudur	*dʒadʒəway* dzʸadzʸəway	*dza-dzØwayʸØ	*RED-dzakʷaɗa	3
1. *dz > z; *kʷ > wʷ; *ɗ > yʸ; y > i; +W: ə > ʉ; +Y: *a > e 2. *dz > z; *kʷ > wʷ; *ɗ > y; ə-epenthesis; +W: ə > u 3. *kʷ > w; *ɗ > yʸ; ə-epenthesis; +Y: *dz > dʒ 4. *kʷ > w; *ɗ > y > Øʸ; ə-epenthesis; +Y: *dz > dʒ; +Y: ə > i; +Y: lexical-final *a > e 5. *kʷ > w; *ɗ > y > Øʸ; ə-epenthesis; +W: ə > u; +Y: lexical-final *a > e 6. *kʷ > w; *ɗ > y; ə-epenthesis; +W: ə > u 7. *kʷ > w; *ɗ > yʸ; ə-epenthesis; +W: ə > u; +Y: *dz > dʒ				

MAROUA

			√ C C Ca	
Giziga Muturwa	*dʒidʒiwid(i)* dzʸəʸdzʸəʸwəʸdɗ(y)	*dz-dzwdØ-yʸ	*RED-dzkʷda-y	1
			√ C CaCa	
Giziga Marva	*dʒidʒiwed* dzʸəʸdzʸəʸwaʸdɗ	*dz-dzwadØ-Øʸ	*RED-dzkʷaɗa-y	2
1. *kʷ > w; ə-epenthesis; *y > yʸ; +Y: *dz > dʒ; +Y: ə > i; *y > i 2. *kʷ > w; ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; +Y: *a > e				

LAMANG

Lamang	*zidî* zəʸdy	*zØdØ-yʸ		*dzkʷda-y	1
Hdi	*zidîkʷ* zəʸdəʸkʷ	*zkʷɗ-Øʸ	*zkʷdØ-y		2
1. *dz > z; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i 2. *dz > z; metathesis kʷɗ > dkʷ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

HIGI

				√ C C Ca	
Kamwe-Futu	*ʒiwi* zʸəʸwy	*zwyʸ	*zkʷy	*dzkʷda-y	1
Bana	*ʒiɓ(i)* zʸəʸɓ(y)	*zbʔyʸ	*zkʷʔØ-y		2
				√ CaC Ca	
Kirya	*ʒew* zʸaʸw	*zawØʸ	*zawyØ	*dzakʷda	3
1. *dz > z; *kʷ > w; *ɗ > yʸ > i; ə-epenthesis; +Y: z > ʒ; +Y: ə > i 2. *dz > z; *ɗ > ʔ; *kʷ > b(ʔ); fusion bʔ > ɓ; ə-epenthesis; *y > yʸ; +Y: z > ʒ; +Y: ə > i; *y > i 3. *dz > z; *kʷ > w; *ɗ > y > Øʸ; +Y: z > ʒ; +Y: *a > e					

KOTOKO-ISLAND

Buduma	*hadʒu* xadzʸw	*xa-dzwØʸ	*xa-dzwyØ	*xa-dzkʷda	1
1. *kʷ > w > u; *ɗ > y > Øʸ; +Y: *dz > dʒ					

KOTOKO-NORTH

Afade	*tsɨwi* tsəʸwy	*tswyʸØ		*dzkʷda(-y)	1
Maltam	*s'ɨwi* sˀəʸwy	*swØˀ-yʸ	*swʔØ-yʸ		2
1. *dz > ts; *kʷ > w; *ɗ > yʸ > i; ə-epenthesis; +Y: ə > ɨ 2. *dz > s; *kʷ > w; *ɗ > ʔ > Øˀ; ʔˇ s > s'; ə-epenthesis; *y > yʸ > i; +Y: ə > ɨ					

KOTOKO-CENTRAL

Lagwan	*zu* zw	*zwØØ		*(ma-)dzk^{w}ɗa(-y)	1
Mser	*ms'ɨwi* msʔəʸwy	*m-sʔw-y	*mØ-swʔØ-y		2
1. *dz > z; *k^{w} > w > u 2. *dz > s; *k^{w} > w; *ɗ > ʔ; metathesis wʔ > ʔw; ə-epenthesis; *y > yʸ > i; +Y: ə > ɨ					

KOTOKO-SOUTH

Zina	*dʒadʒwi* dzʸadzʸwy	*dza-dzwyʸ	*dza-dzØwyØ	*RED-dzak^{w}ɗa	1
1. *k^{w} > w; *ɗ > yʸ > i; +Y: dz > dʒ					

MUSGUM

Vulum	*aduway* adəʷway	*Øa-dwʷayØ	*(ma-)dzk^{w}aɗa	1
Mbara	*tuway* təʷway	*twʷayØ		2
1. *dz > d; *k^{w} > w^{w}; *ɗ > y; ə-epenthesis; +W: ə > u 2. *dz > t; *k^{w} > w^{w}; *ɗ > y; ə-epenthesis; +W: ə > u				

GIDAR

Gidar	*zikɗe* zəʸkɗaʸ	*zkɗa-Øʸ	*zkɗa-y	*dzk^{w}ɗa-y	1
1. *dz > z; *k^{w} > k; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

fly/jump, to

PCC ***v(a)ra** (-k^{w})

BATA

Gude	*fər*	*fr	*frØ	*vra	1
1. *v > f; ə-epenthesis					

SUKUR

Sukur	*vwar* v^{w}ar	*var-Ø^{w}	*varØ-k^{w}	*vara-k^{w}	1
1. *k^{w} > Ø^{w}					

MARGI

Kilba	*fəla*	*fla		*vra(-y)	1
Bura	*fila* fəʸla	*fla-Øʸ	*fla-y		2
Margi	*vəl*	*vl	*vlØ		3
1. *v > f; *r > l; ə-epenthesis 2. *v > f; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *r > l; ə-epenthesis					

MANDARA

Matal	*mavalay*	*ma-val-ay	*ma-valØ-a-y	*ma-vara-a-y	1
1. *r > l					

LAMANG

Lamang	*vala*	*vala	*vara	1
Hdi	*vala*			1
1. *r > l				

KOTOKO-NORTH

Mpade	*fil* fəʸl	*fl-Øʸ	*flØ-y	*vra-y(-kʷ-n)	1
Afade	*fil* fəʸl				1
	filun fəʸləʷn	*fl-Øʸ-Øʷ-n	*flØ-y-kʷ-n		2
Malgbe	*filwun* fəʸlwəʷn	*fl-Øʸ-wʷ-n			3
1. *v > f; *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 2. *v > f; *r > l; *kʷ > Øʷ; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +W: ə > u 3. *v > f; *r > l; *kʷ > wʷ; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +W: ə > u					

KOTOKO-CENTRAL

Mser	*vɨl* vəʸl	*vl-Øʸ	*vlØ-y	*vra-y(-kʷ-n)	1
Lagwan	*vil* vəʸl				1
	vilwun vəʸlwʷəʷn	*vl-Øʸ-wʷ-n	*vlØ-y-kʷ-n		2
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 2. *r > l; *kʷ > wʷ; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +W: ə > u					

KOTOKO-SOUTH

Zina	*vera* vaʸra	*vara-Øʸ	*vara-y	*vara-y	1
1. *y > Øʸ; +Y: *a > e					

foot, leg[57]

PCC *(ma-, RED-) **s(a)ra** (-a, -y, -kʷ, -n; FV)

BATA

Gude	*sədə*	*sdə		*sra-y-n	1
Tsuvan	*sədɛ* sədəʸ	*sdə-Øʸ	*sdə-y		2
Sharwa	*ʃidə* sʸəʸdə				3
Jimi	*sədən*	*sd-n	*sdØ-n		1
	ʃəranyən sʸəraⁿyən	*sra-ⁿyʸ-n	*sra-y-nⁿ		4
1. *r > d; ə-epenthesis 2. *r > d; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 3. *r > d; ə-epenthesis; *y > Øʸ; +Y: ə > i; lexical-final *a > ə 4. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; *n > nⁿ; +N: *y > ⁿy					

DABA

Buwal	*sasalay*	*sa-sal-ay	*RED-sal-a-y	*RED-sara-a-y	1
1. *r > l					

MAFA

				√ C Ca	
Mafa	(a) *sak*	*sa-k	*sØa-kʷ	*sra(-y)-kʷ	1
Cuvok	(a) *sɛk* saʸk	*sa-Øʸ-k	*sØa-y-kʷ		2
				√ CaCa	
Mafa	(b) *ʃɛʃɛlay* sʸaʸsʸaʸlay	*sa-sal-ayʸ	RED-salØ-a-y	*sara-a-y	3

[57] Note that Gravina (2015) reconstructs three different roots, namely ***ʃi**, ***sikʸ**, and ***siray.** While he considers the first potentially to be a loan from Kanuri, he observes that in MAFA the other two associate with different meanings, i.e. (a) 'foot' vs. (b) 'leg', while in most languages both meanings are shared by the same root (cf. also 'arm, hand').

	(b) *sasalay*	*sa-sal-ay	RED-salØ-a-y		4
1. *k^{w} > k 2. *k^{w} > k; *y > Ø^{y}; +Y: *a > e 3. *r > l; *y > y^{y}; +Y: *s > ʃ; +Y: *a > e 4. *r > l					

TERA

Tera	*sara*	*sara		*sara	

HURZA

				√ C Ca	
Vame	*səlay*	*sl-ay	*slØ-a-y	*sra-a-y	1
				√ CaCa	
Mbuko	*saray*	*sar-ay	*sarØ-a-y	*sara-a-y	
1. *r > l; ə-epenthesis					

MARGI

Bura	*sil* sə^{y}l	*sl-Ø^{y}	*slØ-y	*sra-y	1
Margi	*h^{y}i* x^{y}y	*x-y^{y}	*xØØ-y		2
Kilba	*h^{y}i* x^{y}y				2
Margi South	*hi* xy	*x-y			3
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *ə > i 2. *s > x; *y > y^{y} > i; +Y: x > x^{y} 3. *s > x; *y > i					

MANDARA

				√ C Ca	
Malgwa	*səra*	*sra	*sra	*(ma-)sra(-y(-k^{w}a))	1
Matal	*asik* asə^{y}k	*Øa-s-Ø^{y}-k	*ma-sØØ-y-k^{w}		2
	afik as^{y}ə^{y}k				3
Podoko	*ʃige* s^{y}ə^{y}ga^{y}	*s-Ø^{y}-ga	*sØØ-y-k^{w}a		4
Glavda	*ʃiga* s^{y}ə^{y}ga				5
Dghwede	*səge* səga^{y}				6
				√ CaCa	
Mandara	*sera* sa^{y}ra	*sara-Ø^{y}	*sara-y	*sara-y	7
1. ə-epenthesis 2. *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 3. *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i 4. *k^{w} > g; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > ɨ; +Y: lexical-final *a > e 5. *k^{w} > g; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > ɨ 6. *k^{w} > g; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 7. *y > Ø^{y}; +Y: *a > e					

MOFU

				√ C Ca	
Zulgo	*sik* sə^{y}k	*s-y-k	*sØØ-y-k^{w}	*(ma-)sra(-y)-k^{w}	1
Merey	*sik* sə^{y}k	l			1
Ouldeme	*sek* sa^{y}k	*sa-Ø^{y}-k	*sØa-y-k^{w}		2
Gemzek	*sek* sa^{y}k				2
Dugwor	*sek* sa^{y}k				2

Mofu North	*sek* sa^{y}k				2
Mada	*ʃek* s^{y}a^{y}k				3
Muyang	*asak*	*Øa-sak	*ma-sØa-k^{w}		4
Moloko	*asak*				4
				√ CaC Ca	
Mofu-Gudur	*salay*	*sal-ay	*salØ-a-y	*sara-a-y	5
1. *k^{w} > k; *y > i 2. *k^{w} > k; *y > Ø^{y}; +Y: a > e 3. *k^{w} > k; *y > Ø^{y}; +Y: *s > ʃ; +Y: a > e 4. *k^{w} > k 5. *r > l					

MAROUA

				√ C C Ca	
Mbazla	*sir* syr	*syr	*srØ-y	*sra-y	1
				√ CaC Ca	
Giziga-Marva	*sar*	*sar	*sarØ	*(RED-)sara	
Giziga-Muturwa	*sasala*	*sa-sala	*RED-sala		2
1. metathesis ry > yr; *y > i 2. *r > l					

LAMANG

Lamang	*səra*	*sra	*sra	1
Hdi	*səla*	*sla		2
1. ə-epenthesis 2. *r > l; ə-epenthesis				

HIGI

Kamwe-Futu	*sira* sə^{y}ra	*sra-Ø^{y}	*sra-y		1
Kamwe-Nkafa	*səra*	*sra			2
Kirya	*səla*	*sla		*sra(-y)	3
Psikye	*səɗa*	*sɗa			4
Bana	*səɗa*				4
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. ə-epenthesis 3. *r > l; ə-epenthesis 4. *r > ɗ; ə-epenthesis					

KOTOKO-ISLAND

Buduma	*tʃu* ts^{y}w	*ts-Ø^{y}-w	*tsØØ-y-k^{w}	*sra-y-k^{w}	1
1. *s > ts; *k^{w} > w > u; *y > Ø^{y}; +Y: ts > tʃ					

KOTOKO-NORTH

				√ C Ca	
Afade	*entsi* a^{y}ntsy	*n-tsØ-y^{y}	*mØ-tsØØ-y	*ma-sra-y	1
Mpade	*ensɨ* a^{y}nsə^{y}	*n-sa-Ø^{y}	*mØ-sØa-y		2
				√ CaCa	
Mpade	*salio* salya^{w}	*sal-y-Ø^{w}a	*salØ-y-k^{w}a	*sara-y-k^{w}a	3

1. *s > ts; a-prothesis; homorganic assimilation *m > n/_ts; *y > y^y > i; +Y: *a > e 2. a-prothesis; homorganic assimilation *m > n/_s; lexical-final *a > ə; *y > $Ø^y$; +Y: *a > e; +Y: ə > ɨ 3. *r > l; *k^w > $Ø^w$; +W: FV *a > o; *y > i					
KOTOKO-CENTRAL					
Lagwan	*asɨ* asə^y	*a-sa-$Ø^y$	*Øa-sØa-y	*ma-sra-y-k^wa	1
Mser	*ms'ɨkɨ* msʔə^{y}kə^y	*m-sʔ-$Ø^y$-ka	*mØ-sʔØ-y-k^wa		2
1. lexical-final *a > ə; *y > $Ø^y$; +Y : ə > ɨ 2. *r (> ɗ) > ʔ; *k^w > k; ə-epenthesis; lexical-final *a > ə; *y > $Ø^y$; +Y : ə > ɨ					

four

PCC *(ma-, k^wa-, na-) **f(a)ɗa**[58] (-k^w)

BATA

Gude	*ənf^{w}aɗa*	*$Ø^w$ə-n-faɗa	*k^wa-nØ-faɗa	*k^wa-na-faɗa	1
Jimi	*f^{w}aɗ*	*$Ø^w$-faɗ	*k^wØ-faɗØ		2
1. *k^w > $Ø^w$; prefixal *a > ə; +W: *f > f^w 2. *k^w > $Ø^w$; +W: *f > f^w					

DABA

Buwal	*ŋfaɗ*	*ŋ-faɗ	*kØ-n-faɗØ	*k^wa(-n-)faɗa	1
Gavar	*ŋfaɗ*				1
Mbudum	*ŋfaɗ*				1
Daba	*foɗ* fa^{w}ɗ	*$Ø^w$-faɗ	*k^wØ-faɗØ		2
1. *k^w > k; fusion kn > ŋ 2. *k^w > $Ø^w$; +W: *a > o					

MAFA

Mafa	*faɗ*	*faɗ	*faɗØ	*faɗa	
Cuvok	*faɗ*				

TERA

Tera	*vat*	*vat	*vatØ	*(k^wa-)faɗa	1
Ga'anda	*foɗa* fa^{w}ɗa	*$Ø^w$-faɗa	*k^wØ-faɗa		2
1. *f > v; *ɗ > t 2. *k^w > $Ø^w$; +W: *a > o					

SUKUR

Sukur	*fwaɗ* f^{w}aɗ	*$Ø^w$-faɗ	*k^wØ-faɗØ	*k^wa-faɗa	1
1. *k^w > $Ø^w$; +W: *f > f^w					

HURZA

Mbuko	*fuɗo* fə^{w}ɗa^w	*fɗa-$Ø^w$	*fɗa-k^w	*fɗa-k^w	1
Vame	*fuɗaw* fə^{w}ɗaw	*fɗa-w^w			2
1. *k^w > $Ø^w$; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o 2. *k^w > w^w; ə-epenthesis; +W: ə > u					

[58] This very widely spread Chadic root provides highly interesting reflexes of root-augmental elements, in particular *k^wa-/-k^w, which stimulate the discussion of whether the proto-language operated original 'circumfixal' constructions (see section 4.8). There are competing indications for postulating both prefixal and suffixal positions for *k^wa-/-k^w(a). We here, therefore, will allow for both in our reconstructions. More focused typological and comparative research into individual grammatical systems of modern CC languages is needed.

MARGI

Kilba	*fʷadu* fʷadw	*fadˇ-wʷ	*fadØ-kʷ	*(kʷa-(na-))fadˆa (-kʷ)	1
Margi South	*fʷadu* fʷadw				1
	fodu faʷdw				2
Margi	*fodə* faʷdə	*Øʷ-fadˆə	*kʷØ-fadˆa		3
Bura	*nfʷar*	*Øʷ-n-far	*kʷØ-nØ-farØ		4

1. *kʷ > wʷ > u; +W: *f > fʷ
2. *kʷ > wʷ > u; +W: *a > o
3. *kʷ > Øʷ; +W: *a > o; lexical-final *a > ə
4. *dˇ > r; *kʷ > Øʷ; +W: *f > fʷ

MANDARA

				√ C Ca	
Dghwede	*fit'e* fəʸdaʸ	*fdˆa-Øʸ		*fdˆa-y	1
				√ CaCa	
Matal	*ufadˇ* wfadˇ	*w-fadˇ	*kʷØ-fadØ	*(kʷa-)fadˆa(-y)	2
Glavda	*ufadˆa* wfadˆa	*w-fadˆa	*kʷØ-fadˆa		2
Podoko	*ufadˆa* wfadˆa				2
Malgwa	*ufadˆe* wfadˆaʸ	*w-fadˆa-Øʸ	*kʷØ-fadˆa-y		3

1. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e
2. *kʷ > w
3. *kʷ > w; *y > Øʸ; +Y: lexical-final *a > e

MOFU

Moloko	*wəfadˇ*	*w-fadˇ	*kʷØ-fadØ	*(ma-/kʷa-)fadˆa	1
Ouldeme	*məfadˇ*	*mØ-fadˇ	*ma-fadØ		2
Dugwor	*məfadˇ*				2
Mofu-Gudur	*məfadˇ*				2
Zulgo	*əfadˇ*	*Øa-fadˇ			3
Gemzek	*əfadˇ*				3
	fadˇ	*fadˇ	*fadØ		
Muyang	*fadˇ*				
Merey	*fadˇ*				
Mofu North	*fadˇ*				

1. *kʷ > w; ə-epenthesis
2. ə-epenthesis
3. prefixal *a > ə

MAROUA

Giziga-Muturwa	*mufadˇ* mwfadˇ	*m-w-fadˇ	*mØ-kʷØ-fadØ	*ma-kʷa-fadˆa	1
Giziga-Marva	*mufadˇ* mwfadˇ				1
Mbazla	*mofot* maʷfaʷt	*ma-Øʷ-fat	*ma-kʷØ-fatØ		2

1. *kʷ > w > u
2. *dˇ > t; *kʷ > Øʷ; +W: *a > o

LAMANG

Lamang	*ufaɗa* wfaɗa	*w-faɗa	*wØ-faɗa	*k^wa-faɗa	1
Hdi	*fwaɗ* fwaɗ	*fwaɗ	*wØ-faɗØ		2
1. *k^w > w > u 2. *k^w > w; metathesis wf > fw					

HIGI

Bana	*faɗ(ə)*	*faɗə	*faɗa	*(k^wa-)faɗa	1
Psikye	*wufa'* wə^{w}faʔ	*w^w-faʔ	*k^wØ-faʔØ		2
Kamwe-Futu	*f^wadɔ* f^{w}aɗa^w	*Ø^w-faɗa	*k^wØ-faɗa		3
Kirya	*f^wadə*	*Ø^w-faɗə	*k^wØ-faɗa		4
	f^war	*Ø^w-farØ	*k^wØ-fara		5
Kamwe-Nkafa	*f^warə*	*Ø^w-farə			6
1. lexical-final *a > ə 2. *k^w > w^w; *ɗ > ʔ; ə-epenthesis; +W: ə > u 3. *k^w > Ø^w; +W: *f > f^w; +W: lexical-frinal *a > o 4. *k^w > Ø^w; *ɗ > d; lexical-final *a > ə; +W: *f > f^w 5. *k^w > Ø^w; *ɗ > r; +W: *f > f^w 6. *k^w > Ø^w; *ɗ > r; +W: *f > f^w; lexical-final *a > ə					

KOTOKO-SOUTH

Zina	*fodî* fa^{w}dy	*Ø^w-faɗ-y	*k^wØ-faɗØ-y	*k^wa-faɗa-y	1
1. *k^w > Ø^w; +W: *a > o; *y > i					

MUSGUM

Vulum	*puɗu* pə^{w}ɗw	*pɗ-w^w	*pdØ-k^w	*fɗa(-y)-k^w	1
Mbara	*pu'du* pə^{w}ɗw				1
Muskum	*fuudî* fə^{w}wdy	*fw^{w}ɗa-y	*fɗa-y-k^w		2
1. *f > p; *k^w > w^w > u; ə-epenthesis; +W: ə > u 2. *k^w > w^w > u; multiple metathesis dyw > wdy; ə-epenthesis; +W: ə > u; *y > i					

GIDAR

Gidar	*podo* pa^{w}ɗa^w	paɗa-Ø^w	paɗa-k^w	*faɗa-k^w	1
	podo pa^{w}da^w	pada-Ø^w	pada-k^w		2
1. *f > p; *k^w > Ø^w; +W: *a > o 2. *f > p; *k^w > Ø^w; *ɗ > d; +W: *a > o					

fry, to

PCC *(ma-, RED-) **s(a)w(a)ra** (-a, -y, -n, -t; FV)

BATA

Gude	*sərə*	*sra	*sØra	*swra	1
1. ə-epenthesis; lexical-final *a > ə					

DABA

Buwal	*msar*	*m-sar	*mØ-saØrØ	*ma-sawra	
Gavar	*msar*				
Mbudum	*məsar*				1
1. ə-epenthesis					

MAFA

Cuvok	*sala*	*sala	*saØla	*sawra	1
1. *r > l					

TERA

Tera	*zur* zwr	*zwr	*zwrØ	*swra	1
1. *s > z; *w > u					

SUKUR

Sukur	*sura* swra	*swra		*swra	1
1. *w > u					

HURZA

Mbuko	*suwle* sə^{w}wla^{y}	*sw^{w}la-Ø^{y}	*swla-y	*swra(-y)	1
Vame	*səla*	*sla	*sØla		2
1. *r > l; *w > w^{w}; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 2. *r > l; ə-epenthesis					

MARGI

Bura	*sulta* swlta	*swl-ta	*swlØ-ta	*swra(-ta)	1
	sula swla	*swla			1
Kilba	*səla*	*sla	*sØla		2
Margi	*səl*	*sl	*sØlØ		2
1. *r > l; *w > u 2. *r > l; ə-epenthesis					

MANDARA

				√ C C Ca	
Podoko	*sula* swla	*swla		*swra(-y-k^{w}a)	1
Malgwa	*səla*	*sla	*sØla		2
Glavda	*sɨlga* sə^{y}lga	*sl-Ø^{y}-ga	*sØlØ-y-ka		3
				√ CaC Ca	
Mandara	*sela* sa^{y}la	*sala-Ø^{y}	*saØla-y	*sawra-y	4
1. *r > l; *w > u 2. *r > l; ə-epenthesis 3. *r > l; *k^{w} (> g^{w}) > g; ^{w}-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 4. *r > l; *y > Ø^{y}; +Y: ə > e					

MOFU

				√ C C Ca	
Mofu-Gudur	*sər*	*sr	*sØrØ	*(ma-)swra (-a-y(-na))	1
	səl	*sl	*sØlØ		2
Ouldeme	*səlay*	*sl-ay	*sØlØ-a-y		2
Dugwor	*məsuleyna* məswla^{y}yna	*ma-swl-ay^{y}-na	*ma-swlØ-a-y-na		3
				√ CaC Ca	
Gemzek	*sawla*	*sawla		*(ma-) sawra(-y)	4
Merey	*sola* sa^{w}la	*saØ^{w}la	*sawla		5
Moloko	*sol* sa^{w}l	*saØ^{w}l	*sawlØ		5
	mesewle ma^{y}sa^{y}wla^{y}	*ma-sawla-Ø^{y}	*ma-sawla-y		6

				√ C CaCa	
Mada	*moefloeere* $ma^{wy}s^{y}la^{wy}a^{y}ra^{y}$	*ma-slaØ^{w}a-Ø^{y}-na	*ma-swala-y-na	*ma-swara-y-na	7
				√ CaCaCa	
Muyang	*sawalay*	*sawal-ay	*sawalØ-a-y	*sawara-a-y	4
1. ə-epenthesis 2. *r > l; ə-epenthesis 3. *r > l; *w > u; *y > y^{y}; *Y: lexical-final *a > e 4. *r > l 5. *r > l; *w > Ø^{w}; +W: *a > o 6. *r > l; *y > Ø^{y}; +Y: *a > e 7. *r > l; *n > r; metathesis wl > lw; *w > Ø^{w}; *y > Ø^{y}; +Y: *s > ʃ; +Y: *a > e; +W+Y: *a > œ					

MAROUA

Giziga-Muturwa	*susul* swswl	*sw-swl	*RED-swlØ	*(RED-)swra	1
Giziga-Marva	*sula* swla	*swla			1
1. *r > l; *w > u					

LAMANG

Lamang	*sula* swla	*swla		*swra(-a-y)	1
Hdi	*sulay* swlay	*swl-ay	*swlØ-a-y		1
1. *r > l; *w > u					

HIGI

				√ C C Ca	
Kamwe-Futu	*siro* $sə^{y}ra^{w}$	*sØ^{w}ra-Ø^{y}	*swra-y	*swra(-y)	1
Kamwe-Nkafa	*sələ*	*sla	*sØla		2
Kirya	*səl*	*sl	*sØlØ		2
Bana	*s(ə)li* səly	*sl-y	*sØlØ-y		3
				√ CaC Ca	
Kamwe-Nkafa	*selə* $sa^{y}lə$	*sala-Ø^{y}	*saØla-y	*sawra-y	4
1. ə-epenthesis; *w > Ø^{w}; +W: lexical-final *a > o; *y > Ø^{y}; +Y: ə > i 2. *r > l; ə-epenthesis 3. *r > l; ə-epenthesis; *y > i 4. *r > l; ə-epenthesis; lexical-final *a > ə					

KOTOKO-NORTH

Mpade	*sɨlya* $sə^{y}lya$	*sl-y^{y}a	*sØlØ-ya	*swra-ya	1
1. *r > l; *y > y^{y}; +Y: ə > ɨ					

KOTOKO-SOUTH

Zina	*tʃihya* $ts^{y}ə^{y}x^{y}a$	*tsxa-Ø^{y}	*tsØxa-y	*swra-y	1
1. *s > ts; *r > x; ə-epenthesis;*y > Ø^{y}; +Y: ts > tʃ; +Y: x > x^{y}; +Y: ə > i					

MUSGUM

Mbara	*sisal* $sə^{y}sal$	*s-sal-Ø^{y}	*RED-saØlØ-y	*RED-sawra-y	1
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

get well/cure/take care, to

PCC *(k^{w}a-, ma-) **b(a)ra** (-a, -y, -k^{w}, -n; FV)

The reconstruction of prefixal */m/ is guided by analogy to the frequent occurrence of *{ma-} throughout the data corpus and, therefore, could be considered ad hoc for this particular example. Alternatively, we would have to accept a trilateral root ***mb(a)ra** under our assumption that PCC did not possess prenasalised x/^{m}b/.

BATA

Gude	*ə^{m}bi* mby	*m-b-y	*mØ-bØØ-y	*ma-bra-y/-n	1
	^{m}bii mbə^{y}y	*m-b-y^{y}	*mØ-bØØ-y		2
Jimi	*^{m}bədən* mbədən	*m-bɗ-n	*mØ-bdØ-n		3
1. ə-prothesis; *y > i 2. ə-epenthesis; +Y: ə > i; y > i 3. *r > ɗ; ə-epenthesis					

DABA

Gavar	*^{m}bəl* mbəl	*m-bl	*mØ-blØ	*(k^{w}a-)ma-bra	1
Mbudum	*^{m}bəl* mbəl				1
	kə^{m}bəl kəmbəl	*k-m-bl	*k-mØ-blØ		2
1. *r > l; ə-epenthesis 2. *r > l; *k^{w} > k; ə-epenthesis					

HURZA

				√ C Ca	
Vame	*^{m}bəra* mbəra	*m-bra	*mØ-bra	*ma-bra	1
				√ CaCa	
Mbuko	*^{m}bar* mbar	*m-bar	*mØ-barØ	*ma-bara	
1. ə-epenthesis					

MOFU

				√ C Ca	
Dugwor	*mə^{m}bəley* məmbəla^{y}y	*mØ-m-bl-ay^{y}	*ma-mØ-blØ-a-y	*(RED-)ma-bra(-y-k^{w}-n(a))	1
Mofu North	*me^{m}bəley* ma^{y}mbəla^{y}y	*ma-m-bl-ay^{y}	*ma-mØ-blØ-a-y		1
Mada	*me^{m}bleŋa* ma^{y}mbla^{y}ŋa	*ma-m-bla-Ø^{y}-ŋa	*ma-mØ-bla-y-k-na		2
Gemzek	*me^{m}bəle* ma^{y}mbəla^{y}	*ma-m-bla-Ø^{y}	*ma-mØ-bla-y		3
	^{m}bəl mbəl	*m-bl	*mØ-blØ		4
Merey	*^{m}bəl* mbəl				4
Zulgo	*^{m}bəl* mbəl				4
Mofu-Gudur	*^{m}bəl* mbəl				4
Ouldeme	*^{m}bəl* mbəl				4
				√ CaCa	
	^{m}beleŋ mba^{y}la^{y}ŋ	*m-bala-Ø^{y}-ŋ	*mØ-bala-y-k-n	*ma-bara (-y-k^{w}-n)	5
Moloko	*^{m}bar* mbar	*m-bar	*mØ-barØ		
1. *r > l; *y > y^{y}; +Y: *a > e 2. *r > l; *y > Ø^{y}; +Y: *a > e; *k^{w} > k; fusion kn > ŋ 3. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 4. *r > l; ə-epenthesis 5. *r > l; *k^{w} > k; fusion kn > ŋ; *y > Ø^{y}; +Y: a > e					

MAROUA

Giziga-Muturwa	*ᵐbul* mbwl	*m-bwl	*mØ-blØ-w	*ma-bra-kʷ	1
1. *r > l; *kʷ > w > u; metathesis lw > wl					

LAMANG

Hdi	*mba*	*m-ba	*mØ-bØa	*ma-bra	

GIDAR

Gidar	*ɨᵐbəla* əʸmbəla	*m-bla-Øʸ	*mØ-bla-y	*ma-bra-y	1
1. *r > l; ə-prothesis; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

girl, daughter

Areal root *(ma-) **d(a)ma** (-y)

DABA

Daba	*medimi* maʸdəʸmy	*ma-dmØ-yʸ	*ma-dma-y	1
1. ə-epenthesis; *y > yʸ > i; +Y: ə > i; +Y: *a > e				

MAFA

Mafa	*dam*	*damØ		*dama(-y)	
Cuvok	*dem* daʸm	*dam-Øʸ	*damØ-y		1
1. *y > Øʸ; +Y: *a > e					

SUKUR

Sukur	*dəm*	*dmØ	*dma	1
1. ə-epenthesis				

MOFU

				√ C Ca	
Zulgo	*dəm*	*dmØ		*dma	1
Gemzek	*dəm*				1
				√ CaCa	
Merey	*dem* daʸm	*dam-Øʸ	*damØ-y	*dama(-y)	2
Dugwor	*dem* daʸm				2
Mofu North	*dem* daʸm				2
Mofu-Gudur	*dam* dam	*damØ			
1. ə-epenthesis 2. *y > Øʸ; +Y: *a > e					

girl, young unmarried woman

Areal root *(na-) **d(a)ɣ(a)ra**[59] (-a, -y, -kʷ; FV)

DABA

Gavar	*dahalay* daxalay	*daxalØ-a-y	*daɣara-a-y	1
Mbudum	*dalay* dalay	daØØlØ-a-y		2
1. *ɣ > x; *r > l 2. *r > l				

[59] All available examples from the database contain /l/ in C_3 position of the simple root, which is not a reconstructable PCC consonant. We reconstruct a PCC root ***d(a)ɣ(a)ra**, assuming that reconstructed *r in this root has the common reflex /l/ in all languages in the database where the root occurs.

MAFA

Cuvok	*dahla* daxla	*daxla	*daɣra	1
1. *ɣ > x; *r > l				

SUKUR

Sukur	*dəgəli* dəgəly	*dglØ-y	*dɣra-y	1
1. *ɣ > g; *r > l; ə-epenthesis; *y > i				

HURZA

			√ C C Ca	
Vame	*dile* dəʸlaʸ	*dØla-y	*dɣra-y	1
			√ CaCCa	
Mbuko	*dalay*	daØlØ-a-y	*daɣra-a-y	
1. *r > l; ə-epenthesis; +Y: ə > i; +Y: lexical-final *a > e				

MANDARA

			√ C C Ca	
Podoko	*dəhəla* dəxəla	*dxla	*dɣra	1
			√ CaCaCa	
Mandara	*gyaale* dʸaalaʸ	*daØala-Øʸ	*daɣara-y	2
Malgwa	*gyaale* dʸaalaʸ			2
1. *ɣ > x; *r > l; ə-epenthesis 2. *r > l; *y > Øʸ; +Y: d > dʸ > gʸ; +Y: lexical-final *a > e; (vowel length accounted for by loss of intervocalic *ɣ)				

MOFU

			√ CaC Ca	
Gemzek	*dahəla* daxəla	*daxla	*daɣra(-a-y)	1
	dahəlay daxəlay			1
Merey	*dahəlay* daxəlay	*daxlØ-a-y		1
Dugwor	*dahəlay* daxəlay			1
Moloko	*dalay*	*daØlØ-a-y		
			√ CaCaCa	
Muyang	*dahalay* daxalay	*daxalØ-a-y	*(na-)daɣara-a-y-kʷ	2
Ouldeme	*daŋgʷalay* daⁿgʷalay	*Øⁿ-dagʷal-a-y	*nØⁿ-dagalØ-a-y-Øʷ	3
1. *ɣ > x; *r > l; ə-epenthesis 2. *ɣ > x, *r > l 3. *ɣ > g; *r > l; *kʷ > Øʷ; +W: g > gʷ; *n > nⁿ; +N: gʷ > ᵑgʷ				

MAROUA

Giziga-Muturwa	*diyli* dəʸyly	*dyʸl-y	*dɣlØ-yʸ	*dɣra-y	1
Giziga-Marva	*dili* dəʸly		*dØlØ-yʸ		2
1. *r > l; *y > yʸ; +Y: *ɣ > y; ə-epenthesis; +Y: ə > i; final *y > i 2. *r > l; ə-epenthesis; *y > yʸ > i; +Y: ə > i					

LAMANG

Lamang	*daɣele* daɣa^{y}la^{y}	*daɣala-Ø^{y}	*daɣala-y	*daɣara-y	1
Hdi	*daɣali* daɣaly	*daɣalØ-y			2
1. *r > l; *y > Ø^{y}; +Y: *a > e 2. *r > l; *y > i					

HIGI

				√ C C Ca	
Kamwe-Nkafa	*digəlyi* də^{y}gəlyə^{y}	dgl-y^{y}a	dglØ-ya	*dɣra-ya	1
	digilyi də^{y}gə^{y}lyə^{y}				1
				√ CaCaCa	
Bana	*daɣala*		*daɣala	*daɣara	
1. *ɣ > g; *r > l; ə-epenthesis; FV *a > ə; *y > y^{y}; +Y: ə > i					

give, to[60]

PCC *(ma-) **va ~ v(a)ra** (-a, -y, -k^{w}, -n; FV)

BATA

				√ C Ca	
Gude	*və*	*və	*vØa	*vra-y/-n	1
Jimi	*vən1*[61]	*və-n	*vØa-n		1
Sharwa	*vɨ* və^{y}	*və-Ø^{y}	*vØa-y		2
				√ CaCa	
Tsuvan	*avekən* ava^{y}kən	*a-va-Ø^{y}-k-n	*Øa-vaØØ-y-k-n	*ma-vara-y-k^{w}-n	3
1. lexical-final *a > ə 2. lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ 3. *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: *a > e					

DABA

				√ C Ca	
Gavar	*vəl*	*vl	*vlØ	*vra	1
Mbudum	*vəl*				1
Daba	*vəl*				1
				√ CaCa	
Buwal	*val*	*val	*valØ	*vara	2
1. *r > l; ə-epenthesis 2. *r > l					

[60] Gravina (2015) reconstructs two different "possibly cognate" roots, namely ***v*** and ***vɨr***, "though there is no known regular process for deleting a final *r". Paul Newman (p.c. 2022) suggests that "likely both *va and *vər can be traced back to Proto-Chadic and thus also to PCC. They were not different roots, but, as found coexisting in numerous Chadic languages … were manifestations (= allomorphs) of the same lexeme."

[61] Even though *{-n} is a frequently occurring augmental suffix in the BATA group and is as such reconstructed here (see the reflex *a-ve-kə-n* in Tsuvan), Jimi *vən* could potentially also be a reflex of the root allomorph *vra, if in this item a change *r → n can be established for Jimi.

MAFA

Mafa	*va*	*va	*vØa	*vra	
Cuvok	*va*				

TERA

Tera	*vər*	*vrØ	*vra	1
1. ə-epenthesis				

HURZA

				√ C Ca	
Vame	*vəra*	*vra		*vra	1
				√ CaCa	
Mbuko	*var*	*var	*varØ	*vara	
1. ə-epenthesis					

MANDARA

Podoko	*va*	*va	*vØa	*(ma-)vra(-a-y (-k^wa))	
Mandara	*va*				
Malgwa	*va*				
Matal	*mavay*	*ma-v-ay	*ma-vØØ-a-y		
	vəla	*vla			1
Glavda	*vilga* və^{y}lga	*vl-Ø^y-ga	*vlØ-y-k^{w}a		2
1. *r > l; ə-epenthesis 2. *r > l; *k^w (> k) > g; ə-epenthesis; *y > Ø^y; +Y: ə > i					

MOFU

				√ C Ca	
Ouldeme	*vəlar*	*vla-r	*vla-n	*(ma-)vra(-y/-n)	1
Gemzek	*mevəle* ma^{y}və la^y	*ma-vla-Ø^y	*ma-vla-y		2
Dugwor	*məvəley* məvəla^{y}y	*mØ-vla-y^y			3
Zulgo	*vəl*	*vl	*vlØ		4
Moloko	*vər*	*vr	*vrØ		5
				√ CaCa	
Moloko	*val*	*val	*valØ	*vara	6
1. *r > l; *n > r; ə-epenthesis 2. *r > l; ə-epenthesis; *y > Ø^y; +Y: *a > e 3. *r > l; ə-epenthesis; *y > y^y; +Y: *a > e 4. *r > l; ə-epenthesis 5. ə-epenthesis 6. *r > l					

MAROUA

Giziga-Marva	*vul* və^{w}l	*vl-Ø^w	*vlØ-k^w	*vra(-y,-k^w)	1
Mbazla	*vili'* və^{y}ly?	*vl-y^y-?	*vlØ-y-k^w		2
	vili və^{y}ly	*vl-y^y	*vlØ-y		3
1. *r > l; *k^w > Ø^w; ə-epenthesis; +W: ə > u 2. *r > l; *k^w (> k) > ?; ə-epenthesis; *y > y^y > i; +Y: ə > i 3. *r > l; ə-epenthesis; *y > y^y > i; +Y: ə > i					

LAMANG

Lamang	*vla*	*vla	*vra	1
Hdi	*vla*			1
1. *r > l				

HIGI

Psikye	*və*	*və	*vØa	*vra	1
1. lexical-final *a > ə					

KOTOKO-NORTH

Afade	*fi* fy	*f-y	*fØØ-y	*vra-y	1
Mpade	*fi* fy				1
Malgbe	*fi* fy				1
	fidɨ fəʸdəʸ	*fdə-Øʸ	*fda-y		2
1. *v > f; *y > i 2. *v > f; *r > d; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: medial ə > i; +Y: final ə > ɨ					

KOTOKO-CENTRAL

Lagwan	*vawun* vawəʷn	*va-wʷ-n	*vaØØ-kʷ-n	*vara-kʷ(-n)	1
Mser	*vo* vaʷ	*va-Øʷ	*vaØØ-kʷ		2
1. *kʷ > wʷ; ə-epenthesis; +W: ə > u 2. *kʷ > Øʷ; +W: *a > o					

KOTOKO-SOUTH

Zina	*vala*	*vala	*vara	1
1. *r > l				

GIDAR

Gidar	*əvaya*	*ə-va-ya	*Øa-va-ya	*ma-vaØØ-ya	1
1. prefixal *a > ə					

give birth$_1$, to

PCC *(ma-, RED-) **w(a)x(a)ya** (-a,-y, -kʷ, -n, -r ; FV)

MAFA

				√ C C Ca	
Mafa	*ya*	*ØØya		*wxya	
				√ C CaCa	
Cuvok	*haya*	*Øxaya		*wxaya	

TERA

Tera	*xa*	*ØxØa	*wxya	

SUKUR

Sukur	*yiiha* yəʸyxa	*yyʸxa	*wyʸxa	*wxya	1
	yi yy	*yy	*wØyØ		2
1. metathesis xy > yx; assimilation *w > y/_y; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. assimilation *w > y/_y; *y > i					

HURZA

				√ CaC Ca	
Vame	*wah(a)*	*waxØa		*waxya	
				√ CaCaCa	
Mbuko	*wahay*	*waxayØ		*waxaya	

MARGI

Bura	*iya* yya	*yya	*wØya		1
	yia yya				1
Margi	*ya*	*ØØya		*wxya	
Margi South	*ya*				
Kilba	*ya*				
1. assimilation *w > y/_y; y > i					

MANDARA

Podoko	*ha*	*ØxØa		*(RED-) wxya(-k^{w}a/-na)	
Malgwa	*ya*	*ØØya			
Dghwede	*yige* yyga^{y}	*yy^{y}-ga	*wØyØ-ka		1
Glavda	*yiga* yyga	*yy-ga			2
	yayana	*ya-ya-na	*RED-ØØya-na		
1. assimilation *w > y/_y; y > y^{y} > i; +Y: lexical-final *a > e; *k^{w} > k > g 2. assimilation *w > y/_y; y > i; *k^{w} > k > g					

MOFU

				√ C C Ca	
Mofu-Gudur	*y-*	*ØØyØ		*(ma-)wxya(-a-y)	
Merey	*wa*	*wØØa			
Zulgo	*wa*				
Moloko	*we* wa^{y}	*wØ^{y}a	*wØya		1
Ouldeme	*wi* wy	*wØyØ			2
Gemzek	*mawa*	*ma-wØØa			
	mewe ma^{y}wa^{y}	*ma-wØ^{y}a	*ma-wØya		1
Mofu North	*meyey* ma^{y}ya^{y}y	*ma-ØØy^{y}Ø-ay			3
				√ CaC Ca	
Dugwor	*maway*	*ma-waØyØ		*ma-waxya	
1. *y > Ø^{y}; +Y: *a > e 2. *y > i 3. *y > y^{y}					

MAROUA

				√ C C Ca	
Giziga Marva	*ye* ya^{y}	*y$_{y}$a	*ØØya	*wxya	1
	yi yy	*wy	*wØyØ		2
Mbadzla	*yi* yy	*wy			2
				√ CaC Ca	
Mbazla	*yɛyi'* ya^{y}yy?	*ya-yØy^{y}?	*RED-wayxØ	*RED-waxya	3
1. *y > y^{y}; +Y: lexical-final *a > e 2. assimilation *w > y/_y; *y > i 3. metathesis *xy > yx ; *x > ?; assimilation *w > y/_y; *y > y^{y} > i; +Y : *a > E					

LAMANG

Lamang	*ya*	*ØØya		*(RED-)wxya	
Hdi	*yay*	*ya-yØ	RED-ØØya		

HIGI

Kirya	*ya*	*ØØya	*wxya((-k^{w})-k^{w}a)	
Bana	*ya*			
Kamwe-Nkafa	*yə* yə			1
Kamwe-Futu[62]	*yekə* ya^{y}ka	*ØØy^{y}a-ka		2
	yekəg^{w}o ya^{y}kg^{w}a^{w}	*ØØy^{y}a-k-k^{w}a		3

1. lexical-final *a > ə
2. *y > y^{y}; +Y: *a > e; *k^{w} > k; FV *a > ə
3. *y > y^{y}; +Y: lexical-final *a > e; *k^{w} > k; ə-epenthesis; *k^{w} > g^{w}; +W: FV *a > o

KOTOKO-ISLAND

Buduma	*wuy* wə^{w}y	*w^{w}ØyØ	*wxya	1
	wuəy wə^{w}əy			1

1. ə-epenthesis; *w > w^{w}; +W: ə > u

KOTOKO-NORTH

				√ C C Ca	
Afade	*we* wa^{y}	*wØ^{y}a	*wØya	*wxya(-n)	1
	wan	*wØØa-n			
Mpade	*we* wa^{y}	*wØ^{y}a			1
	wan	*wØØa-n			
				√ CaC Ca	
Malgbe	*wawun* wawə^{w}n	*wa-w^{w}Ø-n	*RED-waØØØ-n	*RED-waxya-n	2

1. *y > Ø^{y}; +Y: lexical-final *a > e
2. ə-epenthesis; *w > w^{w}; +W: ə > u

KOTOKO-CENTRAL

				√ C C Ca	
Mser	*we* wa^{y}	*wØØ^{y}a		*wxya(-r)	1
Lagwan	*wel* wa^{y}l	*wØØ^{y}a-l			2
				√ CaC Ca	
Lagwan	*wawun* wawə^{w}n	*wa-w^{w}Ø-n	*wa-waØØØ-n	*RED-waxya-n	3

1. *y > Ø^{y}; +Y: lexical-final *a > e
2. *y > Ø^{y}; +Y: lexical-final *a > e; *r > l
3. ə-epenthesis; *w > w^{w}; +W: ə > u

KOTOKO-SOUTH

Zina	*wiya* wə^{y}ya	*wØy^{y}a	*wxya	1

1. ə-epenthesis; *y > y^{y}; +Y: ə > i

MUSGUM

Mulwi	*wi* wy	*wØyØ	*wxya	1
Mbara	*wii* wə^{y}y	*wØy^{y}Ø		2

[62] The form *ye-kə-g^{w}o* is unique in the data in terms of the apparent repetition of the suffixal augment *{-k^{w}(a)}, if our suggested analysis is correct.

1. *y > i 2. ə-epenthesis; *y > y^{y} > i; +Y: ə > i

GIDAR

Gidar	*wiina* wə^{y}yna	*wØy^{y}Ø-na		*(RED-)wxya(-na)	1
	uwa wwa	*w-wa	*RED-wØØa		2
	uuwa ə^{w}wwa				3
1. ə-epenthesis; *y > y^{y} > i; +Y: ə > i 2. *w > u 3. ə-prothesis; *w > w^{w} > u; +W: ə > u					

give birth$_2$, to

Areal root *(k^{w}a-, ma-) **b(a)wa** (-y, -k^{w}, -n)

BATA

				√ C Ca	
Sharwa	*mb^{w}ə* mbwə	*m-bwa	*mØ-bwa	*(ma-)bwa(-k^{w}a-n)	1
Jimi	*puaan* pwaan	*pwa-Øa-n	*pwa-k^{w}a-n		2
				√ CaCa	
Gude	*pawa*	*pawa		*bawa	3
	poo pa^{w}a^{w}	*paØ^{w}a			4
1. lexical-final *a > ə 2. *b > p; *w > u; (vowel length tentatively accounted for by loss of intervocalic *k^{w}) 3. *b > p 4. *b > p; *w > Ø^{w}; +W: *a > o; (vowel length accounted for by loss of intervocalic segment *w)					

DABA

				√ C Ca	
Gavar	*^{m}bəw* mbəw	*m-bw	*mØ-bwØ	*(k^{w}a-)ma-bwa	1
Mbudum	*kə^{m}bu* kəmbw	*k-m-bw	*kØ-mØ-bwØ		2
Daba	*^{m}bu* mbw	*m-bw	*mØ-bwØ		3
				√ CaCa	
Buwal	*^{m}baw* mbaw	*m-baw	*mØ-bawØ	*ma-bawa	
1. ə-epenthesis 2. ə-epenthesis; *k^{w} > k; *w > u 3. *w > u					

MUSGUM

Mulwi	*puki* pwky	*pw-k-y	*pwØ-y-k	*bwa-y-k^{w}	1
Mbara	*puk* pwk	*pw-k	*pwØ-k		2
1. *b > p; *k^{w} > k; metathesis yk > ky; *w > u; *y > i 2. *b > p; *k^{w} > k; *w > u					

goat

PCC *(ɓa-, ɗa̰-, na-, xa-) **(a)w(a)ka** (-a, -y, -m, -ɗ̰; FV)

BATA

Gude	*əh^{w}a* əxwa	*xwa	*Øwxa	*awka(-y)	1
Sharwa	*h^{w}ə* xwə	*xwa	*Øwxa		2
Tsuvan	*ah^{w}e* axwa^{y}	*axwa-Ø^{y}	*awxa-y		3
1. *k > x; ə-prothesis; metathesis wx > xw 2. *k > x; metathesis wx > xw; lexical-final *a > ə 3. *k > x; metathesis wx > xw; *y > Ø^{y}; +Y: lexical-final *a > e					

DABA

Buwal	*ŋh^{w}a* ŋxwa	*n-xwa	*nØ-Øwxa	*na-awka	1
Gavar	*ŋh^{w}a* ŋxwa				1
1. *k > x; metathesis wx > xw; homorganic assimilation *n > ŋ/_x					

MAFA

Mafa	*ɓak^{w}* ɓakw	*ɓ-akw	*ɓØ-awkØ	*ɓa-/ɗa̰-awka((-a)-y)	1
	ɓok^{w} ɓa^{w}kw	*ɓ-akw^{w}			2
	ɓak^{w}iy ɓakwə^{y}y	*ɓ-akw-y^{y}	ɓØ-awkØ-y		3
	ɓak^{w}ay ɓakway	*ɓ-akw-ay	ɓØ-awkØ-a-y		1
Cuvok	*ɗak^{w}* ɗakw	*ɗ̰-akw	*ɗØ-awkØ		1
1. metathesis wk > kw; 2. metathesis wk > kw; *w > w^{w}; +W: *a > o 3. metathesis wk > kw; ə-epenthesis; *y > y^{y}; Y: ə > i					

SUKUR

Sukur	*'iyuk* ʔə^{y}ywk	*ʔ-y^{y}wk	*ʔØ-ØwkØ-y	*ɗa̰-awka-y	1
	iyuk' ə^{y}ywk^{ʔ}	*y^{y}wk-ʔ	*ØwkØ-y-ɗØ	*awka-y-ɗa̰	1
1. *ɗ̰ > ʔ; multiple metathesis wky > ywk; ə-epenthesis; *y > y^{y}; +Y: ə > i; *w > u					

HURZA

Mbuko	*awak*	*awakØ	*awaka	
Vame	*awak*			

MARGI

Margi	*ku* kw	*kw	*ØwkØ	*awka(-y)	1
Kilba	*ku* kw				1
	k^{w}a kwa	*kwa	*Øwka		2
Bura	*k^{w}i* kwy	*kw-y	*ØwkØ-y		3
1. metathesis wk > kw; *w > u 2. metathesis wk > kw 3. metathesis wk > kw; *y > i					

MANDARA

				√ aC Ca	
Podoko	*nawa*	*n-awØa		*na-awka (-y(-ma))	
Malgwa	*nawe* nawa^{y}	*n-awa-Ø^{y}	*nØ-awØa-y		1
Mandara	*nawime* nawə^{y}ma^{y}	*n-aw-Ø^{y}-ma	*nØ-awØØ-y-ma		2
				√ aCaCa	

Matal	*awak*	*awakØ		*(ɗa-)awaka	
Glavda	*aag*	*aØagØ			3
	dwag	*ɗ-ØwagØ			4
	a:g^{w}a aag^{w}a	*aØ^{w}aga	*awaga		5
1. *y > Ø^{y}; +Y: lexical-final *a > e 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: FV *a > e 3. *k > g 4. *k > g; *ɗ > d 5. *k > g; *w > Ø^{w}; +W: g > g^{w}; (vowel length accounted for by loss of intervocalic segmental *w)					

Mofu

Dugwor	*awak*	*awakØ		*(ɗa-)awaka	
Ouldeme	*awak*				
Moloko	*awak*				
Zulgo	*awak*				
Muyang	*awak*				
Gemzek	*awak*				
Merey	*wak*	*ØwakØ			
Mofu-Gudur	*ɗak^{w}* ɗakw	*ɗ-akw	*dØ-awkØ		1
1. metathesis wk > kw					

Maroua

Mbazla	*'awu* ʔawə^{w}	*ʔaw^{w}a	*dØ-awØa	*(ɗa-)awka	1
	awu' awə^{w}ʔ	*aw^{w}ʔ	*awʔØ		2
Giziga-Muturwa	*'aw* ʔaw	*ʔaw	*dØ-awØØ		3
	aw	*aw	*awØØ		
Giziga-Marva	*aw*				
1. *ɗ > ʔ; lexical-final *a > ə; *w > w^{w}; +W: ə > u 2. *k > ʔ; ə-epenthesis; *w > w^{w}; +W: ə > u 3. *ɗ > ʔ					

Lamang

Lamang[63]	*ogo* a^{w}ga^{w}	*agØ^{w}a	*agwa	*awga	*awka	1
Hdi	*gu* gw	*gw		*ØwgØ		2
1. *k > g; metathesis wg > gw; *w > Ø^{w}; +W: *a > o 2. *k > g; metathesis wg > gw; *w > u						

Higi

Kamwe-Nkafa	*k^{w}ə*	*kwa	*Øwka	*awka	1
Bana	*k^{w}ə*				1
Psikye	*k^{w}ə*				1
Kirya	*ku* kw	*kw	*ØwkØ		2
1. metathesis wk > kw; lexical-final *a > ə 2. metathesis wk > kw; *w > u					

[63] Note that the historical-comparative reconstruction of the underlying segmental form of *ogo* as *agwa (< *awga) differs from the underlying form arrived at by purely internal reconstruction (Wolff 1983: 40ff.; 2015, Vol.1: 67), which is *agu. This is explained by different assumptions

KOTOKO-CENTRAL

Mser	*nɣo* nɣa^{w}	*n-Ø^{w}ɣa	*nØ-Øw^{w}ɣa	*na-awka	1
1. *k > ɣ; *w > Ø^{w}; +W: lexical-final *a > o					
KOTOKO-SOUTH					
Zina	*awa*	*awØa		*awka	

MUSGUM

				√ aC Ca	
Mbara	*we* wa^{y}	*wa-Ø^{y}	*ØwØa-y	*awka-y	1
Muskum	*yaw* yaw	*yaw	*ØwØa-y		2
				√ aCaCa	
Vulum	*yek* ya^{y}k	*y^{y}ak	*ØØka-y	*awka-y	3
1. *y > Ø^{y}; +Y: lexical-final *a > e 2. metathesis wy > yw 3. metathesis ky > yk; *y > y^{y}; +Y: *a > e					

GIDAR

Gidar	*hawa* xawa	*x-awa	*xØ-awØa	*xa-awka	

grain, seed

PCC *(RED-) **x^{w}(a)r(a)fa** (-y, -k^{w}, -n, -ɗ; FV)

BATA

Jimi	*hurəfən* x^{w}ə^{w}rəfən	*x^{w}rfa-n	*x^{w}rfa-n	1
1. ə-epenthesis; lexical-final *a > ə; +W: ə > u				

MAFA

Cuvok	*h^{w}alfey* x^{w}alfa^{y}y	*x^{w}alf-ay^{y}	*x^{w}alfØ-a-y	*x^{w}arfa-a-y	1
1. *r > l; *y > y^{y}; +Y: *a > e					

MARGI

Bura	*h^{w}ulfa* x^{w}ə^{w}lfa	*x^{w}lfa	*x^{w}rfa	1
	hulfu x^{w}ə^{w}lfə^{w}			2
1. *r > l; ə-epenthesis; +W: ə > u 2. *r > l; ə-epenthesis; lexical-final *a > ə; +W: ə > u				

MANDARA

				√ C C Ca	
Podoko	*həlapa*	*xlpa		*x^{w}rfa(-y)(-ɗa)	1
Glavda	*xulfa* x^{w}ə^{w}lfa	*x^{w}lfa			2
	x^{w}əl	*x^{w}lØ	*x^{w}lfØ		3
Malgwa	*hulfe* x^{w}ə^{w}lfa^{y}	*x^{w}lfa-Ø^{y}	*x^{w}lfa-y		4
Dghwede	*xulfət'e* x^{w}ə^{w}lfəɗa^{y}	*x^{w}lfa-Ø^{y}-ɗa	*x^{w}lfa-y-ɗa		4

regarding the underlying vowel system: while the internal reconstruction worked on the assumption of /a, i, u/ being phonemic vowels in Lamang (allowing for conditioned allophones [e] and [o]), our PCC reconstructions only accept one phonemic vowel */a/.

				√ CaC Ca	
Matal	*faflәw*	*fa-fØlw	*RED-falx^{w}Ø	*RED-x^{w}arfa	5
	faflu faflw				6
1. *x^{w} > x; *r > l; *f > p; ə-epenthesis 2. *r > l; ə-epenthesis: +W: ə > u 3. *r > l; ə-epenthesis 4. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 5. *x^{w} > w; *r > l; multiple metathesis x^{w}lf > flx^{w}; ə-epenthesis 6. x^{w} > w > u; *r > l; multiple metathesis x^{w}lf > flx^{w}					

MOFU

				√ C C Ca	
Zulgo	*h^{w}ilfe* x^{w}ə^{y}lfa^{y}	*x^{w}lfa-Ø^{y}	*x^{w}lfa-y	*x^{w}rfa(-y)(-k^{w}/-d)	1
Gemzek	*hulfe* x^{w}ə^{w}lfa^{y}				2
Merey	*hulfe* x^{w}ə^{w}lfa^{y}				2
Moloko	*həlfe* xəlfa^{y}	*xlfa-Ø^{y}	*xlfa-y		3
Dugwor	*həlfe* xəlfa^{y}				3
Mofu North	*həlfaw* xəlfaw	*xlfa-w	*xlfa-k^{w}		4
Mofu-Gudur	*hulfaɗ* x^{w}ə^{w}lfaɗ	*x^{w}lfa-ɗ			5
				√ CaC Ca	
Mada[64]	*hoelfe* x^{w}a^{wy}lfa^{y}	*x^{w}alfa-Ø^{y}	*x^{w}alfa-y	*x^{w}arfa-y	6
				√ CaCaCa	
Ouldeme	*helefe* xa^{y}la^{y}fa^{y}	*xalafa-Ø^{y}	*xalafa-y	*x^{w}arafa-y	7
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 3. *x^{w} > x; *r > l; *y > Ø^{y}; +Y: lexical-final *a > e 4. *x^{w} > x; *r > l; *k^{w} > w 5. *r > l; ə-epenthesis; +W: ə > u 6. *r > l; *y > Ø^{y}; +Y: lexical-final *a > e; combined +W+Y: *a > œ 7. *r > l; *y > Ø^{y}; +Y: *a > e					

MAROUA

Giziga-Marva	*hulfa* x^{w}ə^{w}lfa	*x^{w}lfa	*x^{w}rfa	1
1. *r > l; ə-epenthesis: +W: ə > u				

LAMANG

Lamang	*hulfa* x^{w}ə^{w}lfa	*x^{w}lfa	*x^{w}rfa	1
Hdi	*hulfa* x^{w}ə^{w}lfa			1
1. *r > l; ə-epenthesis; +W: ə > u				

HIGI

				√ C C Ca	
Bana	*x^{w}əlfə*	*x^{w}lfa		*x^{w}rfa	1
Psikye	*fələx^{w}ə*	*flx^{w}a	*x^{w}lfa		2

[64] We are here reading the transcription *hoelfe* to indicate IPA œ, which is the characteristic Central Chadic allophone of /a/ under combined Y- and W-prosodies.

				√ C CaCa	
Kamwe-Futu[65]	*hulofʷo* xʷəʷlaʷfʷaʷ	*xʷlafa-Øʷ	*xʷlafa-kʷ	*xʷrafa-kʷ	3
1. *r > l; ə-epenthesis; lexical-final *a > ə 2. *r > l; * multiple metathesis xʷlf > flxʷ; ə-epenthesis; lexical-final *a > ə 3. *r > l; *kʷ > Øʷ; +W: f > fʷ; +W: ə > u; +W: *a > o					

KOTOKO-NORTH

Mpade	*gulfan* gʷəʷlfan	*gʷlfa-n	*xʷrfa-n	1
1. *xʷ (> ɣʷ) > gʷ; *r > l; +W: ə > u				

grandfather

PCC *(ba-, RED-) **dza** (-y, -kʷ, -n; FV)

BATA

Gude	*dzədzə*	*dz-dza		*RED-dza(-y/-n)	1
Jimi	*dzədzən* dzədzən	*dz-dzØ-n			2
Sharwa	*dʒidʒə* dzʸəʸdzʸə	*dz-dza-Øʸ	*dz-dza-y		3
Tsuvan	*dzədze* dzədzaʸ				4
1. ə-epenthesis; lexical-final *a > ə 2. ə-epenthesis 3. ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; lexical-final *a > ə 4. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e					

DABA

Buwal	*dʒedʒe* dzʸaʸdzʸaʸ	*dza-dza-Øʸ	*dza-dza-y	*RED-dza-y	1
Gavar	*dʒedʒi* dzʸaʸdzʸy	*dza-dzØ-yʸ			2
1. *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e 2. *y > yʸ > i; +Y: *dz > dʒ; +Y: *a > e					

SUKUR

Buwal	*dʒedʒe* dzʸaʸdzʸaʸ	*dza-dza-Øʸ	*dza-dza-y	*RED-dza-y	1
1. *y > Øʸ; +Y: *dz > dʒ; +Y: a > e					

HURZA

				√ C Ca	
Mbuko	*bidʒe* bəʸdzʸaʸ	*bØ-dza-Øʸ		*ba-dza-y	1
				√ CaCa	
Vame	*ʧedʒe* tsʸaʸdzʸaʸ	*tsa-dza-Øʸ	*tsa-dza-y	*RED-dza-y	2
1. ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; +Y: lexical-final *a > e 2. initial *dz > ts; *y > Øʸ; +Y: ts > tʃ; +Y: *dz > dʒ; +Y: *a > e					

MARGI

Margi	*ʧidʒi* tsʸəʸdzʸy	*ts-dzØ-yʸ	*(RED-)dza-y	1
Margi South	*ʧidʒi* tsʸəʸdzʸy			1
Kilba	*adʒi* adzʸy	*Øa-dzØ-yʸ		2
1. initial *dz > ts; ə-epenthesis; *y > yʸ; +Y: ts > tʃ; +Y: *dz > dʒ; +Y: ə > i; *y > i 2. *y > yʸ; +Y: *dz > dʒ; *y > i				

[65] We here consider it likely that the heavy impact of W-prosody originates from a combination of both phonological (*xʷ) and morphological (*{-kʷ}) labialisation.

MANDARA

Malgwa	*əggʸe* ədd^{y}a^{y}	*d-da-Øʸ	*d-da-yØ	*RED-dza-ya(-k^{w}a)	1
Mandara	*əggʸe* ədd^{y}a^{y}				1
	eggʸaaye a^{y}dd^{y}aaya^{y}	*d-da-Øa-y^{y}a	*d-da-k^{w}a-ya		2
1. *dz > d; ə-prothesis; *y > Øʸ; +Y: d (> dʸ) > gʸ; +Y: lexical-final *a > e 2. *dz > d; a-prothesis; metathesis yk^{w} > k^{w}y; *y > y^{y}; +Y: d > g^{y}; +Y: *a > e; (vowel length tentatively accounted for by loss of intervocalic*k^{w})					

LAMANG

Lamang	*dzidzi* dzə^{y}dzy	*dz-dzØ-y^{y}	*RED-dza-y	1
Hdi	*dzidzi* dzə^{y}dzy			1
1. ə-epenthesis; *y > y^{y} > i; +Y: ə > i				

HIGI

Bana	*ʤiʤi* dz^{y}ə^{y}dz^{y}y	*dzdzØ-y^{y}	*dzdza-y	1
1. ə-epenthesis; *y > y^{y} > i; +Y: *dz > ʤ; +Y: ə > i				

grass$_1$, grassland[66]

PCC *(ma-) **k^{w}(a)s(a)fa**

DABA

Gavar	*ŋkəsaf* ŋkəsaf	*ŋ-ksaf	*mØ-ksafØ	*ma-k^{w}safa	1
Buwal	*ŋkusaf* ŋk^{w}ə^{w}saf	*ŋ-k^{w}saf	*mØ-k^{w}safØ		2
Mbudum	*ŋgusof* ŋg^{w}ə^{w}sa^{w}f	*ŋ-g^{w}saf	*mØ-g^{w}safØ		3
1. *k^{w} > k; ə-epenthesis; homorganic assimilation *m > ŋ/_k 2. ə-epenthesis; +W: ə > u; homorganic assimilation *m > ŋ/_k^{w} 3. *k^{w} > g^{w}; ə-epenthesis; +W: ə > u; +W: *a > o; homorganic assimilation *m > ŋ/_g^{w}					

MAFA

Cuvok	*kusaf* k^{w}ə^{w}saf	*k^{w}saf	*k^{w}safØ	*k^{w}safa	1
1. ə-epenthesis; +W: ə > u					

HURZA

Mbuko	*saf*	*saf	*ØsafØ	*k^{w}safa	

MANDARA

Matal	*ksaf*	*ksaf	*ksafØ	*k^{w}safa	1
	kəsaf				2
1. *k^{w} > k 2. *k^{w} > k; ə-epenthesis					

[66] There are two similar but distinct reconstructed roots for 'grass', which may co-occur in the same languages. One of the roots may be generic and/or refer to grass-/bushland, while one (likely among several others) may refer to grass as a plant (or blades/leaves of grass) and/or specific kinds as used for different purposes, like thatching, feeding animals, etc.

MOFU

Gemzek	*kəsaf*	*ksaf	*ksafØ	*k^wsafa	1
Merey	*kəsaf*				1
Mofu North	*kusaf* $k^wə^w$saf	*k^wsaf	*k^wsafØ		2
Mofu-Gudur	*kusaf* $k^wə^w$saf				2
1. *k^w > k; ə-epenthesis 2. ə-epenthesis; +W: ə > u					

LAMANG

Lamang	*k^watsapa*	*k^watsapa	*k^wasafa	1
1. *s > ts; *f > p				

HIGI

				√ C C Ca	
Bana	*səfə*	*sfa	*Øsfa	*k^wsfa	1
				√ C CaCa	
Kirya	*fafa* s^yafa	*safa-Ø^y	*Øsafa-y	*k^wsafa-y	2
1. ə-epenthesis; lexical-final *a > ə 2. *y > Ø^y; +Y: *s > ʃ					

grass$_2$

PCC *(ma-) **k^w(a)z(a)na** (-y, -n, -k^w)

BATA

			√ C C Ca	
Sharwa	*huzənə* $x^wə^wzənə$	*x^wzna	*k^wzna(-n)	1
Gude	*kuzəna* $k^wə^wzəna$	*k^wzna		2
Jimi	*k^wəzənən* $k^wəzənən$	*k^wzna-n		3
			√ C CaCa	
Tsuvan	*huzene* $x^wə^wza^yna^y$	*x^wzana-Ø^y	*k^wzana-y	4
1. *k^w > x^w; ə-epenthesis; +W: ə > u; lexical-final *a > ə 2. ə-epenthesis; +W: ə > u 3. ə-epenthesis 4. *k^w > x^w; ə-epenthesis; +W: ə > u; *y > Ø^y; +Y: *a > e				

MAFA

Cuvok	*kəzeŋ* kəza^{y}ŋ	*kzaŋ-Ø^y	*kzanØ-y-k	*k^wzana-y-k^w	1
1. *k^w > k; ə-epenthesis; *y > Ø^y; +Y: *a > e; fusion *nk > ŋ					

TERA

Tera	*wuzən* $w^wə^wzən$	*w^wzn	*w^wznØ	*k^wzna	1
1. *k^w > w^w; ə-epenthesis; +W: ə > u					

HURZA

Mbuko	*gudʒed* $g^wə^wdz^ya^yɗ$	*g^{w}dzaɗ-Ø^y	*g^{w}dzadØ-y	*k^wzana-y	1
1. *k^w > g^w; *z > dz; *n (> r) > ɗ; ə-epenthesis; +W: ə > u; *y > Ø^y; +Y: dz > ʤ; +Y: *a > e					

MARGI

Bura	*kusar* $k^{w}ə^{w}sar$	$*k^{w}sar$	$*k^{w}sarØ$	$*k^{w}zana$	1
Margi	*psar* $s^{w}ar$	$*Ø^{w}sar$			2
Margi-South	*sar*	*Øsar			3
Kilba	*sar*				3
1. *z > s; *n > r; ə-epenthesis; +W: ə > u 2. $*k^{w}$ > $Ø^{w}$; *n > r; *z > s; +W: s > s^{w} (orthographic: ps) 3. *z > s; *n > r					

MANDARA

				√ C C Ca	
Podoko	*kuzəra* $k^{w}ə^{w}zəra$	$*k^{w}zra$		$*k^{w}zna$	1
				√ C CaCa	
Mandara	*kuʒare* $k^{w}ə^{w}z^{y}əra^{y}$	$*k^{w}zara-Ø^{y}$	$*k^{w}zara-y$	$*k^{w}zana-y$	2
1. *n > r; ə-epenthesis; +W: ə > u 2. *n > r; ə-epenthesis; +W: ə > u; *y > $Ø^{y}$; +Y: *z > ʒ; +Y: lexical-final *a > e					

MOFU

				√ C C Ca	
Muyang	*kʉzir* $k^{w}ə^{w}zə^{y}r$	$*k^{w}zr-Ø^{y}$	$*k^{w}zrØ-y$	$*k^{w}zna-y$	1
Zulgo	*k^{w}izir* $k^{w}ə^{y}zə^{y}r$				2
				√ C CaCa	
Ouldeme	*kuzar* $k^{w}ə^{w}zar$	$*k^{w}zar$	$*k^{w}zarØ$	$*(ma-)k^{w}zana(-y)$	3
Merey	*guzer* $g^{w}ə^{w}za^{y}r$	$*g^{w}zar-Ø^{y}$	$*g^{w}zarØ-y$		4
Mofu North	*guzer* $g^{w}ə^{w}za^{y}r$				4
Mofu-Gudur	*guzer* $g^{w}ə^{w}za^{y}r$				4
Moloko	*ag^{w}ədʒer* $ag^{w}ə^{w}dz^{y}a^{y}r$	$*a-g^{w}dzar-Ø^{y}$	$*Øa-g^{w}dzarØ-y$		5
Dugwor	*gudʒed* $g^{w}ə^{w}dz^{y}a^{y}ɗ$	$*g^{w}dzaɗ-Ø^{y}$	$*g^{w}dzadØ-y$		6
				√ CaCaCa	
Gemzek	*kozer* $k^{w}a^{w}za^{y}r$	$*k^{w}azar-Ø^{y}$	$*k^{w}azarØ-y$	$*k^{w}azana-y$	7
1. *n > r; ə-epenthesis; +W: ə > u; *y > $Ø^{y}$; +Y: ə > i 2. *n > r; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i 3. *n > r; ə-epenthesis; +W: ə > u 4. $*k^{w}$ > g^{w}; *n > r; ə-epenthesis; +W: ə > u; *y > $Ø^{y}$; +Y: *a > e 5. $*k^{w}$ > g^{w}; *n > r; ə-epenthesis; *y > $Ø^{y}$; +Y: dz > ʤ; +Y: *a > e 6. $*k^{w}$ > g^{w}; *n (> r) > ɗ; ə-epenhesis; +W: ə > u; *y > $Ø^{y}$; +Y: dz > ʤ; +Y: *a > e 7. *n > r; +W: *a > o; *y > $Ø^{y}$; *y > $Ø^{y}$; +Y: *a > e					

MAROUA

Giziga-Muturwa	*giziŋ* $gə^{y}zə^{y}ŋ$	$*gzŋ-Ø^{y}$	$*gznØ-y-k$	$*k^{w}zna-y-k^{w}$	1
Giziga-Marva	*giziŋ* $gə^{y}zə^{y}ŋ$				1
Mbazla	*giʒiŋ* $gə^{y}z^{y}ə^{y}ŋ$				2
1. radical $*k^{w}$ (> g^{w}) > g; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i; suffixal $*k^{w}$ > k; fusion *nk > ŋ 2. radical $*k^{w}$ (> g^{w}) > g; ə-epenthesis; *y > $Ø^{y}$; +Y: *z > ʒ; +Y: ə > i; suffixal $*k^{w}$ > k; fusion *nk > ŋ					

LAMANG

				√ C C Ca	
Hdi	*kuzuŋ* $k^wə^wzə^wŋ$	$*k^wzŋ$	$*k^wznØ$-k	$*k^wzna$-k^w	1
				√ C CaCa	
Lamang	*kuzam* $k^wə^wzam$	$*k^wzam$	$*k^wzanØ$	$*k^wzana$	2
1. ə-epenthesis; +W: ə > u; suffixal $*k^w$ > k; fusion *nk > ŋ 2. *n > m (see 3.4.5); ə-epenthesis; +W: ə > u					

HIGI

Psikye	$g^wəzə$	$*g^wza$	$*g^wzØa$	$*k^wzna$	1
	$g^wəzu$ $g^wəzə^w$				2
	guzu $g^wə^wzə^w$				2
Bana	$g^w(ə)zən$	$*g^wzn$	$*g^wznØ$		3
Kirya	*swən*	*swn	*wsnØ		4
1. $*k^w$ > g^w; ə-epenthesis; lexical-final *a > ə 2. $*k^w$ > g^w; ə-epenthesis; lexical-final *a > ə; +W: ə > u 3. $*k^w$ > g^w; ə-epenthesis 4. $*k^w$ > w; *z > s; metathesis ws > sw; ə-epenthesis					

grasshopper

PCC *(Ca-) **x^w(a)y(a)k^wa** (-y, -dà, -k^w, -n; FV)

BATA

			√ C C Ca	
Gude	*ayiwa* $ayə^ywa$	$*Øy^ywa$	$*x^wyk^wa$	1
			√ CaCaCa	
Bata	*qaawe* $x^{wy}aawa^y$	$*x^waØ^yawa$	$*x^wayak^wa$	2
1. $*k^w$> w; a-prothesis; ə-epenthesis; *y > y^y; +Y: ə > i 2. $*k^w$> w; *y > $Ø^y$; +Y: lexical-final *a > e; unclear transcription convention $*x^{wy}a$ > qa				

DABA

			√ CaC Ca	
Daba	*wayəp'*	wayp'Ø	$*x^waykw^a$	1
			√ CaCaCa	
Buwal	*wayak*	*wayakØ	$*x^wayak^wa$	2
Gavar	*wayak*			2
Mbudum	*wayak*			2
1. $*x^w$ > w; $*k^w$ (> b) > p' [ɓ]; ə-epenthesis 2. $*x^w$ > w; $*k^w$ > k				

MAFA

Cuvok	*yak*^{w}	$*ØyakwØ$	$*x^wyak^wa$	

MARGI

Bura	*hauwa* xa^wwa	$*xaØw^wa$		$*x^waykwa$	1
Kilba	*ha'yi* xaʔyə^y	$*xaʔy^ya$	$*xayʔa$		2
1. $*k^w$ > w+^{w}; diphthongisation of *a+^{w} > au 2. $*k^w$ (> k) > ʔ; metathesis yʔ > ʔy; lexical-final *a > ə; *y > y^y; +Y: ə > i					

MANDARA

			√ C C Ca	
Mandara	*iwa* ywa	*Øywa	*x^wyk^wa	1
Malgwa	*iiwe* $ə^ywa^y$	*Øy^ywa		2
			√ C CaCa	
Podoko	*hiyawa* $xə^ya^ywa$	*xy^yawa	*x^wyak^wa	3
			√ CaCaCa	
Matal	*hayaw*	*xayawØ	*x^wayak^wa	4
1. *k^w > w; *y > i 2. *k^w > w; ə-prothesis; *y > y^y; *y > i; +Y : ə > i; +Y: lexical-final *a > e 3. *x^w > x; *k^w > w; ə-epenthesis; *y > y^y; +Y : ə > i 4. *x^w > x; *k^w > w				

MOFU

			√ C CaCa	
Mofu-Gudur	*ayak^w*	*Øyak^{w}Ø	*x^wyak^wa	1
Mada	*ayaw*	*ØyawØ		2
Muyang	*eyew* a^ya^yw	*Øy^yawØ		3
			√ CaCaCa	
Mofu North	*h^wayak^w*	*x^wayak^{w}Ø	*(Ca-)x^wayak^{w}a	
Zulgo	*hayaw*	*xayawØ		4
Moloko	*heyew* xa^ya^yw	*xay^{y}awØ		5
Gemzek	*heyew* xa^ya^yw			5
Merey	*heyew* xa^ya^yw			5
Dugwor	*h^weyek* $x^wa^ya^yk$	*x^way^{y}akØ		6
Ouldeme[67]	*awayak*	*Øa-wayakØ		7
1. a-prothesis 2. a-prothesis; *k^w > w 3. a-prothesis; *k^w > w; *y > y^y; +Y: *a > e 4. *x^w > x; *k^w > w 5. *x^w > x; *k^w > w; *y > y^y; +Y: *a > e 6. *k^w > k; *y > y^y; +Y: *a > e 7. *x^w > w; *k^w > k				

MAROUA

			√ C C Ca	
Giziga-Muturwa	*yuku* $yə^wk^wə^w$	*Øyk^{w}a	*x^wyk^wa	1
	yuku $yə^wkw$	*Øykw^{w}Ø		2
			√ CaCaCa	
Giziga-Marva	*hoyok* $x^wa^wya^wk$	*x^{w}ayak^{w}Ø	*x^wayak^wa	3
1. ə-epenthesis; lexical-final *a > ə; +W: ə > u 2. Alternative analysis: re-segmentalisation *k^w > k+w; ə-epenthesis; +W: ə > u; w > u 3. +W: *a > o				

[67] The nature of the assumed initial consonant of the prefix in Ouldeme remains obscure for lack of comparative evidence.

LAMANG [68]

Lamang	*hɗeŋe* xɗaʸŋaʸ	*xØʸ-ɗa-ŋa	*xyØØ-ɗa-k-na	*xʷykʷa(-ɗa-kʷ-na)	1
Hdi	*hi'i* xəʸʔy	*xʔyʸ	*xyʔØ		2
1. *xʷ > x; *y > Øʸ; see fn. 2. *xʷ > x; *kʷ (> k) > ʔ; ə-epenthesis; metathesis yʔ > ʔy; *y > yʸ > i; +Y: ə > i					

HIGI

Kamwe-Futu	*hagi* xagy	*xagy	*xaygØ	*xʷaykʷa	1
Kamwe-Nkafa	*hagʸi* xagʸy	*xagyʸ			2
Kirya	*hay*	*xayØØ			
Bana	*xay*				
1. *xʷ > x; *kʷ > g; metathesis yg > gy; *y > i 2. *xʷ > x; *kʷ > g; metathesis yg > gy; *y > yʸ > i; +Y: g > gʸ					

KOTOKO-NORTH

Mpade	*hayo* xayaʷ	*xayaØʷ	*xayawØ	*xʷayakʷa	1
	gayo gayaʷ	*gayaØʷ	*gayawØ		2
1. *xʷ > x; *kʷ > w; +W: lexical-final *a > o 2. *xʷ (> x > ɣ) > g; *kʷ > w > Øʷ; +W: lexical-final *a > o					

GIDAR

Gidar[69]	*heyɗeŋ* xaʸyɗaʸŋ	*xayʸ-ɗa-ŋ	*xayØØ-ɗa-k-n	*xʷaykʷa-ɗa-kʷ-n	1
	heeyɗeŋ xaaʸyɗaʸŋ	*xaa-yʸ-ɗa-ŋ	*xaØaØØ-y-ɗa-k-n	*xʷayakʷa-y-ɗa-kʷ-n	1
1. *xʷ > x; *y > yʸ; see fn.					

grinding stone

PCC *(ma-) **gʷ(a)v(a)na** (-a, -y, -kʷ)

DABA

				√ C C Ca	
Gavar	*ŋvən*	*ŋvn	*mØ-gvnØ	*ma-gʷvna	1
				√ C CaCa	
Buwal	*ŋvan*	*ŋvan	*mØ-gvanØ	*ma-gʷana	2
1. *gʷ > g; fusion *mg > ŋ; ə-epenthesis 2. *gʷ > g; fusion *mg > ŋ					

[68] Note on Lamang (LAMANG) and Gidar (GIDAR):

Lamang *hɗeŋe* 'locust' and Gidar *heeyɗeŋ* 'locuste (migrateur), sauterelle, criquet', *heyɗeŋ* ~ *heyɗeŋ* 'criquet, sauterelle' would appear to be cognates, but may not belong to the same root as all the other examples in this set. If they did, this would point to hitherto unidentified suffixal augmental material of the shape *-ɗa-kʷ-n(a) plus phonological Y-prosody, i.e.

Lamang √ C C Ca *xØʸØØ-ɗaʸ-k-naʸ > *hɗeŋe*
Gidar √ CaC Ca *xayʸØØ-ɗaʸ-k-n > *heyɗeŋ*

The long vowel in Gidar *heeyɗeŋ* could tentatively be explained by the assumption of root-augmental *{-y} and deletion of root-internal *y between a_a.

[69] See footnote 68.

Tera

Tera	*vəna*	*vna	*Øvna	*g^{w}vna	1
1. ə-epenthesis					

Sukur

Sukur	*ban*	*ban	*ØbanØ	*g^{w}vana	1
1. *v > b					

Hurza

Mbuko	*van*	*van	*ØvanØ	*g^{w}vana	
Vame	*van*				

Margi

Bura	*bur* bwr	*bwr	*wbrØ	*g^{w}vna	1
	bura bwra	*bwra	*wbra		1
Kilba	*bəra*	*bra	*Øbra		2
1. *v > b; *n > r; *g^{w} > w > u; metathesis wb > bw 2. *v > b; *n > r; ə-epenthesis					

Mandara

				√ C C Ca	
Malgwa	*ugvəra* ə^{w}g^{w}vəra	*g^{w}vra		*g^{w}vna	1
Dghwede	*vəra*	*vra	*Øvra		2
Matal	*vəl*	*vl	*ØvlØ		3
				√ C CaCa	
Podoko	*mavara*	*ma-vara	*ma-Øvara	*(ma-)g^{w}vana(-y)	4
Mandara	*uvera* wva^{y}ra	*wvara-Ø^{y}	*g^{w}vara-y		5
Glavda	*vaa*	*vaØa	*Øvara		6
				√ CaCaCa	
Glavda	*va:ra*	*vaØara	*vag^{w}ara	*g^{w}avara	7
1. *n > r; ə-prothesis; +W: ə > u; ə-epenthesis 2. *n > r; ə-epenthesis 3. *n (> r) > l; ə-epenthesis 4. *n > r 5. *n > r; *g^{w} > w > u; *y > Ø^{y}; +Y: *a > e 6. *n > r; (vowel length accounted for by loss of intervocalic r) 7. *n > r; metathesis g^{w}v > vg^{w} (vowel length accounted for by loss of intervocalic *g^{w})					

Mofu

Ouldeme	*avar*	*a-var	*Øa-ØvarØ	*(ma-)g^{w}vana(-y)	1
Muyang	*avar*				1
Moloko	*ver* va^{y}r	*var-Ø^{y}	*ØvarØ-y		2
Merey	*ber* ba^{y}r	*bar-Ø^{y}	*ØbarØ-y		3
Gemzek	*ber* ba^{y}r				3
	bor ba^{w}r	*Ø^{w}bar	*Ø^{w}barØ		4
1. *n > r 2. *n > r; *y > Ø^{y}; +Y: *a > e 3. *n > r; *v > b; *y > Ø^{y}; +Y: *a > e 4. *n > r; *v > b; *g^{w} > Ø^{w}; +W: *a > o					

MAROUA

Giziga-Marva	*voŋ* va^{w}ŋ	*Ø^{w}vaŋ	*Ø^{w}vanØ-k	*g^{w}vana-k^{w}	1
Mbazla	*vaŋ*	*vaŋ	*ØvanØ-k		2
1. *k^{w} > k; fusion nk > ŋ; *g^{w} > Ø^{w}; +W: *a > o 2. *k^{w} > k; fusion nk > ŋ					

LAMANG

Lamang	*buna* bwna	*bwna	*wbna	*g^{w}vna	1
Hdi	*buna* bwna				1
1. *g^{w} > w > u; *v > b; metathesis wb > bw					

HIGI

Kamwe-Nkafa	*vəna*	*vna	*Øvna	*g^{w}vna	1
Kamwe-Futu	*vəna*				1
Kirya	*vəna*				1
1. ə-epenthesis					

KOTOKO-CENTRAL

Lagwan	*vin* < və^{y}n	*vn-Ø^{y}	*ØvnØ-y	*g^{w}vna-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

KOTOKO-SOUTH

Mazera	*vuna* vwna	*vwna	*wvna	*g^{w}vna	1
1. *g^{w} > w > u; metathesis wv > vw					

MUSGUM

Mbara	*funay* fwnay	*fwn-ay	*wfnØ-a-y	*g^{w}vna-a-y	1
1. *v > f; *g^{w} > w > u; metathesis sf > fw					

GIDAR

Gidar	*buən* bwən	*bwn	*wbnØ	*g^{w}vna	1
1. *g^{w} > w > u; *v > b; metathesis wb > bw; ə-epenthesis					

ground squirrel

PCC ***x(a)y(a)ɣa*** (-RED, -k^{w}, -n)

HURZA

Mbuko	*ayah*	*ayax	*ØayaxØ	*xayaɣa	1
Vame	*ayah*				1
1. *ɣ > x					

MANDARA

Matal	*hayaŋ*	*xaya-ŋ	*xayaØØ-k-n	*xayaɣa(-RED/-k^{w}-n)	1
Mandara	*yaye* yaya^{y}	*ya-y^{y}a	* ØØyaØØ-RED		2
Malgwa	*yeye* ya^{y}ya^{y}				2
Glavda	*ayaʁayaʁa*	*ayaɣa-yaɣa	*Øayaɣa-RED		
	ayaɣaya	*ayaɣa-yaØØ			
1. *k^{w} > k; fusion kn > ŋ 2. *y > y^{y}; +Y: *a > e					

Mofu

				√ C C Ca	
Dugwor	*hiyaŋ* xəʸyaŋ	*xyʸa-ŋ	*xyØa-k-n	*xyɣa-kʷ-n	1
Zulgo	*hiyeŋ* xəʸyaʸŋ				2
Gemzek	*hiyeŋ* xəʸyaʸŋ				2
Merey	*hiyeŋ* xəʸyaʸŋ				2
				√ CaCaCa	
Moloko	*ayah*	*ayax	*ØayaxØ	*xayaɣa(-kʷ-n)	3
Mofu-Gudur	*ayaŋ*	*aya-ŋ	*ØayaØØ-k-n		4
Ouldeme	*ayeŋ* ayaʸŋ	*ayʸa-ŋ	*ØayaØØ-k-n		5
Muyang	*eyeŋ* aʸyaʸŋ				5

1. *kʷ > k; fusion kn > ŋ; ə-epenthesis; *y > yʸ; +Y: ə > i
2. *kʷ > k; fusion kn > ŋ; ə-epenthesis; *y > yʸ; +Y: ə > i; +Y: *a > e
3. *ɣ > x
4. *kʷ > k; fusion kn > ŋ
5. *kʷ > k; fusion kn > ŋ; *y > yʸ; +Y: *a > e

Maroua [70]

Giziga-Muturwa	*yaw*	*yaw	*ØØyawØ	*xayaɣa	1
	ayaw	*ayaw	*ØayawØ		1
Giziga-Marva	*ayew* ayaʸw	*ayʸaw	*ØayawØ		2

1. *ɣ > w
2. *ɣ > w; *y > yʸ; +Y: *a > e

Lamang

Lamang	*yaɣe* yaɣaʸ	*yʸaɣa	*Øyaɣa	*xyaɣa	1
Hdi	*yaɣi* yaɣəʸ	*yʸaɣa			2

1. *y > yʸ; +Y: lexical-final *a > e
2. lexical-final *a > ə; *y > yʸ; +Y: ə > i

Kotoko-North

Mpade	*yaga*	*yaga	*Øyaga	*xyaɣa	1

1. *ɣ > g

Kotoko-South

Mazera	*ayahe* ayaxaʸ	*ayʸaxa	*Øayaxa	*xayaɣa	1

1. *ɣ > x; *y > yʸ; +Y: lexical-final *a > e

Musgum

Mbara	*yaya*	*ya-ya	*ØyØa-RED	*xyɣa-RED	

[70] Gravina (2015) raises the valid point that "[t]he reflex *w in the Giziga languages … may imply that *ɣ was labialised" – a lead that we have not followed up in this study, because we found no corroborative evidence from other languages.

grow (up/old), bring up, raise, to

PCC *(ma-, k^{w}a-) **g(a)ra** (-a, -y, -k^{w}, -n, -b; FV)

BATA

Gude	*gərə* gərə	*gra		*gra((-k^{w})-n)	1
Jimi	*gərən* gərən	*gra-n			1
Tsuvan	*gəlkən* gəlkən	*gl-k-n	*glØ-k^{w}-n		2
1. ə-epenthesis; lexical-final *a > ə 2. *r > l; *k^{w} > k; ə-epenthesis					

DABA

				√ C Ca	
Daba	*gəla*	*gla		*(k^{w}a-)gra(-y)	1
	gəl	*glØ			1
Gavar	*gəl*				1
Mbudum	*gəl*				1
	kəgil kəgə^{y}l	*k-gl-Ø^{y}	*kØ-glØ-y		2
				√ CaCa	
Buwal	*gal*	*galØ		*(ma-)gara	3
	^{ŋ}gal ŋgal	*mØ-gal	*ma-galØ		4
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 3. *r > l 4. *r > l; homorganic assimilation *m > ŋ/_g					

MAFA

			√ C Ca	
Cuvok	*gəla*	*gla	*gra	1
			√ CaCa	
	gal	*galØ	*gara	2
1. *r > l; ə-epenthesis 2. *r > l				

TERA

Tera	*gor* ga^{w}r	*gar-Ø^{w}	*garØ-k^{w}	*gara-y-k^{w}	1
	gori ga^{w}ry	*gar-y-Ø^{w}	*garØ-y-k^{w}		2
1. *k^{w} > Ø^{w}; +W: *a > o 2. *k^{w} > Ø^{w}; +W: *a > o; *y > i					

SUKUR

Sukur	*gər*	*grØ	*gra	1
1. ə-epenthesis				

HURZA

			√ C Ca	
Vame	*gəra*	*gra	*gra	1
	ɣəra	*ɣra		2
			√ CaCa	
	ɣala	*ɣala	*gara	3
Mbuko	*har* xar	*xarØ		4

1. ə-epenthesis 2. *g > ɣ; ə-epenthesis 3. *g > ɣ; *r > l 4. *g (> ɣ) > x					

MARGI

Bura	kila kəʸla	*kla-Øʸ	*kla-y	*gra-y	1
1. *r > l; *g > k; ə-epenthesis; *y > Øʸ; +Y: ə > i					

MANDARA

				√ C Ca	
Podoko	*gəla*	*gla		*gra	1
				√ CaCa	
Mandara	*gela* gaʸla	*gala-Øʸ	*gala-y	*gara-y	2
1. *r > l; ə-epenthesis 2. *r > l; *y > Øʸ; +Y: *a > e					

MOFU

				√ C Ca	
Ouldeme	*gəleŋ* gəlaʸŋ	*gla-Øʸ-ŋ	*gla-y-k-n	*(ma-)gra (-a-y(-kʷ-n)/-ba)	1
Zulgo	*gəlba*	*glØ-ba			2
Merey	*gəl*	*glØ			2
Mofu-Gudur	*gəl*				2
Gemzek	*gəl*				2
	megəle maʸgəlaʸ	*ma-gla-Øʸ	*ma-gla-y		3
Mofu North	*megəley* maʸgəlaʸy	*ma-glØ-a-yʸ			4
Dugwor	*məgəley* məgəlaʸy				
Mada	*magla*	*ma-gla			5
				√ C Ca	
Muyang	*gal*	*galØ		*gara	5
Moloko	*gar*	*garØ			
1. *r > l; *kʷ > k; fusion kn > ŋ; ə-epenthesis; *y > Øʸ; +Y: *a > e 2. *r > l; ə-epenthesis 3. *r > l; ə-epenthesis; *y > Øʸ; +Y : *a > e 4. *r > l; ə-epenthesis; *y > yʸ; +Y : *a > e 5. *r > l					

MAROUA

Giziga-Marva	*gla*	*gla		*gra(-y)	1
	gəl	*glØ			2
Giziga-Muturwa	*gil* gəʸl	*gl-Øʸ	*glØ-y		3
1. *r > l 2. *r > l; ə-epenthesis 3. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i					

LAMANG

			√ C Ca	
Lamang	*gla*	*gla	*gra(-a-y)	1
Hdi	*gəlay*	*glØ-a-y		2
			√ CaCa	
	halay xalay	*xalØ-a-y	*gara-a-y	3
1. *r > l 2. *r > l; ə-epenthesis 3. *g (> ɣ?) > x; *r > l				

HIGI

Kirya	*kəl*	*klØ		*gra(-y/-k^w)	1
Bana	*k(ə)li* kəly	*klØ-y			2
Kamwe-Futu	*kəlo* kəla^w	*kla-Ø^w	*kla-k^w		3
1. *r > l; *g > k; ə-epenthesis 2. *r > l; *g > k; ə-epenthesis; *y > i 3. *r > l; *g > k; ə-epenthesis; *k^w > Ø^w; +W: lexical-final *a > o					

guineafowl

PCC *(na-) **dz(a)v(a)na** (-k^w, -n; FV)

BATA

Sharwa	*zavunə* zavə^{w}nə	*zavna-Ø^w	*zavna-k^w	*dzavna-k^w(-n)	1
Gude	*zoovəna* za:^{w}vəna				2
Jimi	*zav^{w}ənən*	*zavn-Ø^w-n	*zavnØ-k^w-n		3
Tsuvan	*zavənkən*	*zavn-k-n	*zavnØ-k-n		4
1. *dz > z; ə-epenthesis; *k^w > Ø^w; +W: ə > u; lexical-final *a > ə 2. *dz > z; ə-epenthesis; *k^w > Ø^w; +W: a > o; vowel length unaccounted for 3. *dz > z; ə-epenthesis; *k^w > Ø^w; +W: v > v^w 4. *dz > z; ə-epenthesis; *k^w > k					

DABA

			√ CaC Ca	
Gavar	*zavən*	*zavnØ	*dzavna	1
Daba	*zavən*			1
			√ CaCaCa	
Buwal	*zavan*	*zavanØ	*dzavana(-k^w)	2
Mbudum	*zavaŋ*	*zavaŋ	*zavanØ-k	3
1. *dz > z; ə-epenthesis 2. *dz > z 3. *dz > z; *k^w > k; fusion nk > ŋ				

MAFA

Mafa	*zapan*	*zapanØ	*dzavana(-k^w)	1
Cuvok	*zapaŋ*	*zapaŋ	*zapanØ-k	2
1. *dz > z; *v > p 2. *dz > z; *v > p; *k^w > k; fusion nk > ŋ				

Tera

Tera	*ʧivan* $ts^{y}ə^{y}van$	*tsvan-Ø^{y}	*tsvanØ-y	*dzvana-y	1
	ʃivan $s^{y}ə^{y}van$	*svan-Ø^{y}	*svanØ-y		2
1. *dz > ts; ə-epenthesis; *y > Ø^{y}; +Y: ts > tʃ; +Y: ə > i 2. *dz (>ts) > s; ə-epenthesis; *y > Ø^{y}; +Y: s > ʃ; +Y: ə > i					

Sukur

Sukur	*zabən*	*zabnØ	*dzavna	1
1. *dz > z; *v > b; ə-epenthesis				

Hurza

				√ CaC Ca	
Vame	*savnak*	*savna-k		*dzavna-k^{w}	1
				√ CaCaCa	
Mbuko	*nzavan*	*n-zavan	*nØ-zavanØ	*na-dzavana	2
1. *dz (> z) > s; *k^{w} > k 2. *dz > z					

Margi

Margi	*tsəvər*	*tsvrØ	*dzvna	1
Kilba	*tsəvər*			1
Bura	*tsəvəra*	*tsvra		1
1. *dz > ts; *n > r; ə-epenthesis				

Mandara

				√ CaC Ca	
Matal	*zavər*	*zavrØ		*(na-)dzavna(-y)	1
Podoko	*za^{m}bəra* za^{m}bəra	*Ø^{n}-zabra	*n^{n}Ø-zabra		2
Glavda	*zabə*	*zabØa			3
	žeeb $z^{y}a^{y}a^{y}b$	*zaab-Ø^{y}	*zaabØØ-y		4
	ʒabra $z^{y}abra$	*zabra-Ø^{y}	*zabra-y		5
Malgwa	*ʒebre* $z^{y}abra^{y}$				6
				√ CaCaCa	
Mandara	*ʒabera* $z^{y}aba^{y}ra$	*zabara-Ø^{y}		*dzavana-y	6
1. *dz > z; *n > r; ə-epenthesis 2. *dz > z; *n > r; *v > b; ə-epenthesis; *n > Ø^{n}; +N: b > ^{m}b 3. *dz > z; *v > b; lexical-final *a > ə 4. *dz > z; *v > b; *y > Ø^{y}; +Y: z > ʒ; +Y: *a > e; origin of vowel length unaccounted for 5. *dz > z; *v > b; *n > r; *y > Ø^{y}; +Y: z > ʒ 6. *dz > z; *v > b; *n > r; *y > Ø^{y}; +Y: z > ʒ; +Y: *a > e					

Mofu

				√ CaC Ca	
Zulgo	*^{n}dzavər* *ndzavər*	*n-dzavr	*nØ-dzavrØ	*na-dzavna	1
				√ CaCaCa	
Ouldeme	*zavar*	*zavarØ		*(na-) dzavana(-y)	2
Mada	*zavar*				2
Mofu-Gudur	*tsavar*	*tsavarØ			3
Muyang	*dʒavar* $dz^{y}avar$	*dzavar-Ø^{y}	*dzavarØ-y		4
Moloko	*dʒavar* $dz^{y}avar$				4

Dugwor	*ⁿdʒavar* ndz^{y}avar	*n-dzavar-Ø^{y}	*nØ-dzavarØ-y		4
Mofu-Gudur	*ⁿdʒavar* ndz^{y}avar				4
Gemzek	*ⁿdzavar* ndzavar	*n-dzavar	*nØ-dzavar		5
Merey	*ⁿdzavar* ndzavar				5
Mofu North	*ⁿdzavar* ndzavar				5
1.*n > r; ə-epenthesis 2. *n > r; *dz > z 3. *n > r; *dz > ts 4. *n > r; *y > Ø^{y}; +Y: *dz > dʒ 5. *n > r					

Maroua

				√ C C Ca	
Giziga-Muturwa	*tʃuvuŋ* ts^{y}ə^{w}və^{w}ŋ	*tsvŋ^{w}-Ø^{y}	*tsvnØ-y-k^{w}	*dzvna-y-k^{w}	1
Mbazla	*tʃufuŋ* ts^{y}ə^{w}fə^{w}ŋ	*tsfŋ^{w}-Ø^{y}	*tsfnØ-y-k^{w}		2
				√ C CaCa	
Giziga-Marva	*tʃuvon* ts^{y}ə^{w}fa^{w}n	*tsvan-Ø^{y}-Ø^{w}	*tsvanØ-y-k^{w}	*dzvana-y-k^{w}	3
1. *dz > ts; *y > Ø^{y}; +Y: ts > tʃ; ə-epenthesis; fusion nk^{w} > ŋ^{w}; +W: ə > u 2. *dz > ts; *y > Ø^{y}; +Y: ts > tʃ; *v > f; ə-epenthesis; fusion nk^{w} > ŋ^{w}; +W: ə > u 3. *dz > ts; *y > Ø^{y}; +Y: ts > tʃ; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; +W: *a > o					

Lamang

			√ C C Ca	
Hdi	*zəvnək*	*zvnØ-k	*dzvna-k^{w}	1
			√ CaCaCa	
Lamang	*zavanaka*	*zavana-ka	*dzavana-k^{w}a	2
1. *dz > z; *k^{w} > k; ə-epenthesis 2. *dz > z; *k^{w} > k				

Higi

Kamwe-Nkafa	*zəvənə*	*zvna		*dzvna(-y(-k^{w}))	1
Bana	*zəvəni* zəvəny	*zvnØ-y			2
Kamwe-Futu	*zivəno* zə^{y}vəna^{w}	*zvna-Ø^{y}-Ø^{w}	*zvna-y-k^{w}		3
1. *dz > z; ə-epenthesis; lexical-final *a > ə 2. *dz > z; ə-epenthesis; *y > i 3. *dz > z; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > Ø^{w}; +W: lexical-final *a > o					

Kotoko-North

			√ C CaCa	
Afade	*tsifan* tsə^{y}fan	*tsfanØ-Ø^{y}	*dzvana-y	1
			√ CaCaCa	
Mpade	*safan*	*safanØ	*dzavana	2
Malgbe	*safan*			2
Maltam	*safan*			2
1. *dz > ts; *v > f; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. *dz (> ts) > s; *v > f				

KOTOKO-CENTRAL

Lagwan	*zavan*	*zavanØ	*dzavana	1
Mser	*savan*	*savanØ		2
1. *dz > z 2. *dz (> z) > s				

KOTOKO-SOUTH

Mazera	*dʒavaŋ* $dz^{y}avaŋ$	*dzavaŋ-Ø^{y}	*dzavanØ-y-k	*dzavana-y-k^{w}	1
1. *y > Ø^{y}; +Y: *dz > dʒ; *k^{w} > k; fusion nk > ŋ					

MUSGUM

Mbara	*tʃeeveŋ* $ts^{y}a{:}^{y}va^{y}ŋ$	*tsavaŋ-Ø^{y}	*tsavanØ-y-k	*dzavana-y-k^{w}	1
1. *dz > ts; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e; *k^{w} > k; fusion nk > ŋ; vowel length unaccounted for					

GIDAR

Gidar	*zafʾna* zafʾna	*zafna-Øʔ	*zafna-ʔ	*(Na-)dzavna(-k^{w})	1
	zamvəna za^{m}vəna	*Ø^{n}-zavna	*N^{n}Ø-zavna		2
	samvəna sa^{m}vəna	*Ø^{n}-savna	*N^{n}Ø-savna		3
1. *dz > z; *v > f; *k^{w} > k > ʔ; ʔ > Øʔ; ʔ: f > fʔ 2. *dz > z; ə-epenthesis; *N > Ø^{n}; +N: *v > ^{m}v 3. *dz (> z) > s; ə-epenthesis; +N: *v > ^{m}v					

hair$_{1}$

PCC *(ma-) **s(a)b(a)ta** (-y, -k^{w})

BATA					
				√ C C Ca	
Sharwa	*ʃəɓ^{w}əti* s^{y}əɓ^{w}əty	*sɓt-y^{y}-Ø^{w}	*sɓtØ-y-k^{w}	*sbta-y-k^{w}	1
Tsuvan	*suɓte* sə^{w}ɓ^{w}ta^{y}	*sɓ^{w}ta-Ø^{y}-Ø^{w}	*sɓta-y-k^{w}		2
				√ CaC Ca	
Bata	*ʃewto* $s^{y}a^{y}wta^{w}$	*saw^{w}ta-Ø^{y}	*sawta-y	*sabta-y	3
1. *b > ɓ; *k^{w} > Ø^{w}; +W: ɓ > ɓ^{w}; ə-epenthesis; *y > y^{y}; +Y: *s > ʃ; *y > i 2. *b > ɓ; *k^{w} > Ø^{w}; ə-epenthesis; +W: 6 > 6w; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 3. *b > w > w^{w}; +W: lexical-final *a > o; *y > Ø^{y}; +Y: *s > ʃ; +Y: *a > e					

SUKUR

Sukur	*ʃu^{m}but* s^{y}ə^{wm}bə^{w}t	*Ø^{n}-sbt-Ø^{y}-Ø^{w}	*m^{n}Ø-sbtØ-y-k^{w}	*ma-sbta-y-k^{w}	1
1. *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; *k^{w} > Ø^{w}; +W: ə > u					

MOFU

Moloko	*sə^{m}betewk* sə^{m}ba^{y}ta^{y}wk	*Ø^{n}-sbata-Ø^{y}-kw	*m^{n}Ø-sbata-Ø^{y}-k^{w}	*ma-sbata-y-k^{w}	1
1. *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis; *y > Ø^{y}; +Y: *a > e; *k^{w} > k+w > wk (metathesis)					

LAMANG

Lamang	*sidi* sə^{y}dy	*sØdØ-y^{y}	*sbta-y	1
Hdi	*səwidi* səwə^{y}dy	*swdØ-y^{y}		2
1. *t > d; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *t > d; *b > w; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i				

HIGI

Kamwe-Nkafa	*ʃinᵘi* sʸəʸntʸy	*snt-yʸ	*smtØ-y	*sbta-y	1
Bana	*səti* səty	*sØt-y			2
	ʃti sʸty	*sØt-yʸ			3
1. *b > m > n (homorganic assimilation: m > n/_t); ə-epenthesis; *y > yʸ; +Y: ə > i; +Y: *s > ʃ; +Y: t > tʸ; *y > i 2. ə-epenthesis; *y > i 3. *y > yʸ; +Y: *s > ʃ; *y > i					

hair$_2$

PCC *(ma-) **gʷ(a)tsa** (-y, -kʷ)

MAFA

Mafa	*gʷatsə*	*gʷatsa		*(ma-)gʷatsa(-y)	1
Cuvok	*ŋgʷetʃ* ŋgʷaʸtsʸ	*ŋ-gʷats-Øʸ	*mØ-gʷatsØ-y		2
1. lexical-final *a > ə 2. homorganic assimilation *m > ŋ/_gʷ; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e					

TERA

Tera	*ɣos* ɣʷaʷs	*ɣʷas	*ɣʷasØ	*gʷatsa(-y)	1
Ga'anda	*weeʃa* waʸsʸa	*wasa-Øʸ	*wasa-y		3
1. *ts > s; *gʷ > ɣʷ; +W: *a > o 2. *ts > s; *gʷ > ɣʷ; +W: *a > o; *y > i 3. *ts > s; *gʷ > w; *y > Øʸ; +Y: s > ʃ; +Y: *a > e; vowel length unaccounted for					

MANDARA

Glavda	*gud͡ʒa* gʷəʷdzʸa	*gʷdza-Øʸ	*gʷdza-y	*(ma-)gʷtsa(-y)	1
Malgwa	*ugdʒe* əʷgʷdzʸaʸ				2
Dghwede	*guⁿdza* gʷəʷⁿdza	*Øⁿ-gʷdza	*mØ-gʷdza		3
Podoko	*ᵑgutsa* ŋgʷəʷtsa	*ŋ-gʷtsa	*mØ-gʷtsa		4
Matal	*aŋidz* aŋəʸdz	*Øa-ⁿgdz-Øʸ	*mⁿa-gdzØ-y		5
	aŋidʒ aŋəʸdzʸ				6
1. *ts > dz; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: dz > dʒ 2. *ts > dz; ə-prothesis; +W: ə > u; *y > Øʸ; +Y: dz > dʒ; lexical-final *a > e 3. *ts > dz; ə-epenthesis; +W: ə > u; *m > Øⁿ; +N: dz > ⁿdz 4. ə-epenthesis; +W: ə > u; homorganic assimilation *m > ŋ/_gʷ 5. *ts > dz; *gʷ > g; ə-epenthesis; *y > Øʸ; +Y: ə > i; *m > Øⁿ; +N: g > ᵑg > ŋ 6. *ts > dz; *gʷ > g; ə-epenthesis; *y > Øʸ; +Y: dz > dʒ; +Y: ə > i; *m > Øⁿ; +N: g > ᵑg > ŋ					

MOFU

				√ C Ca	
Gemzek	*aᵑguz* aⁿgʷəʷz	*Øa-ⁿgʷz	*mⁿa-gʷzØ	*ma-gʷtsa(-y)	1
Muyang	*eŋgutʃ* aʸᵑgʷəʷts	*Øa-ⁿgʷts-Øʸ	*mⁿa-gʷtsØ-y		2
				√ CaCa	
Merey	*məkʷes* məkʷaʸs	*m-kʷas-Øʸ	*mØ-kʷasØ-y	*ma-gʷatsa-y	3
Dugwor	*aŋgʷetʃ* aⁿgʷaʸtsʸ	*Øa-ⁿgʷats-Øʸ	*mⁿa-gʷatsØ-y		4
Mofu-Gudur	*eŋgʷetʃ* aʸᵑgʷaʸtsʸ				4

1. *ts (> s) > z; ə-epenthesis; +W: ə > ʉ; *m > Øⁿ; +N: *gʷ > ᵑgʷ
2. ə-epenthesis; +W: ə > ʉ; *m > Øⁿ; +N: *gʷ > ᵑgʷ; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e
3. *gʷ > kʷ; *ts > s; ə-epenthesis ; *y > Øʸ; +Y: *a > e
4. *m > Øⁿ; +N: *gʷ > ᵑgʷ; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e

MAROUA

Giziga-Muturwa	*ngʷitʃi* ngʷəʸtsʸy	*n-gʷts-yʸ	*mØ-gʷtsØ-y	*ma-gʷtsa(-y/-kʷ)	1
Mbazla	*ᵑguzo'* ŋgʷəʷzaʷʔ	*ŋ-gʷza-ʔʷ	*mØ-gʷza-kʷ		2
1. ə-epenthesis; *y > yʸ; +Y: *ts > tʃ; +Y: ə > i; *y > i; partial assimilation *m > n/_gʷ 2. *ts (> s) > z; ə-epenthesis; *kʷ > ʔʷ; +W: ə > u; +W: lexical-final *a > o; homorganic assimilation *m > ŋ/_gʷ					

hare

PCC *(ma-, na-) **xʷ(a)d(a)y(a)va** (-kʷ, -n ; FV)

BATA

Gude	*pitʸa* pytʸa	*pyʸta	*Øtypa	*xʷdyva((-kʷ)-n)	1
Jimi	*vidən* vydən	*vyda-n	*ØdyvØ-n		2
Tsuvan	*vitikən* vytəʸkən	*vyʸt-k-n	*ØtyvØ-kʷ-n		3
1. *v (> f) > p; *d > t; multiple metathesis typ > pyt; *y > yʸ; +Y: t > tʸ; *y > i 2. multiple metathesis dyv > vyd; ə-epenthesis; *y > i 3. *d > t; multiple metathesis tyv > vyt; *kʷ > k; *y > i; ə-epenthesis; *y > yʸ; +Y: ə > i					

DABA

				√ C C C Ca	
Buwal	*maⁿdəvan*	*ma-ⁿdva-n	*mⁿa-ØdØva-n	*ma-xʷdyva-n	1
Gavar	*maⁿdəvan*				1
				√ C CaC Ca	
Daba	*maⁿdavən*	*ma-ⁿdav-n	*mⁿa-ØdaØvØ-n	*ma-xʷdayva(-kʷ)-n	1
Mbudum	*məⁿdeveŋ* mənᵈaʸvaʸŋ	*m-ⁿdaØʸva-ŋ	*mⁿØ-Ødayva-k-n		2
1. *m > mⁿ; +N: *d > ⁿd; ə-epenthesis 2. *m > mⁿ; +N: *d > ⁿd; ə-epenthesis; *y > Øʸ; +Y: *a > e; *kʷ > k; fusion kn > ŋ					

MAFA

Mafa	*waⁿdav*	*Øⁿ-wadav	*mⁿØ-wadaØvØ	*ma-xʷadayva	1
1. *xʷ > w; *m > Øⁿ; +N: *d > ⁿd					

SUKUR

Sukur	*vəlʸa* vəlya	*vlya	*vyla	*Ølyva	*xʷdyva	1
	vilʸa vəʸlya	*vlyʸa				2
1. *d (> r) > l ; multiple metathesis lyv > vly; ə-epenthesis 2. *d (> r) > l ; multiple metathesis lyv > vly; ə-epenthesis; *y > yʸ; +Y: ə > i						

HURZA

Vame	*ⁿdiveŋ* ndyvaʸŋ	*n-dyʸva-ŋ	*mØ-Ødyva-k-n	*ma-xʷdyva-kʷ-n	1
1. homorganic assimilation *m > n/_d; *y > yʸ > i; +Y: *a > e; *kʷ > k; fusion kn > ŋ					

MARGI

Kilba	*pita* pyta	*pyta	*Øtypa	*x^wdyva (-k^w)	1
Margi	*pitə* pytə				2
Margi-South	*pitu* pitw	*pyt-w	*ØtypØ-k^w		3
Bura	*pti* pty	*pty	*ØtypØ		4

1. *v (> f) > p; *d > t; multiple metathesis typ > pyt; *y > i
2. *v (> f) > p; *d > t; multiple metathesis typ > pyt; *y > i; lexical-final *a > ə
3. *v (> f) > p; *d > t; multiple metathesis typ > pyt; *k^w > w > u
4. *v (> f) > p; *d > t; multiple metathesis typ > pty; *y > i

MANDARA

Glavda	*vi:da* və^{y}yda	*vy^{y}da	*Ødyva	*(na-)x^wdyva	1
	vii və^{y}y	*vy^y	*ØØyvØØ		2
Podoko	*vira* vyra	*vyra	*Øryva		3
Mandara	*navire* navyra^y	*na-vy^{y}ra	*na-Øryva		4
Malgwa	*naviira* navə^{y}yra				5

1. multiple metathesis dyv > vyd; ə-epenthesis; *y > y^y > i; +Y: ə > i
2. metathesis yv > vy; ə-epenthesis; *y > y^y > i; +Y: ə > i
3. *d > r; multiple metathesis ryv > vyr; *y > i
4. *d > r; multiple metathesis ryv > vyr; *y > y^y > i; +Y: lexical-final *a > e
5. *d > r; multiple metathesis ryv > vyr; ə-epenthesis; *y > y^y > i; +Y: ə > i; *y > i

MOFU

				√ C CaC Ca	
Zulgo	*hə^{n}dav*	*Ø^n-xdav	*m^{n}Ø-xdaØvØ	*ma-x^wdayva	1
				√ CaCaC Ca	
Ouldeme	*adavo* adava^w	*adava-Ø^w	*ØadaØva-k^w	*(ma-) x^wadayva(-k^w)	2
Merey	*wa^{n}dav*	*Ø^n-wada	*m^{n}Ø-wadaØvØ		3
Dugwor	*wa^{n}dav*				3
Mofu North	*wa^{n}dav*				3
Mofu-Gudur	*h^{w}a^{n}dav*	*Ø^n-x^wadav	*m^{n}Ø-x^wadaØvØ		4

1. *x^w > x; ə-epenthesis; *m > Ø^n; +N: *d > ^{n}d
2. *k^w > Ø^w; +W: lexical-final *a > o
3. *x^w > w; *m > Ø^n; +N: *d > ^{n}d
4. *m > Ø^n; +N: *d > ^{n}d

MAROUA

Giziga-Muturwa	*ma^{n}daf*	*ma-^{n}daf	*m^{n}a-ØdaØfØ	*ma-x^wdyva	1
Giziga-Marva	*ma^{n}daf*				

1. *v > f; *m > Ø^n; +N: *d > ^{n}d

LAMANG

Lamang	*vilak^{w}a* vylak^{w}a	*vyla-k^{w}a	*Ølyva-k^{w}a	*x^wdyva-k^w(a)	1
Hdi	*vilak^w* vylak^w	*vyla-k^w	*Ølyva-k^w		1

1. *d (> r) > l; multiple metathesis lyv > vyl; *y > i

HIGI

Kamwe-Futu	*vira* vyra	*vyra	*Øryva	*xʷdyva	1
Bana	*v(ə)le* vəlaʸ	*vØʸla	*Ølyva		2
Kirya	*pitə*	*pyta	*Øtypa		3
1. *d > r; multiple metathesis ryv > vyr; *y > i 2. *d (> r) > l; multiple metathesis lyv > vyl; *y > Øʸ; +Y: lexical-final *a > e 3. likely loan from Margi (see above)					

MUSGUM

Mbara	*mudivay* məʷdyvay	*m-Øʷdyv-ay	*mØ-xʷdyvØ-a-y	*ma-xʷdyva-a-y	1
1. radical *y > i; ə-epenthesis; *xʷ > Øʷ; +W: ə > u					

GIDAR

Gidar	*maⁿdava* maⁿdava	*ma-ⁿdava	*mⁿa-ØdaØva	*ma-xʷdayva	1
1. *m > Øⁿ; +N: *d > ⁿd					

hat

PCC/areal root? *(na-) **dz(a)kʷa** (-y, -kʷ, -n; FV)

HURZA

Mbuko	*ʤugo* dzʸəʷgaʷ	*dzgʷa-Øʸ	*dzgʷa-y	*dzkʷa-y	1
Vame	*dzuge* dzəʷgaʸ				2
1. *kʷ > gʷ; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o; *y > Øʸ; +Y: *dz > ʤ 2. *kʷ > gʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e					

MARGI

Bura	*dzakʷa*	*dzakʷa	*dzakʷa	

MANDARA

Matal	*dzakʷa*	*dzakʷa		*dzakʷa(-y)	
Podoko	*dzakʷa*				
Glavda	*dzakʷa*				
Mandara	*dzakʷe*	*dzakʷa-Øʸ	*dzakʷa-y		1
1. *y > Øʸ; +Y: lexical-final *a > e					

MOFU

				√ C Ca	
Mofu-Gudur	*ʤikʷew* dzʸəʸkʷaʸw	*dzkʷa-Øʸ-w	*dzkʷa-y-kʷ	*dzkʷa-y-kʷ(a)	1
Dugwor	*ʤiggo* dzʸəʸggʷaʷ	*dzgʷ-Øʸ-gʷa	*dzkʷØ-y-kʷa		2
				√ CaCa	
Merey	*dzakʷa*	*dzakʷa		*dzakʷa-y	
	dzagʷa	*dzagʷa			3
Ouldeme	*dzagu* dzagw	*dzagw	*dzakʷØ		4
Moloko	*ʤogo* dzʸaʷgaʷ	*dzagʷa-Øʸ	*dzagʷa-y		5
Muyang	*ʤaku* dzʸakw	*dzakw-Øʸ	*dzakwØ-y		6
1. ə-epenthesis; suffixal *kʷ > w; *y > Øʸ; +Y: *dz > ʤ; +Y: ə > i; +Y: lexical-final *a > e 2. *kʷ > gʷ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +W; FV *a > o 3. *kʷ > gʷ 4. re-segmentalisation *kʷ > k+w; k > g; w > u					

5. *k^{w} > g^{w}; +W: *a > o; *y > Ø^{y}; +Y: *dz > ʤ 6. re-segmentalisation *k^{w} > k+w; w > u; *y > Ø^{y}; +Y: *dz > ʤ

MAROUA

				√ C Ca	
Giziga-Muturwa	*ʤiyku* dz^{y}ə^{y}ykw	*dzykw	*dzk^{w}Ø-y	*dzk^{w}a-y	1
				√ CaCa	
Giziga-Marva	*ʤoko* dz^{y}a^{w}k^{w}a^{w}	*dzak^{w}a-Ø^{y}		*dzak^{w}a-y	2
1. metathesis *k^{w}y > yk^{w}; re-segmentalisation *k^{w} > k+w; w > u; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *dz > ʤ 2. *y > Ø^{y}; +Y: *dz > ʤ; +W: *a > o					

LAMANG

				√ C Ca	
Hdi	*dzug^{w}a* dzə^{w}g^{w}a	*dzg^{w}a		*dzk^{w}a	1
				√ CaCa	
Lamang	*dzoŋo* dza^{w}ŋ^{w}a^{w}	*dzaØ-ŋ^{w}a	*dzak^{w}Ø-na	*dzak^{w}a-na	2
1. ə-epenthesis; +W: ə > u 2. fusion k^{w}n > ŋ^{w}; +W: *a > o					

KOTOKO-ISLAND

Buduma	*ⁿdʒok^{w}a* ndz^{y}a^{w}k^{w}a	*n-dzak^{w}a-Ø^{y}	*nØ-dzak^{w}a-y	*na-dzak^{w}a-y	1
1. *y > Ø^{y}; +Y: *dz > ʤ; +W: *a > o					

KOTOKO-NORTH

Mpade	*sag^{w}a* sag^{w}a	*sag^{w}a		*dzak^{w}a	1
1. *dz (> z) > s; *k^{w} > g^{w}					

KOTOKO-SOUTH

Zina	*ʤaku* dz^{y}akw	*dzakw-Ø^{y}	*dzak^{w}Ø-y	*dzak^{w}a-y	1
1. re-segmentalisation *k^{w} > k+w; w > u; *y > Ø^{y}; +Y: *dz > ʤ					

MUSGUM

Vulum	*zagaw* zagaw	*zaga-w	*zaga-k^{w}	*dzak^{w}a-k^{w}	1
1. *dz > z; root-internal k^{w} (> g^{w}) > g; suffixal *k^{w} > w					

hatch$_{1}$, to

PCC *(RED-) **ts(a)ɬa** (-y; FV)

BATA

Gude	*ʧatʃalhə* ts^{y}ats^{y}ałə	*tsa-tsałə-Ø^{y}	*tsa-tsała-y	*RED-tsała-y	1
1. *y > Ø^{y}; +Y: *ts > ʧ; lexical-final *a > ə					

SUKUR

Sukur	*ʧiɬ* ts^{y}ə^{y}ɬ	*tsɬ-Ø^{y}	*tsłØ-y	*tsła-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: *ts > ʧ; +Y: ə > i					

HURZA

Vame	*ʧałya*	*tsał-ya	*tsałØ-ya	*tsała-ya	

MANDARA

				√ C Ca	
Podoko	*ʧiɬa* ts^{y}ə^{y}ła	*tsła-Ø^{y}		*tsła-y	1

				√ CaCa	
Mandara	*tʃałe* tsʸałayʸ	*tsała-Øʸ		*tsała-y(-kʷa)	2
Glavda	*t͡ʃałʸga* tsʸałəga	*tsał-Øʸ-ga	*tsałØ-y-kʷa		3
1. ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i 2. *y > Øʸ; +Y: *ts > tʃ; +Y: lexical-final *a > e 3. *kʷ (> gʷ) > g; ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ					

Mofu

Ouldeme	*tsał*	*tsał	*tsałØ	*(RED-/ma-) tsała(-y)	
Merey	*tsətsał*	*tsØ-tsał	*RED-tsałØ		1
Zulgo	*tsetsiɮ* tsaʸtsəʸɮ	*tsa-tsəɮ-Øy	*RED-tsaɮØ-y		2
Gemzek	*metseɬe* maʸtsaʸɬaʸ	*ma-tsała-Øʸ	*ma-tsała-y		3
1. ə-epenthesis 2. *ɬ > ɮ; *a > ə; *y > Øʸ; +Y: *a > e; +Y: ə > i 3. *y > Øʸ; +Y: *a > e					

Lamang

Lamang	*tsiɬa* tsəʸɬa	*tsła-Øʸ	*tsła-y	*tsła(-a)-y	1
Hdi	*tsiɬay* tsəʸɬay	*tsł-ayʸ	*tsłØ-a-y		2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis; *y > yʸ; +Y: ə > i					

hatch$_2$, to[71]

PCC *(kʷa-, RED-) **ɗ(a)ɬa** (-y, -kʷ; FV)

Daba

Buwal	*yaɬ*	*yałØ	*ɗaɬa	1
1. *ɗ > y				

Mafa

Cuvok	*yiɬa* yəʸɬa	*yła-Øʸ	*ɗła-y	1
1. *ɗ > y; ə-epenthesis; suffixal *y > Øʸ; +Y: ə > i				

Hurza

				√ C Ca	
Vame	*ɗuliya* ɗəʷɬəʸya	*ɗł-Øʸ-Øʷa	*ɗłØ-y-kʷa	*ɗła-y-kʷa	1
				√ CaCa	
Mbuko	*ɗədeɬ* ɗəɗaʸɬ	*ɗ-ɗaɬ-Øʸ	*RED-ɗaɬØ-y	*RED-ɗała-y	2
1. ə-epenthesis; *kʷ > Øʷ; +W: ə > u; *y > Øʸ; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: *a > e					

Mofu

Muyang	*ɗiɬ* ɗəʸɬ	*ɗł-Øʸ	*ɗłØ-y	*ɗła-y	1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i					

[71] Compare with the root for 'egg' for possible deep cognation and see footnote 40 there concerning the ambiguous nature of final /...y(a)/ as either part of the simple root or as a root-augmental suffix.

Gidar					
Gidar	*wədeɬe* wədaʸɬaʸ	*w-dɬa-Øʸ	*wØ-ɗaɬa-y	*kʷa-ɗaɬa-y	1
1. ə-epenthesis; *y > Øʸ; +Y: *a > e					

head

PCC *(ma-, d-) **ɣʷ(a)na**[72] (-y, -kʷ, -n; FV)

Bata

Gude	*na*	*Øna		*(ma-)ɣʷna(-y,-n)	
Tsuvan	*əne*	*na-Øʸ	*Øna-y		1
Jimi	*yinən* yəʸnən	*ɣʸna-Øʸ-n	*ɣna-yʸ-n		2
Sharwa	*ᵑginə* ŋgəʸnə	*ŋ-gna-Øʸ	*mØ-gna-y		3
1. ə-prothesis; *y > Øʸ; +Y: lexical-final *a > e 2. *ɣ > ɣʸ > y; ə-epenthesis; *ɣʷ > ɣ; suffixal *y > yʸ; +Y: ə > i 3. *ɣʷ (> ɣ) > g; ə-epenthesis; *y > Øʸ; +Y: ə > i; homorganic assimilation *m > ŋ/_g; lexical-final *a > ə					

Daba

Buwal	*ha*	*xØa	*ɣʷna	1
Gavar	*ha*			1
1. *ɣʷ (> ɣ) > x				

Mafa

				√ C Ca	
Mafa	*gəɗ*	*grØ	*gna	*ɣʷna	1
				√ CaCa	
Cuvok	*yaŋ*	*ɣʸaŋ-Ø	*ɣaŋ-Øʸ-Ø	*ɣanØ-y-k	*ɣʷana-y-kʷ	2
1. *ɣʷ (> ɣ) > g; *n > r (possibly borrowed: *gra) > ɗ; ə-epenthesis 2. *y > Øʸ; +Y: *ɣʷ > ɣʸ > y; *kʷ > k; fusion *nk > ŋ					

Sukur

Sukur	*kə*	*ka	*kØa	*ɣʷna	1
1. *ɣʷ (> ɣ > x) > k; lexical-final *a > ə					

Hurza

Mbuko	*ᵑga* ŋga	*nga	*gna	*ɣʷna	1
Vame	*ᵑga* ŋga				1
	ŋa ŋa				2
1. *ɣʷ (> ɣ) > g; metathesis gn > ng; homorganic assimilation n > ŋ/_g 2. *ɣʷ (> ɣ) > g; fusion gn > ŋ					

[72] Gravina (2015) suggests two formally slightly different roots: **ɣin** and **ɣʷi**, which are here considered to be too similar not to be accepted as historically the same in the light of widely spread patterns of sound changes, such as de-labialisation and prosodification and/or loss (e.g. *ɣʷ > ɣ, *n > Øⁿ ~ Ø). Somewhat disturbingly, Gravina attaches different grammatical gender to his reconstructed roots: **ɣin** nm., **ɣʷi** nf., but relativising such categorisation in the introduction to the database: "For some nouns, the gender is included. Gender is a feature in a minority of Central Chadic languages, but when the gender of a noun is consistent across these languages, that gender is given as the gender of the reconstructed form. These attributions cannot be treated as reliable."

MARGI

Margi	*kər*	*krØ		*ɣʷna(-y)	1
Margi-South	*kər*				1
Kilba	*kər*				1
Bura	*kir* kəʸr	*kr-Øʸ	*kr-y		2
1. *ɣʷ (> ɣ > x) > k; *n > r; ə-epenthesis 2. *ɣʷ (> ɣ > x) > k; *n > r; ə-epenthesis; *y > Øʸ; +Y: ə > i					

MANDARA

Glavda	*ʁra*	*ɣra			*ɣʷna(-y)	1
	ɣr	*ɣrØ				1
Dghwede	*gre*	*gra-Øʸ		*gra-y		2
Mandara	*ira* yra	*ɣʸra	*ɣra-Øʸ	*ɣra-y		3
Malgwa	*iire* əʸyraʸ					4
Matal	*gəl*	*glØ				5
1. *n > r; *ɣʷ > ɣ 2. *n > r; *ɣʷ (> ɣ) > g; *y > Øʸ; +Y: lexical-final *a > e 3. *n > r; *y > Øʸ; +Y: *ɣʷ (> ɣ) > ɣʸ > y 4. *n > r; ə-prothesis; *y > Øʸ; +Y: *ɣʷ (> ɣ) > ɣʸ > y; +Y: lexical-final *a > e 5. *n (> r) > l; *ɣʷ (> ɣ) > g; ə-epenthesis						

MOFU

			√ C Ca	
Zulgo	*gər*	*grØ	*(d-)ɣʷna(-y)	1
Gemzek	*gər*			1
Merey	*gər*			1
Mofu-Gudur	*ray*	*Øra-y		2
Moloko	*dəray*	*d-Øra-y		2
			w CaCa	
Ouldeme	*ɣar*	*ɣarØ	*(ma-)ɣʷana	2
Muyang	*ahar*	*Øa-xarØ		3
Gemzek	*gar*	*garØ		4
Mofu North	ʾar	*ʔarØ		5
1. *n > r; *ɣʷ (> ɣ) > g; ə-epenthesis 2. *n > r 3. *n > r; *ɣʷ (> ɣ) > x 4. *n > r; *ɣʷ (> ɣ) > g 5. *n > r; *ɣʷ (> ɣ > g) > ʔ				

MAROUA

Giziga-Muturwa[73]	*hirᵑga* xəʸrŋga	*xr-Øʸ-nga		*xrØ-y-g-na	*ɣʷna (-y,-kʷ,-na)	1
Giziga-Marva	*huruŋ* xʷəʷrəʷŋʷ	*xʷra-kʷ-n				2
Mbazla	*yiŋ* yəʸŋ	*ɣʸŋ-Ø	*ɣŋ-Øʸ	*ɣnØ-y-k		3

[73] A parallel form *hirᵑgaŋ* (xəʸrŋgaŋ) contained in the database poses a unique problem for historical reconstruction with regard to the double occurrence of the nasal, i.e. both as part of the medial nasal+obstruent cluster ŋg (or prenasalised ᵑg) and the word-final occurrence as ŋ (and following the reconstructed FV */a/), which usually points to fusion nk > ŋ. Currently, the exact historical analysis of this particular form remains open.

1. *ɣ^{w} (> ɣ) > x; *n > r; *k^{w} (> k) > g; metathesis gn > ng; homorganic assimilation n > ŋ/_g; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *ɣ^{w} > x^{w}; *n > r; fusion k^{w}n > ŋ^{w}; ə-epenthesis; lexical-final *a > ə: +W: ə > u 3. *ɣ^{w} (> ɣ); ə-epenthesis; *y > Ø^{y}; +Y: *ɣ (> ɣ^{y}) > y; +Y: ə > i; *k^{w} > k; fusion nk > ŋ					
Lamang					
				√ C Ca	
Hdi	*ɣəŋ*	*ɣŋ	*ɣnØ-k	*ɣ^{w}na-k^{w}	1
				√ CaCa	
Lamang	*ɣaŋ*	*ɣaŋ	*ɣanØ-k	*ɣ^{w}ana-k^{w}	2
1. *ɣ^{w} > ɣ; ə-epenthesis; *k^{w} > k; fusion *nk > ŋ 2. *ɣ^{w} > ɣ; *k^{w} > k; fusion *nk > ŋ					
Higi					
Kirya	*ɣən*	*ɣnØ			1
Bana	*ɣən*	1			1
Kamwe-Nkafa	*ɣə* ɣa	*ɣa	*ɣØ**a**	*ɣ^{w}na(-y)	2
Kamwe-Futu	*ɣi* ɣy	*ɣ-y	*ɣØØ-**y**		3
Psikye	*gu* gw	*gwØ	*gwØa		4
1. *ɣ^{w} > ɣ; ə-epenthesis 2. *ɣ^{w} > ɣ; lexical-final *a > ə 3. *ɣ^{w} > ɣ; *y > i 4. fortition and re-segmentalisation *ɣ^{w} (> ɣ+w) > g+w; w > u					
Kotoko-Island					
Buduma	*kuə* kwa	*kwØa	*k^{w}na	*ɣ^{w}na	1
	ku kw	*kw	*k^{w}ØØ		2
1. re-segmentalisation *k^{w} > k+w; w > u; lexical-final *a > ə 2. re-segmentalisation *k^{w} > k+w; w > u					
Kotoko-North					
Afade	*go* g^{w}a^{w}	*g^{w}a	*g^{w}Øa	*ɣ^{w}na	1
Mpade	*go* g^{w}a^{w}				1
	ko k^{w}a^{w}	*k^{w}a	*k^{w}Øa		2
1. *ɣ^{w} > g^{w}; +W: lexical-final *a > o 2. *ɣ^{w} (> g^{w}) > k^{w}; +W: lexical-final *a > o					
Kotoko-Central					
				√ C Ca	
Mser	*ko* k^{w}a^{w}	*k^{w}a	*k^{w}Øa	*ɣ^{w}na	1
				√ CaCa	
Lagwan	*kaa*	*kaØa		*ɣ^{w}ana	
1. *ɣ^{w} (> g^{w}) > k^{w}; +W: lexical-final *a > o 2. *ɣ^{w} (> g^{w} > g) > k					

GIDAR

Gidar	*ki* ky	*k-y	*kØØ-y	*ɣʷna-y(a)	1
	kiya kəʸya	*k-yʸa			2
1. *ɣʷ (> gʷ > g) > k; *y > i 2. *ɣʷ (> gʷ > g) > k; ə-epenthesis; +Y: ə > i					

hearth, three-stone fireplace

PCC ***r(a)w(a)tsa** (-y, -kʷ)

BATA

Sharwa	*ryəti* rʸəty	*rt-yʸ	*rØtØ-y	*rwtsa-y	1
1. *ts > t; ə-epenthesis; *y > yʸ; +Y: *r > rʸ; *y > i					

DABA

				√ C C Ca	
Mbudum	*luwitʃ* ləʷwʷəʸtsʸ	*lwʷts-Øʸ	*lwtsØ-y	*rwtsa-y	1
				√ C CaCa	
Buwal	*ləwetʃ* ləwaʸtsʸ	*lwats-Øʸ	*lwatsØ-y	*rwatsa-y	2
1. *r > l; ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i 2. *r > l; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e					

MAFA

Mafa	*ruwetʃ* rəʷwʷaʸtsʸ	*rwʷats-Øʸ	*rwatsØ-y	*rwatsa-y	1
Cuvok	*luwetʃ* ləʷwʷaʸtsʸ	*lwʷats-Øʸ	*lwatsØ-y		2
1. *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e 2. r > l; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e					

SUKUR

Sukur	*ruts* rwts	*rwtsØ		*rwtsa	1
1. *w > u					

HURZA

Mbuko	*ruwetʃ* rəʷwʷaʸtsʸ	*rwʷats-Øʸ	*rwatsØ-y	*rwatsa-y	1
1. *w > wʷ; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ; +Y: *a > e					

MANDARA

Podoko	*lutʃe* lwtsʸaʸ	*lwtsa-Øʸ	*lwtsa-y	*rwtsa(-y)	1
Matal	*ləts*	*lts	*lØtsØ		2
Mandara	*eltʃa* aʸltsʸa	*ltsa-Øʸ	*lØtsa-y		3
Malgwa	*əltʃa* əltsʸa				4
Glavda	*ɨl͡tsa* əʸltsa				5

1. *r > l; *w > u; *y > Ø^{y}; +Y: *ts > tʃ; +Y: lexical-final *a > e
2. *r > l; ə-epenthesis
3. *r > l; a-prothesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: prothetic *a > e
4. *r > l; ə-prothesis; *y > Ø^{y}; +Y: *ts > tʃ
5. *r > l; ə-prothesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: ə > ɨ

MOFU

				√ C C Ca	
Ouldeme	*liwit* ləʸwəʸt	*lwt-Ø^{y}	*lwtØ-y	*rwtsa-y	1
Zulgo	*liwit* ləʸwəʸt				1
Muyang	*lɯwit* ləʷwəʸt	*lw^{w}t-Ø^{y}			2
Moloko	*ləwte* ləwtaʸ	*lwta-Ø^{y}	*lwta-y		3
				√ C CaCa	
Dugwor	*luwet* ləʷwʷaʸt	*lw^{w}at-Ø^{y}	*lwatØ-y	*rwatsa-y	4
Gemzek	*luwet* ləʷwʷaʸt				4
Merey	*luwets* ləʷwʷaʸts	*lw^{w}ats-Ø^{y}	*lwatsØ-y		5
Mofu North	*ləwets* ləwaʸts	*lwats-Ø^{y}			6
Mofu-Gudur	*ləwetʃ* ləwaʸtsʸ				6

1. *r > l; *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: ə > i
2. *r > l; *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *w > w^{w}; +W: ə > ʉ
3. *r > l; *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e
4. *r > l; *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: a > e; *w > w^{w}; +W: ə > u
5. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: a > e; *w > w^{w}; +W: ə > u
6. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: a > e

MAROUA

				√ C C Ca	
Mbazla	*lutʃi* lwtsʸy	*lwts-y^{y}	*lwtsØ-y	*rwtsa-y	1
Giziga-Muturwa	*liwis(i)* ləʸwəʸsy	*lws-y^{y}	*lwsØ-y		2
				√ C CaCa	
Giziga-Marva	*liwes* ləʸwaʸs	*lwas-Ø^{y}	*lwasØ-y	*rwatsa-y	3

1. *r > l; *w > u; *y > y^{y} > i; +Y: *ts > tʃ
2. *r > l; *ts > s; ə-epenthesis; *y > y^{y} > i; +Y: ə > i
3. *r > l; ə-epenthesis; *y > y^{y}; +Y: ə > i; +Y: a > e

LAMANG

Lamang	*liti* ləʸty	*lt-y^{y}	*lØtØ-y	*rwtsa-y(-k^{w})	1
Hdi	*litik* ləʸtyk	*lt-y^{y}-k	*lØtØ-y-k^{w}		2

1. *r > l; *ts > t; ə-epenthesis; *y > y^{y} > i; +Y: ə > i
2. *r > l; *ts > t; *k^{w} > k; ə-epenthesis; *y > y^{y} > i; +Y: ə > i

HIGI

Kamwe-Nkafa	*rətwə*	*rtwa	*rwta	*rwtsa	1
Bana	*lət(ə)*	*lta	*lØta		2

1. *ts > t; metathesis wt > tw; ə-epenthesis; lexical-final *a > ə
2. *ts > t; *r > l; ə-epenthesis; lexical-final *a > ə

MUSGUM

Mbara	*liwit* lə^{y}wə^{y}t	*lwt-Ø^{y}	*lwtØ-y	*rwtsa-y	1
Muskum	*wit* wə^{y}t	*wt-Ø^{y}	*ØwtØ-y		2
1. *ts > t; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *ts > t; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

hedgehog

PCC *(ɗa-, ma-, RED-) **x^{w}(a)sa** (-RED, -ɓ, -y)

DABA

Buwal	*h^{w}asasaɓ*	*x^{w}asa-sa-ɓ	*x^{w}asa-RED-ɓ	

HURZA

				√ C C Ca	
Vame	*awuʃawuʃa* awə^{w}s^{y}awə^{w}s^{y}a	*a-w^{w}sa-w^{w}sa-Ø^{y}	*Øa-RED-wØsa-y	*ma-RED-x^{w}sa-y	1
				√ C CaCa	
Mbuko	*usos* wsa^{w}s	*w^{w}sa-sØ	*w^{w}sa-sa	*x^{w}sa-RED	2
1. *x^{w} > w^{w}; +W: ə > u; ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ 2. *x^{w} > w^{w} > u; +W: *a > o					

MARGI

Bura	*h^{w}isa* x^{w}ə^{y}sa	*x^{w}sa-Ø^{y}	*x^{w}sa-y	*x^{w}sa-y	1
Margi	*wisə* wə^{y}sə	*wsa-Ø^{y}	*wsa-y		2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *x^{w} > w; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə					

MANDARA

Mandara	*ususa* wsə^{w}sa	*w^{w}sØ-sa		*x^{w}sa-RED	1
Malgwa	*ususa* wsə^{w}sa				1
1. *x^{w} > w^{w} > u; ə-epenthesis; +W: ə > u					

MOFU

				√C C Ca	
Muyang	*asus* asws	*a-sw-s	*Øa-wsØ-RED	*ɗa-x^{w}sa-RED	1
Zulgo	*asus* asws				1
Merey	*ɗasus* ɗasws	*ɗa-sw-s	*ɗa-wsØ-RED	*ɗa-x^{w}sa-RED	1
				√CaC Ca	
Mofu North	*ʔoʔos* ʔa^{w}ʔa^{w}s	*ʔ^{w}a-ʔ^{w}as	*RED-ʔ^{w}asØ	*RED-x^{w}asa	2
				√C CaCa	
Ouldeme	*asas*	*a-sa-s	*Øa-Øsa-RED	*ɗa-x^{w}sa-RED	
				√CaCaCa	
Gemzek	*hosos* x^{w}a^{w}sa^{w}s	*x^{w}asa-s	*x^{w}asa-RED	*x^{w}asa-RED	3
1. *x^{w} > w > u ; metathesis ws > sw 2. *x^{w} (> k^{w}) > ʔ^{w}; +W: *a > o 3. +W: *a > o					

LAMANG

Hdi	*muxtus* məʷxʷtəʷs	*m-xʷt-s	*mØ-xʷsØ-RED	*ma-xʷsa-RED	1
1. dissimilation *s > t; ə-epenthesis; +W: ə > u					

HIGI

				√C C C	
Kirya	*fisa* fəʸsa	*fsa-Øʸ	*fsa-y	*xʷsa-y	1
				√CaC Ca	
Bana	*xasəsə*	*xasØ-sa		*xʷasa-RED	2
1. *xʷ (> x) > f; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *xʷ > x; ə-epenthesis; lexical-final *a > ə					

hide, to

PCC *(kʷa-) ɓ**(a)ɣʷa** (-n)

BATA

				√ C Ca	
Jimi	*ɓʷəɣən*	*ɓɣʷa-n		*ɓɣʷa-n	1
				√ CaCa	
Sharwa	*ɓʷah* ɓʷax	*ɓaxʷ	*ɓaxʷØ	*ɓaɣʷa	2
Bata	*ɓoo* ɓʷaʷaʷ	*ɓaØʷa			3
1. feature transfer of ʷ from velar C_2 to labial C_1; ə-epenthesis; lexical-final *a > ə 2. *ɣʷ > xʷ; feature transfer of ʷ from velar C_2 to labial C_1 3. *ɣʷ > Øʷ; +W: *a > o					

DABA

Buwal	*ɓah*	*ɓaxØ	*(kʷa-)ɓaɣʷa	1
Gavar	*ɓah*			1
Mbudum	*kəɓah*	*kØ-ɓaxØ		2
Daba	*ɓoh* ɓaʷxʷ	*ɓaxʷØ		3
1. *ɣʷ (> xʷ) > x 2. *ɣʷ (> xʷ) > x; *kʷ > k; ə-epenthesis 3. *ɣʷ > xʷ; +W: *a > o				

MANDARA

Podoko	*ɓəhʷa*	*ɓxʷa	*ɓɣʷa	1
1. *ɣʷ > xʷ; ə-epenthesis				

MOFU

Muyang	*ɓu* ɓw	*ɓwØ	*ɓɣʷa	1
1. *ɣʷ > w > u				

HIGI

Bana	*ɣuɓə* ɣʷəʷɓə	*ɣʷɓa	*ɓɣʷa	1
1. metathesis ɓɣʷ > ɣʷɓ; ə-epenthesis; +W: ə > u; lexical-final *a > ə				

hole

PCC *(k^{w}a-, RED-) **v(a)g^{w}(a)ɗà** (-y, -m, -n)

BATA

				√ C C Ca	
Bata	*g^{w}e* g^{w}a^{y}	*g^{w}a-Ø^{y}	*Øg^{w}Øa-y	*vg^{w}ɗà-y/-n	1
Jimi	*gu'un* g^{w}ə^{w}ʔə^{w}n	*g^{w}ʔ-n	*Øg^{w}dØ-n		2
Sharwa	*g^{w}ə'ə*	*g^{w}ʔa	*Øg^{w}ʔa		3
1. *y > Ø^{y}; +Y: lexical-final *a > e 2. *ɗ > ʔ; ə-epenthesis; +W: ə > u 3. *ɗ > ʔ; ə-epenthesis; lexical-final *a > ə					

MAFA

Mafa	*veved* va^{y}va^{y}ɗ	*va-vaɗ-Ø^{y}	*RED-vØadØ-y	*RED-vg^{w}aɗa-y	1
1. *y > Ø^{y}; +Y: *a > e					

TERA

Tera	*g^{w}a*	*g^{w}a	*Øg^{w}Øa	*vg^{w}ɗà	

SUKUR

Sukur	*vuɗ* və^{w}ɗ	*vØ^{w}ɗ	*vg^{w}dØ	*vg^{w}ɗà	1
1. ə-epenthesis; *g^{w} > Ø^{w}; +W: ə > u					

MARGI

Kilba	*ka'u* kaʔw	*ka-ʔw	*ka-Øg^{w}ʔØ	*k^{w}a-vg^{w}ɗà	1
Margi-South	*kau*	*ka-w	*ka-Øg^{w}ØØ		2
Bura	*ku*	*kØ-w	*ka-Øg^{w}ØØ		2
1. *ɗ > ʔ; *k^{w} > k; metathesis g^{w}ʔ > ʔg^{w}; *g^{w} > w 2. *g^{w} > w; *k^{w} > k					

MANDARA

					√ C C Ca	
Podoko	*vige* və^{y}ga^{y}	*vga-Ø^{y}		*vgØa-y	*(k^{w}a-)vg^{w}ɗà-y	1
Malgwa	*əvəge* əvəga^{y}					2
Dghwede	*fke* fka^{y}	*fka-Ø^{y}		*fkØa-y		3
Matal	*afik* afə^{y}k	*Øa-fk-Ø^{y}		*ka-fkØØ-y		4
Glavda	*afka*	*Øa-fka		*ka-fkØa		5
					√ CaC Ca	
	aaf	*Øa-Øaf	*Øa-gaf	*ka-fagØØ	*k^{w}a-vag^{w}ɗa-y	6
Mandara	*evege* a^{y}va^{y}ga^{y}	*Øa-vaga-Ø^{y}		*ka-vagØa-y		7
1. *g^{w} > g; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *g^{w} > g; ə-prothesis; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 3. *v > f; *g^{w} (> g) > k; *y > Ø^{y}; +Y: lexical-final *a > e 4. *v > f; *g^{w} (> g) > k; *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 5. *v > f; *g^{w} (> g) > k; *k^{w} > k 6. *v > f; *g^{w} > g; *k^{w} > k; metathesis fg > gf; vowel length accounted for by loss of intervocalic /g/ 7. *g^{w} > g; *k^{w} > k; *y > Ø^{y}; +Y: *a > e						

MOFU

				√ C C Ca	
Ouldeme	*avi* avy	*Øa-vy	*kʷa-vØyØ	*(kʷa-)vgʷɗà(-y)	1
Moloko	*pəɗe* pəɗàʸ	*pɗà-Øʸ	*pØɗà-y		2
Merey	*bəɗ*	*bØdØ			3
Zulgo	*biye* bəʸyaʸ	*byʸa	*bØya		4
Gemzek	*biye* bəʸyaʸ				4
				√ C CaCa	
Mofu-Gudur	*vəgeɗ* vəgaʸɗ	*vgaɗ-Øʸ	*vgadØ-y	*(kʷa-/RED-) vgʷaɗà-y	5
Dugwor	*abed*[74] abaʸd	*Øa-baɗ-Øʸ	*ka-bØadØ-y		6
Mada	*vveɗ* vvaʸɗ	*v-vaɗ-Øʸ	*RED-vØadØ-y		7

1. *ɗ > y > i
2. *v (> b) > p; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e
3. *v > b; ə-epenthesis
4. *v > b; ə-epenthesis; *ɗ > y > yʸ; +Y: ə > i; +Y: FV *a > e
5. *gʷ > g; ə-epenthesis; *y > Øʸ; +Y: a > e
6. *v > b; *ɗ > d; *kʷ > k; *y > Øʸ; +Y: *a > e
7. *y > Øʸ; +Y: *a > e

MAROUA

				√ C C Ca	
Giziga-Muturwa	*vigiɗ(i)* vəʸgəʸdʸ	*vgdØ-yʸ		*vgʷɗà-y	1
				√ C CaCa	
Giziga-Marva	*vigeɗ* vəʸgaʸɗ	*vgaɗ-Øʸ	*vgadØ-y	*vgʷaɗà-y	2
Mbazla	*veɗ* vaʸɗ	*vaɗ-Øʸ	*vØadØ-y		3

1. *gʷ > g; ə-epenthesis; *y > yʸ >i; +Y: ə > i
2. *gʷ > g; ə-epenthesis; *y > Øʸ; +Y: ə > i
3. *y > Øʸ; +Y: *a > e

LAMANG

Lamang	*ɣubo* ɣʷəʷɓaʷ	*ɣʷvʔa	*vɣʷʔa	*vgʷɗà(-n)	1
Hdi	*ɣrum* ɣrəʷm	*ɣʷr-m	*ØɣʷrØ-n		2

1. *ɗ > ʔ; *gʷ > ɣʷ; metathesis vɣʷʔ > ɣʷvʔ; *v > b; fusion bʔ > ɓ; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o
2. *gʷ > ɣʷ; *ɗ > r; ə-epenthesis; +W: ə > u; final *m < *{-n} (see 3.4.5)?

HIGI

Kamwe-Futu	*kə*	*ka	*ØgØa	*(kʷa-)vgʷɗà	1
Bana	*kə'u* kəʔw	*kØ-ʔw	*ka-Øgʷ?Ø		2
Kirya	*ɣaw*	*ɣa-w	*ka-ØwØØ		3

1. *gʷ (> kʷ) > k; lexical-final *a > ə
2. *gʷ > w > u; *kʷ > k; *ɗ > ʔ; ə-epenthesis
3. *gʷ > w; *kʷ > k (> g) > ɣ

[74] Transcription error or spontaneous de-glottalisation?

GIDAR

Gidar	*vovu* va^{w}vw	*va-vØw^{w}	*va-vawØØ	*RED-vag^{w}da(-n)	1
	vomvu va^{wm}vw	*va-vØw^{w}-Ø^{n}	*va-vawØØ-n^{n}		2
1. *g^{w} > w^{w} > u; +W: *a > o 2. *g^{w} > w^{w} > u; +W: *a > o; *n > n^{n}; +N: v > ^{m}v					

honey, bee

PCC *(y-, na-, ɓa-, RED-) **ama** (-y, -t, -k^{w}, -n)

DABA

Buwal	*ɓamam*	*ɓ-am-am	* ɓØ-RED- amØ	*RED-(ɓa-)ama(-k^{w})	
Mbudum	*ɓəɓam*	*ɓØØ-ɓ-am	*RED-ɓØ-amØ		1
Daba	*ɓoɓom* ɓa^{w}ɓa^{w}m	*ɓa-ɓam-Ø^{w}	*RED-ɓØ-amØ-k^{w}		2
Gavar	*amam*	*am-am	*RED-amØ		
1. ə-epenthesis 2. *w > Ø^{w}; +W: *a > o					

MAFA

Cuvok	*mgbam*	*m-gb-am	*nØ-gbØ-amØ	*na-ɓa-ama	1
1. *ɓ > gb; assimilation *n > m/__gb					

SUKUR

Sukur	*mam*	*Øm-am	*RED-amØ	*RED-ama	

HURZA

Mbuko	*umam* wmam	*w-Øm-am	*w-RED-amØ	*(ɓ-)RED-ama(-k^{w})	1
Vame	*aməmak*	*am-ama-k	*RED-ama-k		2
1. *ɓ > w > u 2. root-initial *a > ə					

MARGI

Margi	*məmə*	*ma-ma	*RED-Øma	*RED-ama(-k^{w})	1
Bura	*muma* mə^{w}ma	*mØ-ma-Ø^{w}	*RED-Øma-k^{w}		2
1. lexical-final *a > ə 2. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					

MANDARA

Podoko	*mama*	*ma-ma	*RED-Øma	*RED-/na-ama	
Glavda	*mam*				
Mandara	*nama*	*nØ-ama			
Malgwa	*nama*				

Mofu

Ouldeme	*ama*	*ama		*(RED-) ama(-k^w(a))	
Mada	*ama*				
Muyang	*amu* amw	*am-w	*amØ-k^w		1
Merey	*wum* w$ə^w$m	*w^wm	*ØmØ-w		2
Zulgo	*amum* am$ə^w$m	*am-am-Ø^w	*RED-amØ-k^w		3
Moloko	*omom* a^{w}ma^{w}m				4
Gemzek	*awom* awa^{w}m	*Øa-w^wamØ	*RED-amØ-w^wa		5
Dugwor	*amam*	*am-am	*RED-amØ		
Mofu-Gudur	*amam*				

1. *k^w > w > u
2. *k^w > w; metathesis mw > wm; ə-epenthesis; +W: ə > u
3. root-initial *a > ə; *k^w > Ø^w; +W: ə > u
4. *k^w > Ø^w; +W: *a > o
5. *k^w > w^w; metathesis mw > wm

Maroua

Giziga-Marva	*amam*	*am-am	*RED-amØ	*(ɓ-)RED-ama	
Mbazla	*'amam* ʔamam	*ʔ-am-am	*ɓ-RED-amØ		1

1. *ɓ > ʔ

Lamang

Lamang	*omo* a^{w}ma^{w75}	*ama-Ø^w			*ama-k^w	1
	omo a^{w}ma^w	*am-aØ^w	*am-aw^{w}Ø	*amØ-ama	*RED-ama	2

1. *k^w > Ø^w; +W: *a > o
Alternative:
2. *m > w > Ø^w; +W *a > o

Kotoko-North

Afade	*mam*	*Øm-am	*am-amØ	*RED-ama	
Malgbe	*mam*				
Mpade	*mam*				

Kotoko-Central

Lagwan	*iman* yman	*y-ma-n	*y-Øma-n	*(y-, RED-)ama(-n)	1
Mser	*mam*	*Øm-am	*RED-amØ		

1. *y > i

Kotoko-South

Zina	*amama*	*amØ-ama	*RED-ama	

[75] Note that the historical-comparative reconstruction of the underlying form given here as *a^{w}ma^w differs from the underlying form arrived at by purely internal reconstruction, which is *amu < *amw (cf. Wolff 2015, Vol.1: 67). Possibly and speculatively, we could be dealing with yet another case of 'sporadic' *m > w change (see 4.1.6.1) affecting only the original simple root of an underlying reduplicated form and leading to a synchronic underlying reanalysis *ama^w > *amØ^w > amw; this option is given here as tentative 'alternative' analysis.

MUSGUM

Mbara	*momoy* ma^{w}ma^{w}y	*ma-ma-y-Ø^{w}	*RED-Øma-y-k^{w}	*(RED-) ama(-y/-t)(-k^{w})	1
Vulum	*aamii* aaməʸy	*aØ-ama-y^{y}	*RED-ama-y		2
Muskum	*amtu* amtw	*am-t-w	*amØ-t-k^{w}		3
1. *k^{w} > Ø^{w}; +W: *a > o 2. lexical-final *a > ə; *y > y^{y}; +Y: ə > i; *y > i 3.*k^{w} > w > u					
GIDAR					
Gidar	*amama*	*am-ama		*RED-ama	
	amәma	*am-Øma			1
1. ə-epenthesis					

horn$_1$

PCC *(ma-) **d(a)r(a)ma** (-y, -k^{w})

MAFA

				√ C C Ca	
Mefele	*dərum* dərəʷm	*drm-Ø^{w}	*drmØ-k^{w}	*drma-k^{w}	1
				√ C CaCa	
Cuvok	*dərem* dəraʸm	*dram-Ø^{y}	*dramØ-y	*drama-y/-k^{w}	2
Mafa	*durom* dəʷraʷm	*dram-Ø^{w}	*dramØ-k^{w}		3
				√ CaCaCa	
Mafa	*tolom* taʷlaʷm	*talam-Ø^{w}	*talamØ-k^{w}	*darama-k^{w}	4
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u 2. ə-epenthesis; *y > Ø^{y}; +Y: *a > e 3. ə-epenthesis; +W: ə > u ; *k^{w} > Ø^{w}; +W : *a > o 4. *d > t; *r > l; *k^{w} > Ø^{w}; +W: *a > o					

SUKUR

Sukur	*t^{w}am*	*tam-Ø^{w}	*tØamØ-k^{w}	*drama-k^{w}	1
1. *d > t; *k^{w} > Ø^{w}; +W : t > t^{w}					

MARGI

Kilba	*təlәm*	*tlmØ		*(ma-)drma(-y-k^{w})	1
Bura	*ti^{m}bul* təʸᵐbəʷl	*Ø^{n}-tbl-Ø^{y}-Ø^{w}	*mØ-tlb-y-k^{w}		2
1. *d > t; *r > l; ə-epenthesis 2. *d > t; *r > l; metathesis lm > ml; dissimilation *m > b; +N: b > ^{m}b; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > Ø^{w}; +W: ə > u					

MANDARA

				√ C C Ca	
Malgwa	*dərme* dərmaʸ	*drma-Ø^{y}	*drma-y	*drma-y	1
				√ CaC Ca	
Mandara	*derma* daʸrma	*darma-Ø^{y}		*darma-y	2
				√ C CaCa	
Glavda	*dəra*	*draØØ		*drama	3

	drawa	*drawa		4
Podoko	*dərawa*			5
Dghwede	*dərawa*			5
Matal	*draw*	*drawØ		4
	dəraw			4
1. ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 2. *y > Ø^{y}; +Y: lexical-final *a > e 3. ə-epenthesis 4. *m > w 5. *m > w; ə-epenthesis				

MOFU

				√ C CaCa	
Muyang	*edrem* a^{y}dra^{y}m	*a-dram-Ø^{y}	*a-dramØ-y	*(a-)drama (-y/-k^{w})	1
Dugwor	*dərom* dəra^{w}m	*dram-Ø^{w}	*dramØ-k^{w}		2
Mada	*dram*	*dramØ			
Merey	*dəram*				3
Mofu North	*tələm*	*tlamØ			4
Mofu-Gudur	*tələm*				4
				√ CaCaCa	
Mofu North	*talam*	*talamØ		*darama	5
1. *y > Ø^{y}; +Y : *a > e 2. ə-epenthesis; *k^{w} > Ø^{w}; +W: *a > o 3. ə-epenthesis 4. *d > t; *r > l; ə-epenthesis 5. *d > t; *r > l					

MAROUA

				√ C C Ca	
Giziga Muturwa	*drum* drə^{w}m		*drmØ-Ø^{w}	*drma-k^{w}	1
	durum də^{w}rə^{w}m				1
Mbazla	*durum* də^{w}rə^{w}m				1
				√ C CaCa	
Giziga Marva	*durom* də^{w}ra^{w}m	*dram-Ø^{w}	*dramØ-k^{w}	*drama-k^{w}	2
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: *ə > u 2. ə-epenthesis; *k^{w} > Ø^{w}; +W: *ə > u; +W: *a > o					

LAMANG

Lamang	*duli* dwly	*dwl-y	*dlwØ-y	*drma-y	1
Hdi	*duli* dwly				1
1. *r > l; *m > w; metathesis lw > wl; w > u; *y > i					

HIGI

Kamwe-Nkafa	*tərm^{w}i* tərm^{w}y	*trmØ^{w}-y	*trm-w-y	*trmØ-y-w	*drma-y-k^{w}	1
Kamwe-Futu	*tərimo* təryma^{w}	*tryma-Ø^{w}		*trma-y-w		2
Bana	*təlimə* təlyma	*tlyma		*tlma-y		3
1. *d > t; metathesis yw > wy; ə-epenthesis; *k^{w} > Ø^{w}; +W: m > m^{w}; *y > i						
2. *d > t; metathesis my > ym; ə-epenthesis; *y > i; *k^{w} > Ø^{w}; +W: lexical-final *a > o						
3. *d > t; *r > l; metathesis my > ym; ə-epenthesis; *y > i; lexical-final *a > ə						

horn$_2$

Loan/areal root[76] *(ma-) **x^{w}(a)ra** (-y)

KOTOKO-SOUTH

				√ C Ca	
Mazera	*mihue* mə^{y}xwa^{y}	*m-xwa-Ø^{y}	*mØ-x^{w}Øa-y	*ma-x^{w}ra-y	1
				√ CaCa	
Zina	*ah^{w}al*	*Øa-x^{w}alØ		*ma-x^{w}ara	2
1. re-segmentalisation *x^{w} > x+w; w > u; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 2. *r > l					

MUSGUM

Mbara	*moho* ma^{w}x^{w}a^{w}	*ma-x^{w}aØØ	*ma-x^{w}ara	1
1. +W : *a > o				

GIDAR

Gidar	*moho* ma^{w}x^{w}a^{w}	*ma-x^{w}aØØ	*ma-x^{w}ara	1
1. +W : *a > o				

horn$_3$

Areal root[77] *(ma-) **b(a)k^{w}(a)ma** (-ɗ; FV)

TERA

Ga'anda	*^{m}bo'om^{n}da* mba^{w}ʔ^{w}a^{w}m^{n}da	*m-baʔ^{w}am-^{n}ɗa	*mØ^{n}-baʔ^{w}amØ-ɗa	*ma-bak^{w}ama-ɗa	1
1. *k^{w} > ʔ^{w}; +W: *a > o; *m > m^{n}; +N: *ɗ > ^{n}d					

HURZA

Vame	*ɓaŋg^{w}am* ɓa^{n}g^{w}am	*Ø^{n}-ɓag^{w}amØ	*m^{n}Ø-ɓag^{w}amØ	*ma-bak^{w}ama	1
1. *b > ɓ; *k^{w} > g^{w}; *m > Ø^{n}; +N: g^{w} > ^{n}g^{w}					

MOFU

				√ C C Ca	
Zulgo	*^{m}bukum* mbə^{w}k^{w}ə^{w}m	*m-bk^{w}m	*mØ-bk^{w}mØ	*ma-bk^{w}ma	1
				√ C CaCa	
Ouldeme	*a^{m}bəkam* a^{m}bəkam	*Øa-^{n}bkam	*m^{n}a-bkamØ	*ma-bk^{w}ama	2
Gemzek	*^{m}bukom* mbə^{w}k^{w}a^{w}m	*m-bk^{w}am	*mØ-bk^{w}amØ		3

[76] This root is areally quite restricted to the Eastern Plains (Gravina 2015); the final */l/ in Zina suggests a diachronic root ^{x}**x^{w}ala**, which would not be a valid PCC reconstruction, since the proto-language is reconstructed without ^{x}/l/. The root could be either a loan (with as yet unidentified donor), or the Zina form reflects a later areal innovation after /l/ had been phonemicised from an allophone of PCC *r, so there was likely a historically older areal form ***x^{w}(a)ra** that we tentatively reconstruct here.

[77] The geographic distribution of this root makes it hard to believe that as an 'areal root' it would have spread from a centre to the listed languages, which occupy territories quite far away from each other. Ga'anda (TERA) is spoken at the southern periphery of the territory occupied by CC languages, separated from MOFU and HURZA group languages, who are neighbours. The latter are spoken at quite a distance from MUSGUM (see Map 1).

Moloko	*mo^{n}gom* ma^{wn}g^{w}a^{w}m	*m^{n}a-g^{w}am	*m^{n}a-Øg^{w}amØ		4
1. ə-epenthesis; +W: ə > u 2. *k^{w} > k; *m > Ø^{n}; +N: *b > ^{m}b; ə-epenthesis 3. ə-epenthesis; +W: ə > u; +W: *a > o 4. *k^{w} > g^{w}; +W: *a > o; *m > m^{n}; +N: g^{w} > ^{n}g^{w};					

MUSGUM

Vulum	*amok* ama^{w}k	*a-mak^{w}	*Øa-Øk^{w}amØ	*ma-bk^{w}ama	1
1. metathesis k^{w}m > mk^{w}; +W: *a > o					

horn$_4$

Areal root/loan? ***l(a)gana***[78] (-y)

HURZA

Mbuko	*ləkam*	*lkam	*lkamØ	*lgana	1
1. *g > k; ə-epenthesis; for root-final *n > m (see 3.4.5)					

KOTOKO-NORTH

Mpade	*lagan*	*laganØ		*lagana(-y)	
Malgbe	*lagan*				
Maltam	*lagare* lagara^{y}	*lagara-Ø^{y}	*lagara-y		1
1. *n > r; *y > Ø^{y}; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Mser	*lagar*	*lagarØ	*lagana	1
1. *n > r				

horse$_1$[79]

Loan/Pseudo-PCC ***p(a)r(a)sa*** (-y, -k^{w}; FV)

DABA

Daba	*pilis* pə^{y}lə^{y}s	*pls-Ø^{y}	*plsØ-y	*prsa-y	1
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

MAFA

Mafa	*pilef* pə^{y}la^{y}s^{y}	*plas-Ø^{y}	*plasØ-y	*prasa-y	1
Cuvok	*pəlez* pəla^{y}z	*plaz-Ø^{y}	*plazØ-y		2
1. *r > l ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e; +Y: *s > ʃ 2. *r > l ;*s > z; ə-epenthesis; *y > Ø^{y}; +Y: *a > e					

[78] The areal nature and most likely later-than-PCC nature of this root is borne out by its limited geographic distribution at the northeastern periphery (see Map 1) and the consistent /l/ as initial consonant of the simple root – if it does not eventually turn out to be a loan. In any case and therefore, we are hesitant to reconstruct ^{x}**r(a)gana** or ^{x}**ɮ(a)gana** as its potential PCC origin, for which there is no robust comparative evidence found in the database.

[79] This is an obvious loan (ultimately from Arabic) and thus qualifies as a 'Pseudo'-PCC root insofar as it has been streamlined into Central Chadic phonology systems to the extent of being apparently 'reconstructable'.

Tera

Ga'anda	*pirʃa* pəʸrsʸa	*prsa-Øʸ	*prsa-y	*prsa-y	1
Tera	*pərsi* pərsy	*prsØ-y			2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y:*s > ʃ 2. ə-epenthesis; *y > i					

Hurza

Mbuko	*pəles* pəlaʸs	*plas-Øʸ	*plasØ-y	*prasa-y	1
Vame	*pəleʃ* pəlaʸsʸ				2
1. *r > l ; ə-epenthesis; *y > Øʸ; +Y: *a > e 2. *r > l ; ə-epenthesis; *y > Øʸ; +Y: *a > e; +Y : *s > ʃ					

Mandara

				√ C C Ca	
Matal	*pəlis* pələʸs	*pls-Øʸ	*plsØ-y	*prsa(-y)	1
	pəliʃ pələʸsʸ				2
Podoko	*pirəʃe* pəʸrəsʸaʸ	*prsa-Ø	*prsa-y		3
Glavda	*pil:ʃa* pəʸlsʸa	*plsa-Ø	*plsa-y		4
	pəls	*plsØ			5
Malgwa	*bəlsa*	*blsa			6
				√ CaC Ca	
Mandara	*belsa* baʸlsa	*balsa-Øʸ		*parsa-y	7
1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ 3. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ; +Y: lexical-final *a > e 4. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ; (consonantal length unaccounded for) 5. *r > l; ə-epenthesis 6. *p > b; *r > l; ə-epenthesis 7. *p > b; *r > l; *y > Øʸ; +Y : *a > e					

Mofu

				√ C C Ca	
Ouldeme	*pəlis* pələʸs	*plsØ-Øʸ		*prsa-y	1
Zulgo	*piris* pəʸrəʸs	*prsØ-Øʸ			2
				√ C CaCa	
Moloko	*pəles* pəlaʸs	*plasØ-Øʸ		*prasa-y	3
Gemzek	*pəles* pəlaʸs				3
Merey	*pəles* pəlaʸs				3
Dugwor	*pəles* pəlaʸs				3
Mofu-Gudur	*pəles* pəlaʸs				3
				√ CaCaCa	
Mofu North	*peles* paʸlaʸs	*palasØ-Øʸ		*parasa-y	4

1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i
2. ə-epenthesis; *y > Øʸ; +Y: ə > i
3. *r > l; ə-epenthesis; *y > Øʸ; +Y: *a > e
4. *r > l; *y > Øʸ; +Y: *a > e

MAROUA

				√ C C Ca	
Mbazla	*pilif* pəʸləʸsʸ	*plsØ-Øʸ		*prsa-y(-kʷ)	1
Giziga Muturwa	*pilis(i)* pəʸləʸsy				2
	plis pləʸs				3
	putʃu pəʷtsʸəʷ	*ptsa-Øʸ-Øʷ	*pØtsa-y-kʷ		4
				√ C CaCa	
Giziga Marva	*piles* pəʸlaʸs	*plasØ-Øʸ		*prasa-y	5

1. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ
2. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; *y > i
3. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i
4. *s > ts; ə-epenthesis; *y > Øʸ; +Y: ts > tʃ; lexical-final *a > ə; +W: ə > u
5. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e

LAMANG

Lamang	*pəlis(i)* pələʸsy	*plsØ-y	*prsa-y	1
Hdi	*pəlis* pələʸs			2

1. *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i
2. *r > l; ə-epenthesis; *y > Øʸ; +Y: ə > i

MUSGUM

			√ C C Ca	
Mulwi	*aplis* apləʸs	*plsØ-Øʸ	*prsa-y	1
Vulum	*aplis* apləʸs			1
Mbara	*pilis* pəʸlaʸs	*plsØ-Øʸ		1
			√ C CaCa	
Muskum	*pleseke* plaʸsaʸkaʸ	*plasa-Øʸ-ka	*prasa-y-kʷa	2

1. *r > l; a-prothesis (Mulwi, Vulum); ə-epenthesis; *y > Øʸ; +Y: ə > i
2. *r > l; *y > Øʸ; +Y: *a > e

GIDAR

Gidar	*pəlsa* pəlsa	*plsa		*prsa(-y)	1
	piilsa pəʸylsa	*pyʸlsa	*plsa-y		2

1. *r > l; ə-epenthesis
2. *r > l; ə-epenthesis; metathesis lsy > yls; *y > yʸ; +Y: ə > i; assimilation y (> i) > i/i_

horse$_2$

PCC ***t(a)k(a)wa** (-k^w)

BATA

Gude	*təh^{w}a* təxwa	*txwa		*tkwa	1
1. *k > x; ə-epenthesis					

DABA

Buwal	*dak^w* dakw	*dakw	*dakwØ	*takwa	1
Gavar	*dak^w* dakw				1
Mbudum	*dok* da^{w}k	*dakØ^w			2
1. *t > d 2. *t > d; *w > Ø^w					

SUKUR

Sukur	*duk* dwk	*dwk	*dkwØ	*tkwa(-k^w)	1
	dək'u[80] dəkʔw	*dkw-ʔ	*dkwØ-k		2
1. *t > d; metathesis kw > wk; *w > u 2. *t > d; *k^w > k; *k > ʔ; ə-epenthesis; *w > u					

MARGI

Bura	*taku* takw	*takw	*takwØ	*takwa	1
Kilba	*taku* takw				1
Margi	*tagu* tagw	*tagw	*tagwØ		2
Margi-South	*tagu* tagw				2
1. *w > u 2. *k > g; *w > u					

HIGI

Kirya	*təku* təkw	*tkw	*tkwØ	*tkwa	1
1. ə-epenthesis; *w > u					

human being, person

PCC *(ma-) **d(a)wa** (-y, -k^w, -n; FV)

BATA

Gude	*ə^{n}da* ənda	*n-da	*mØ-dØa	*ma-dwa	1
Sharwa	*^{n}du* ndw	*n-dw	*mØ-dwØ		2
1. ə-prothesis; homorganic assimilation *m > n/_d 2. homorganic assimilation *m > n/_d ; w > u					

[80] It remains a matter of decision by the linguist whether to consider a case like this as representing a consonant cluster involving the glottal stop or rather a case of glottalisation prosody: ʔ > Ø^ʔ; +ʔ: k > k^ʔ.

MAFA

Mafa	*ⁿdo* ndaʷ	*n-daØʷ	*mØ-dawØ	*ma-dawa(-na)	1
Cuvok	*ⁿda* nda	*n-da	*mØ-dØa		2
	ⁿdana ndana	*n-da-na	*mØ-dØa-na		2
1. homorganic assimilation *m > n/_d; *w > Øʷ; +W: *a > o 2. homorganic assimilation *m > n/_d					

TERA

Tera	*ⁿduku* ndwkʷəʷ	*n-dw-kʷa	*mØ-dwØ-kʷa	*ma-dwa-kʷa	1
1. homorganic assimilation *m > n/_d; *w > u; FV *a > ə; +W: ə > u					

SUKUR

Sukur	*ⁿda* nda	*n-da	*mØ-dØa	*ma-dwa	1
	ⁿdu ndw	*n-dw	*mØ-dwØ		2
1. homorganic assimilation *m > n/_d 2. homorganic assimilation *m > n/_d; *w > u					

MARGI

Kilba	*ⁿdu* ndw	*n-dw	*mØ-dwØ	*ma-dwa	1
1. homorganic assimilation *m > n/_d; *w > u					

MANDARA

Podoko	*məⁿda*	*m-ⁿda	*mⁿØ-dØa	*ma-dwa(-y)	1
Malgwa	*ⁿda* nda	*n-da	*mØ-dØa		2
Glavda	*uda* wda	*w-da	*wØ-dØa		3
	uu ww	*w-w	*wØ-ØwØ		4
Dghwede	*wude* wʷəʷdaʸ	*wʷ-da-Øʸ	*wØ-dØa-y		5
1. *m > mⁿ > Øⁿ; +N: *d > ⁿd; ə-epenthesis 2. homorganic assimilation *m > n/_d 3. *m > w > u 4. *m > w > u; *w > u 5. *m > wʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e					

MOFU

Merey	*ⁿdo* ndaʷ	*n-daØʷ	*mØ-dawØ	*ma-dawa	1
Mofu North	*ⁿdaw* ndaw	*n-daw	*mØ-dawØ		2
Mofu-Gudur	*ⁿdaw* ndaw				2
Dugwor	*wdaw*	*w-daw	*wØ-dawØ		3
1. homorganic assimilation *m > n/_d; *w > Øʷ; +W: *a > o 2. homorganic assimilation *m > n/_d 3. *m > w					

LAMANG

Hdi	*məⁿdu* məⁿdw	*m-ⁿdw	*mⁿØ-dwØ	*ma-dwa	1
	mndu mⁿdw				2
Lamang	*uⁿdu* wⁿdw	*w-ⁿdw	*mⁿØ-dwØ		3
1. *m > mⁿ > Øⁿ; +N: *d > ⁿd; ə-epenthesis; *w > u 2. *m > mⁿ > Øⁿ; +N: *d > ⁿd; *w > u 3. *m > mⁿ > Øⁿ; +N: *d > ⁿd; prefixal *m > w > u; radical *w > u					

Higi

Kirya	*ⁿdə* ndə	*n-da	*mØ-dØa	*ma-dwa	1
Psikye	*ⁿdə* ndə				1
	wuⁿdu $w^{w}ə^{w^{n}}dw$	*w-ⁿdw	*mⁿØ-dwØ		2
1. homorganic assimilation *m > n/_d; lexical-final *a > ə 2. *m > m^{n} > $Ø^{n}$; +N: *d > ⁿd; *w > u; ə-epenthesis; prefixal *m > w^{w} > u; +W: ə > u					

hump[81]

PCC/loan(?)[82] *(ma-, xa-) **dz(a)g^{w}(a)ra** (-y, -k^{w}; FV)

Daba

				√ C C Ca	
Mbudum	*ɗiⁿgir* $də^{y^{n}}gə^{y}r$	*$Ø^{n}$-ɗgr-$Ø^{y}$	*mⁿØ-ɗgrØ-y	*ma-dzg^{w}ra-y	1
Gavar	*ɗəⁿgur* $də^{n}gə^{w}r$	*$Ø^{n}$-ɗg^{w}r	*mⁿØ-ɗg^{w}rØ		2
				√ C CaCa	
Buwal	*ɗəg^{w}ar*	*ɗg^{w}arØ		*dzg^{w}ara	3
1. *dz (> d) > ɗ; *g^{w} > g; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i; *m > $Ø^{n}$; +N: g > ⁿg 2. *dz (> d) > ɗ; ə-epenthesis; +W: ə > u; *m > $Ø^{n}$; +N: g^{w} > ⁿg^{w} 3. *dz (> d) > ɗ; ə-epenthesis					

Tera

Tera	*ɗugul* $də^{w}g^{w}ə^{w}l$	*ɗg^{w}lØ	*dzg^{w}ra	1
1. *dz (> d) > ɗ; *r > l; ə-epenthesis; +W: ə > u				

Sukur

Sukur	*ʒigudˊ* $dz^{y}ə^{y}g^{w}ə^{w}dˊ$	*dzg^{w}ɗ-$Ø^{y}$	*dzg^{w}dØ-y	*dzg^{w}ra-y	1
1. *r > ɗ; *y > $Ø^{y}$; +Y: *dz > ʤ; +Y: ə > i; +W: ə > u					

Hurza

				√ C CaCa	
Mbuko	*mədzəgar* mədzəgar	*mØ-dzgarØ		*ma-dzg^{w}ara	1
				√ CaCaCa	
Vame	*hwadegwar* $x^{w}ada^{y}g^{w}ar$	*xa-dag^{w}ar-$Ø^{y}$	*xa-dag^{w}arØ-y	*xa-dzag^{w}ara-y	2
1. *g^{w} > g; ə-epenthesis 2. *dz > d; +W: *x > x^{w}; *y > $Ø^{y}$; +Y: *a > e					

[81] Hump on a zebu cow, by extension also used for a human hunchback. Note that Central Chadic speakers know two different kinds of cows, the zebu cow and a humpless smaller breed.

[82] It remains unclear whether the root reflects a borrowing from Kanuri *zugure ~ tsugure* or whether Kanuri has borrowed this root from Central Chadic. Various reflexes of this root (even within the same language, cf. Bura) may mirror different paths of borrowing or re-borrowing.

MARGI

				√ C C Ca	
Bura	*dʒukur* dzʸəʷkʷəʷr	*dzkʷr-Øʸ	*dzkʷrØ-y	*dzgʷra-y	1
	dʒikur dzʸəʸkʷəʷr				
				√ CaCaCa	
Bura	*madagara*	*ma-dagara		*ma-dzagʷara	3
	madakara	*ma-dakara			4
1. *gʷ > kʷ; ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +W: ə > u 2. *gʷ > kʷ; *ə-epenthesis; y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; +W: ə > u 3. *dz > d; *gʷ > g 4. *dz > d; *gʷ (> g) > k					

MOFU

			√ C C Ca	
Zulgo	*madzəgər*	*ma-dzgrØ	*ma-dzgʷra	1
			√ C CaCa	
Gemzek	*madzəgar*	*ma-dzgarØ	*ma-dzgʷara	1
Merey	*madzəgar*			1
Mofu North	*madzəgar*			1
			√ CaCaCa	
Moloko	*mətokor* mətaʷkʷaʷr	*mØ-takʷarØ	*ma-dzagʷara	2
1. *gʷ > g; ə-epenthesis 2. *dz > t; *gʷ > kʷ; +W: *a > o; ə-epenthesis				

KOTOKO-NORTH

Mpade	*sugure* səʷgʷəʷraʸ	*sgʷra-Øʸ	*sgʷra-y	*dzgʷra-y	1
Malgbe	*sigbire* səʸgbəʸraʸ	*sgbra-Øʸ	*sgbra-y		2
1. *dz (> z) > s; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e 2. *dz (> z) > s; *gʷ > gb; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*zurkˀʷa*[83] zəʷrkʷʔa	*zrkʷ-ʔa	*zkʷrØ-ka	*dzgʷra-kʷa	1
1. *dz > z; *gʷ > kʷ; metathesis kʷr > rkʷ; suffixal *kʷ (> k) > ʔ; ə-epenthesis; +W: ə > u					

KOTOKO-SOUTH

Mazera	*dʒaŋkʷara* dzʸaᵑkʷara	*Øⁿ-dzakʷara-Øʸ	*mⁿØ-dzakʷara-y	*ma-dzagʷara-y	1
1. *gʷ > kʷ; *y > Øʸ; +Y: *dz > dʒ; *m > Øⁿ; +N: kʷ > ᵑkʷ					

MUSGUM

Mulwi	*zugurii* zəʷgʷəʷrəʸy	*zgʷrØ-yʸ	*dzgʷra-y	1
1. *dz > z; ə-epenthesis; +W: ə > u; *y > yʸ; +Y: ə > i; *y > i				

[83] It remains a matter of decision by the linguist whether to consider a case like this as representing a consonant cluster involving the glottal stop or rather a case of glottalisation prosody: ʔ > Øˀ, +ʔ: kʷ > kˀʷ.

hunger[84]

PCC *(x^{w}a-, RED-) **m(a)ya** (-k^{w}, -t; FV)

BATA

Sharwa	*miki* mykə^{y}	*my^{y}-ka	*myØ-ka	*mya-k^{w}a	1
1. *k^{w} > k; FV *a > ə; *y > y^{y}; +Y: ə > i; *y > i					

MAFA

Mafa	*may*	*mayØ		*maya	
Cuvok	*may*				

TERA

				√ C Ca	
Ga'anda	*miita* mə^{y}yta	*my^{y}-ta	*myØ-ta	*mya-ta	1
				√ CaCa	
Tera	*mee* ma^{y}	*maØ^{y}	*mayØ	*maya	2
1. ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. y > Ø^{y}; +Y: a > e; (the status of vowel length in Tera remains problematic)					

SUKUR

Sukur	*may*	*may	*mayØ	*maya	
	mai may				1
1. *y > i					

HURZA

Mbuko	*may*	*may	*mayØ	*(x^{w}a-)maya	
Vame	*may*				
	humay x^{w}ə^{w}may	*x^{w}-may	*x^{w}Ø-mayØ		
1. ə-epenthesis; +W: ə > u					

MARGI

Bura	*mi* my	*my	*myØ	*mya	1
Margi	*mi* my				1
1. *y > i					

MANDARA

Podoko	*maya*	*maya		*maya	
Matal	*may*	*mayØ			
Mandara	*waya*	*waya			1
Malgwa	*waya*				1
Glavda	*waya*				1
	wa	*wa	*waØØ		1
1. *m > w					

MOFU

Moloko	*may*		*maya	
Zulgo	*may*			
Gemzek	*may*			

[84] This root has a broad range of meanings, including 'to be hungry; famine, drought, scarcity'. See also the root for 'mouth', which is likely identical, but both allow for different augmented structures and surface representations, hence we describe and analyse them separately in this study.

Merey	*may*	*mayØ		
Dugwor	*may*			
Mofu North	*may*			
Mofu-Gudur	*may*			

MAROUA

Giziga-Muturwa	*may*	*mayØ		*(xʷa-)maya(-kʷ)	
Giziga-Marva	*may*				
Mbazla	*may*				
	omai' aʷmayʔ	*Øʷa-may-ʔ	*xʷa-mayØ-kʷ		1
1. *xʷ > Øʷ; +W: *a > o; *kʷ (> k) > ʔ; *y > i					

LAMANG

Lamang	*maya*	*maya		*maya	
Hdi	*maya*				

HIGI

Kamwe-Nkafa	*må*	*ma	*maØØ	*maya(kʷ)	
Kamwe-Futu	*ma*				
Psikye	*ma*				
Bana	*ma*				
Kirya	*'ma*	*ma-ʔ	*maØØ-kʷ		1
1. *kʷ (> k) > ʔ > Øʔ; +ʔ > ʔm					

MUSGUM

Mbara	*miyamay* məʸyamay	*mØyʸa-may	*maya-mayØ	*RED-maya	1
1. *y > yʸ; ə-epenthesis; +Y: ə > i					
GIDAR					
Gidar	*maya*	*maya	*maya		

hut, bedroom

PCC ***v(a)na*** (-a, -y, -kʷ)

BATA

Bata	*vine* vəʸnaʸ	*vna-Øʸ	*vna-y	*vna-y	1
Sharwa	*vira* vəʸra	*vra-Øʸ	*vra-y		2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 2. *n > r; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

DABA

Mbudum	*bəŋ*	*bŋ	*bnØ-k	*vna-kʷ	1
1. *v > b; ə-epenthesis; *kʷ > k; fusion *nk > ŋ					

MAFA

Cuvok	*veŋ* vaʸŋ	*vaŋ-Øʸ	*vanØ-y-k	*vana-y-kʷ	1
1. *y > Øʸ; +Y: *a > e; *kʷ > k; fusion *nk > ŋ					

SUKUR

Sukur	*va*	*va	*vØa	*vna	

MARGI

Kilba	*vi* vy	*v-y	*vØØ-y	*vna-y	1
1. *y > i					

MANDARA

				√ C Ca	
Malgwa	*bəre* bəra^{y}	*bra-Ø^{y}	*bra-y	*vna(-y)	1
Glavda	*və*	*və	*vØa		2
	v	*vØ			
				√ CaCa	
Mandara	*bere* ba^{y}ra^{y}	*bara-Ø^{y}	*bara-y	*vana-y	3
1. *v > b; *n > r; *y > Ø^{y}; +Y: lexical-final *a > e 2. lexical-final *a > ə 3. *v > b; *n > r; *y > Ø^{y}; +Y: *a > e					

MOFU

				√ C Ca	
Zulgo	*bir* bə^{y}r	br-Ø^{y}	*brØ-y	*vna(-y)	1
Gemzek	*bir* bə^{y}r				1
	bəra	*bra			2
Ouldeme	*vər*	*vr	*vrØ		3
				√ CaCa	
Merey	*ber* ba^{y}r	*bar-Ø^{y}	*barØ-y	*vana-y	4
Moloko	*ver* va^{y}r	*var-Ø^{y}	*varØ-y		5
1. *n > r; *v > b; ə-epenthesis; *y > Ø^{y}; +Y: *ə > i 2. *n > r; *v > b; ə-epenthesis 3. *n > r; ə-epenthesis 4. *n > r; *v > b; *y > Ø^{y}; +Y: *a > e 5. *n > r; *y > Ø^{y}; +Y: *a > e					

MAROUA

				√ C Ca	
Mbazla	*viŋ* və^{y}ŋ	*vŋ-Ø^{y}	*vnØ-y-k	*vna-y-k^{w}	1
				√ CaCa	
Giziga-Marva	*veŋ* va^{y}ŋ	*vaŋ-Ø^{y}	*vanØ-y-k	*vana-y-k^{w}	2
1. k^{w} > k; fusion *nk > ŋ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. k^{w} > k; fusion *nk > ŋ; ə-epenthesis; *y > Ø^{y}; +Y: a > e					

LAMANG

Lamang	*ivŋ(i)* ə^{y}vŋy	*vŋ-y^{y}	*vnØ-y-k	*vna-y-k^{w}	1
	ivəŋ ə^{y}vŋ	*vŋ-Ø^{y}			2
Hdi	*viŋ* və^{y}ŋ				3
1. k^{w} > k; fusion *nk > ŋ; ə-prothesis; *y > y^{y}; +Y: ə > i; *y > i 2. k^{w} > k; fusion *nk > ŋ; ə-prothesis; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 3. k^{w} > k; fusion *nk > ŋ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

HIGI

Kamwe-Nkafa	*vyi* v^yy	*v-y^y	*vØØ-y	*vna-y	1
Kamwe-Futu	*vi* vy	*v-y			2
1. *y > y^y > i;+Y: *v > v^y 2. *y > i					

KOTOKO-NORTH

Afade	*fin* f$ə^y$n	*fn-$Ø^y$	*fnØ-y	*vna-y	1
Mpade	*fin* f$ə^y$n				1
Malgbe	*fin* f$ə^y$n				1
1. *v > f; ə-epenthesis; *y > $Ø^y$; +Y: ə > ɨ					

KOTOKO-CENTRAL

Lagwan	*vini* v$ə^y$ny	*vn-y^y	*vnØ-y	*vna-y	1
Mser	*vir* v$ə^y$r	*vr-$Ø^y$	*vrØ-y		2
1. ə-epenthesis; *y > y^y > i; +Y: ə > ɨ 2. *n > r; ə-epenthesis; *y > $Ø^y$; +Y: ə > ɨ					

MUSGUM

Vulum	*funii* f$ə^w$n$ə^y$y	*fna-y^y-$Ø^w$		*fna-y-k^w	*vna(-a)-y-k^w	1
Mulwi	*funii* f$ə^w$n$ə^y$y					1
Mbara	*fiŋay* f$ə^y$ŋay	*f**ŋ**-ay^y	*fnk-a-y	*fnØ-a-y-k		2
1. *v > f; ə-epenthesis; *k^w > $Ø^w$; +W: ə > u; lexical-final *a > ə; *y > y^y > i; +Y: ə > i 2. *v > f; ə-epenthesis; multiple metathesis nyk > kny; fusion kn > ŋ; *y > y^y; +Y: ə > i						

GIDAR

Gidar	*biina* b$ə^y$yna	*by^{y}na	*bna-y	*vna-y	1
1. *v > b; metathesis ny > yn; ə-epenthesis; *y > y^y > i; +Y: ə > i					

itch/scratch, to

PCC *(ma-, RED-) **f(a)na** (-a, -y,- k^w)

MAFA

Cuvok	*mefefrey* ma^{y}fa^{y}fra^{y}y	*ma-fa-fØr-ay^y	*ma-RED-farØ-a-y	*ma-RED-fana-a-y	1
1. *n > r; *y > y^y; +Y: *a > e					

HURZA

				√ C Ca	
Vame	*fəfəna*	*f-fna		*RED-fna	1
				√ CaCa	
Mbuko	*fəfan*	*f-fan	*f-fanØ	*RED-fana	1
1. ə-epenthesis					

MOFU

				√ C Ca	
Gemzek	*fər*	*fr	*frØ	*fna	1
				√ CaCa	
Moloko	*far*	*far	*farØ	*(ma-, RED-) fana(-y)	2
Mofu-Gudur	*fafər*	*fa-fØr	*RED-farØ		1

Merey	*fəfar*	*f-far			1
Dugwor	*məferey* məfa^{y}ra^{y}y	*m-far-ay^{y}	*mØ-farØ-a-y		3
Mada	*moffor* ma^{w}ffa^{w}r	*ma-f-far-Ø^{w}	*ma-RED-farØ-k^{w}		4
1. *n > r; ə-epenthesis 2. *n > r 3. *n > r; ə-epenthesis; *y > y^{y}; +Y: *a > e 4. *n > r; *k^{w} > Ø^{w}; +W: *a > o					

MAROUA

Giziga-Muturwa	*fun* fə^{w}n	*fn-Ø^{w}	*fnØ-k^{w}	*fna-k^{w}	1
Giziga-Marva	*funa* fə^{w}na	*fna-Ø^{w}	*fna-k^{w}		1
1. *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u					

jealousy, be jealous

PCC ***s(a)r(a)ka*** (-a, -y, -k^{w}, -n; FV)

BATA

Gude	*sərəha*	*srxa		*srka(-n)	1
Jimi	*sərəhən*	*srx-n	*srxØ-n		1
1. *k > x; ə-epenthesis					

DABA

Buwal	*sərah*	*srax	*sraxØ	*sraka(-y)	1
Gavar	*sərah*				1
Mbudum	*sərah*				1
Daba	*səreh* səra^{y}x	*srax-Ø^{y}	*sraxØ-y		2
1. *k > x; ə-epenthesis 2. *k > x; ə-epenthesis; *y > Ø^{y}; +Y : a > e					

MAFA

Mafa	*sərak*	*srak	*srakØ	*sraka(-y)	1
Cuvok	*sələk* səla^{y}k	*slak-Ø^{y}	*slakØ-y		2
1. ə-epenthesis 2. *r > l; ə-epenthesis; *y > Ø^{y}; +Y : a > e					

TERA

Tera	*ʒiri* z^{y}ə^{y}ry	*zr-y^{y}	*zrØØ-y	*srka-y	1
1. *s > z; ə-epenthesis; *y > y^{y} > i; +Y: z > ʒ; +Y: ə > i					

SUKUR

Sukur	*sərəh*	*srx	*srxØ	*srka	1
1. *k > x; ə-epenthesis					

HURZA

Mbuko	*sərak*	*srak	*srakØ	*sraka	1
1. ə-epenthesis					

MARGI

Bura	*silka* sə^{y}lka	*slka-Ø^{y}	*slka-y	*srka-y	1
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y : ə > i					

MANDARA

					√ C C Ca	
Podoko	*fira* $s^{y}ə^{y}ra$	*sra-$Ø^{y}$		*srØa-y	*srka-y(-na)	1
Malgwa	*fələŋa* $s^{y}ələŋa$	*slŋ-$Ø^{y}$-a	*slnk-y-a	*slkØ-y-na		2
Glavda	*siɬga* $sə^{y}lga$	*slga-$Ø^{y}$		*slga-y		3
					√ CaC Ca	
	sel $sa^{y}l$	*sal-$Ø^{y}$	*salØØ-y		*sarka-y	4
1. ə-epenthesis; *y > $Ø^{y}$; +Y: *s > ʃ; +Y: ə > i 2. *r > l; ə-epenthesis; *y > $Ø^{y}$; +Y: *s > ʃ; multiple metathesis kyn > nky; fusion nk > ŋ 3. *r > l; *k > g; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > ɨ 4. *r > l; *y > $Ø^{y}$; +Y: *a > E						

MOFU

				√ C C Ca	
Ouldeme	*silik* $sə^{y}lə^{y}k$	*slk-$Ø^{y}$	*slkØ-y	*srka-y	1
Muyang	*zirey* $zə^{y}ra^{y}y$	*zr-ay^{y}	*zrØØ-a-y		2
				√ CaC Ca	
Gemzek	*solo* $sa^{w}la^{w}$	*sala-$Ø^{w}$	*salØa-k^{w}	*sarka-k^{w}	3
				√ C CaCa	
Gemzek	*sələk*	*slak	*slakØ 4	*sraka(-n)	4
Merey	*sələk*				
Dugwor	*sələk* $səla^{y}k$	*slak-$Ø^{y}$	*slakØ-y 5		5
Moloko	*sələk* $səla^{y}k$				
Mofu North	*səleŋ* $səla^{y}ŋ$	*slaŋ	*slakØ-n 6		6
Mofu-Gudur	*səleŋ* $səla^{y}ŋ$				
1. *r > l; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i 2. *s > z; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i; +Y: *a > e 3. *r > l; *k^{w} > $Ø^{w}$; +W: *a > o 4. *r > l; ə-epenthesis 5. r > l; ə-epenthesis; *y > $Ø^{y}$; +Y: *a > e 6. r > l; ə-epenthesis; *y > $Ø^{y}$; +Y: *a > e; fusion kn > ŋ					

MAROUA

Giziga-Marva	*sulon* $sə^{w}la^{w}n$	*sla-$Ø^{w}$-n	*slØa-k^{w}-n	*srka-k^{w}-n	1
1. *r > l; ə-epenthesis; *k^{w} > $Ø^{w}$; +W: ə > u; +W: *a > o					

LAMANG

Hdi	*draku* drakw	*drak-w	*drakØ-k^{w}	*sraka-k^{w}	1
1. *s (> t) > d; *k^{w} > w > u					

HIGI

Kirya	*səlkə*	*slka	*srka	1
1. *r > l; ə-epenthesis; lexical-final *a > ə				

kidney

Areal root[85] *(ma-) **ɣʷ(a)r(a)sa** (-y, -RED)

DABA

				√ C C Ca	
Gavar	*wəlif* wələˠsˠ	*wls-Øˠ	*wlsØ-y	*ɣʷrsa-y	1
				√ C CaCa	
Buwal	*ules* wlaˠs	*wlas-Øˠ	*wlasØ-y	*ɣʷrasa-y	2
1. *r > l; *ɣʷ > w; ə-epenthesis; *y > Øˠ; +Y: ə > i; +Y: s > ʃ 2. *r > l; *ɣʷ > w > u; *y > Øˠ; +Y: *a > e					

SUKUR

Sukur	*yuləʃiʃi* ɣʷəʷləsˠysˠy	*ɣʷls-yˠ-syˠ	*ɣʷlsØ-y-RED	*ɣʷrsa-y-RED	1
1. *r > l; ə-epenthesis; +W: ə > u; *y > yˠ; +Y: ə > i; +Y: s > ʃ; *y > i					

HURZA

Vame	*hulasase* xʷəʷlasasaˠ	*xʷlasa-sa-Øˠ	*xʷlasa-sa-y	*ɣʷrasa-RED-y	1
1. *r > l; ə-epenthesis; *ɣʷ > xʷ; +W: ə > u; *y > Øˠ; +Y: *a > e					

MARGI

Bura	*kulʃi* kʷəʷlsˠy	*kʷls-yˠ	*kʷlsØ-y	*ɣʷrsa-y	1
Margi	*hulʃi* xʷəʷlsˠy	*xʷls-yˠ	*xʷlsØ-y		2
1. *r > l; ə-epenthesis; *ɣʷ > kʷ; +W: ə > u; *y > yˠ; +Y: *s > ʃ; *y > i 2. *r > l; ə-epenthesis; *ɣʷ > xʷ; +W: ə > u; *y > yˠ; +Y: *s > ʃ; *y > i					

MANDARA

Podoko	*hulәfe* xʷəʷləsˠaˠ	*xʷlsa-Øˠ	*xʷlsa-y	*(ma-)ɣʷrsa (-y/-RED)	1
Glavda	*kwfəla* kʷsˠla	*kʷsla-Øˠ	*kʷlsa-y		2
Malgwa	*ŋursasa* ŋwrsasa	*ŋ-wrsa-sa	*mØ-ɣʷrsa-RED		3
1. *r > l; *ɣʷ > xʷ; ə-epenthesis; +W: ə > u; *y > Øˠ; +Y: *a > e 2. *r > l; *ɣʷ > xʷ; metathesis ls > sl; *y > Øˠ; +Y: *s > ʃ 3. *ɣʷ > w > u; homorganic assimilation *m >ŋ/_ɣʷ					

MOFU

Dugwor	*wures* wʷəʷraˠs		*wʷrasa-Øˠ	*wrasa-y	*ɣʷrasa-y 1
Mofu-Gudur	*wules* wʷəʷlaˠs		*wʷlasa-Øˠ	*wlasa-y	*ɣʷrasa-y 2
1. ə-epenthesis; *ɣʷ > wʷ; +W: ə > u; *y > Øˠ; +Y: *a > e 2. *r > l; ə-epenthesis; *ɣʷ > wʷ; +W: ə > u; *y > Øˠ; +Y: *a > e					

LAMANG

				√ C C Ca	
Lamang	*ywələsisi* ɣʷələsysy	*ɣʷls-y-sy	*ɣʷlsØ-y-sØy	*ɣʷrsa-y-RED	1
	yuləsisi ɣʷəʷləsysy				1
Hdi	*hulisisi* xʷəʷlaˠsysy	*xʷls-yˠ-syˠ	*xʷlsØ-y-sØy		2
				√ CaC Ca	

[85] Gravina (2015) observes that by reference to his own sub-classification (Gravina 2007, 2011) "[t]his root is widespread amongst the languages of the North sub-branch, but is only attested in Buwal, Gavar and Sukur of the South sub-branch. *l did not exist in Proto-Central Chadic, but was an innovation in the North sub-branch following *r→l." We tentatively assume that on a deeper level of reconstruction, the PCC simple root was ***ɣʷ(a)r(a)sa**. If so, then Malgwa (MANDARA) and Dugwor (MOFU) would be somewhat exceptional in having retained the original *r, while most other languages underwent and phonemicised the common *r > l change.

Lamang	*ɣoləsisi* ɣʷaʷləsysy	*ɣʷals-y-sy	*ɣʷalsØ-y-RED	*ɣʷarsa-y-RED	3
	ɣoləlisi ɣʷaʷlələʸsy	*ɣʷal-l-s-y	*ɣʷal-RED-sØ-y	~*ɣʷar-RED-sa-y	3
1. *r > l; ə-epenthesis; *y > i 2. *r > l; *ɣʷ > xʷ; ə-epenthesis; *y > i 3. *r > l; +W: *a > o; ə-epenthesis; *y > i					

Higi

				√ C C Ca	
Kamwe-Futu	*ɣulətʃi* ɣʷəʷlətsʸy	*ɣʷlts-yʸ	*ɣʷltsØ-y	*ɣʷrsa-y	1
Bana	*wəlisa* wələʸsa	*wlsa-Øʸ	*wlsa-y		2
				√ CaC Ca	
Kamwe-Nkafa	*golifi* gʷaʷləʸsʸy	*gʷals-yʸ	*gʷalsØ-y	*ɣʷarsa-y	3
1. *r > l; *s > ts; ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: ts > tʃ 2. *r > l; *ɣʷ > w; ə-epenthesis; *y > Øʸ; +Y: *ə > i 3. *r > l; *ɣʷ > gʷ; ə-epenthesis; *y > yʸ > i; +Y: *ə > i; +Y: s > ʃ					

Kotoko-North

Mpade	*duguse* dəʷgʷəʷsaʸ	*dg̰ʷsa-Øʸ	*gʷdsa-y	*ɣʷrsa-y	1
1. *r (> l > d) > d; ɣʷ > gʷ; metathesis gʷd > dg̰ʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e					

Kotoko-Central

Lagwan	*xudusɨ* xʷəʷdə̀ʷsəʸ	*xʷdsa-Øʸ	*xʷdsa-y	*ɣʷrsa-y	1
Mser	*hidis* xəʸdəʸs	*xds-Øʸ	*xdsØ-y		
1. *ɣʷ > xʷ; *r (> l > d) > d; ə-epenthesis; *y > Øʸ; lexical-final *a > ə; +Y: *ə > i; +W: ə > u 2. *ɣʷ > x; *r (> l) > d; ə-epenthesis; *y > Øʸ; +Y: *ə > i					

know, to

PCC *(ma-) **s(a)na** (-y, -kʷ, -n, -t; FV)

Bata

Gude	*ʃii* sʸəʸy	*sa-yʸ	*sØa-y	*(ma-)sna(-y/-kʷ-n)	1
Sharwa	*sinan* səʸnan	*sna-Øʸ-n	*sna-y-n		2
Tsuvan	*asənakən*	*a-sna-k-n	*Øa-sna-kʷ-n		3
1. *y > yʸ > i; +Y: *s > ʃ; lexical-final *a > ə; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 3. *kʷ > k; ə-epenthesis					

Daba

				√ C Ca	
Gavar	*sən*	*sn	*snØ	*sna(-kʷ)	1
Daba	*sən*				1
Mbudum	*səŋ*	*sŋ	*snØ-k		2
				√ CaCa	
Buwal	*san*	*san	*sanØ	*sana	
1. ə-epenthesis 2. ə-epenthesis; *kʷ > k; fusion nk > ŋ					

MAFA

Mafa	*sən*	*sn	*snØ	*sna	1
Cuvok	*səna*	*sna			1
1. ə-epenthesis					

TERA

Tera	*zəni* zəny	*zn-y	*znØ-y	*sna-y	1
1. *s > z; ə-epenthesis; *y > i					

SUKUR

Sukur	*sə*	*sə	*sØa	*sna	1
1. lexical-final *a > ə					

HURZA

				√ C Ca	
Vame	*səna*	*sna		*sna	1
				√ CaCa	
Mbuko	*san*	*san	*sanØ	*sana	
1. ə-epenthesis					

MARGI

Margi South	*sini* sə^{y}ny	*sn-y^{y}	*snØ-y	*sna-y(-t(a))	1
Bura	*si^{n}da* sə^{y}nda	*sn-Ø^{y}-da	*snØ-y-da		2
Kilba	*zə^{n}di* zəndy	*zn-d-y	*znØ-y-d		3
1. ə-epenthesis; *y > y^{y} > i; +Y: ə > i 2. ə-epenthesis; *t > d; *y > Ø^{y}; +Y: ə > i 3. *s > z; *t > d; ə-epenthesis; metathesis yd > dy; *y > i					

MANDARA

Matal	*masəlay*	*ma-sl-ay	*ma-srØ-a-y	*(ma-)sna(-a)-y(-k^{w}a)	1
Glavda	*sirga* sə^{y}rga	*sr-Ø^{y}-ga	*srØ-y-k^{w}a		2
1. *n (> r) > l; ə-epenthesis 2. *n > r; *k^{w} > g; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

MOFU

				√ C Ca	
Ouldeme	*sə*	*sə	*sØa	*(ma-)sna ((-a)-y)	1
Muyang	*sər*	*sr	*srØ		2
Merey	*sər*				2
Mofu-Gudur	*sər*				2
Dugwor	*məsərey* məsəra^{y}y	*m-sr-ay^{y}	*mØ-srØ-a-y		3
Mofu North	*mesərey* ma^{y}səra^{y}y	*ma-sr-ay^{y}	*ma-srØ-a-y		3
Gemzek	*mesəre* ma^{y}səra^{y}	*ma-sra-Ø^{y}	*ma-sra-y		4
Mada	*masəla*	*ma-sla			5
				√ CaCa	
Moloko	*sar*	*sar	*sarØ	*sana	6
1. lexical-final *a > ə 2. *n > r; ə-epenthesis 3. *n > r; ə-epenthesis; *y > y^{y}; +Y: *a > e 4. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 5. *n (> r) > l 6. *n > r					

MAROUA

Giziga Marva	*sən*	*sn	*snØ	*sna(-y-k^{w})	1
Mbazla	*ʃiŋ*	*sŋ-Ø^{y}-Ø	*snØ-y-k		2
1. ə-epenthesis 2. ə-epenthesis; *k^{w} > k; fusion nk > ŋ; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i					

LAMANG

Lamang	*sna*	*sna	*sna	
Hdi	*sna*			

HIGI

Bana	*səna*	*sna		*sna(-y-k^{w}/ta)	1
Kamwe-Nkafa	*sənata*	*sna-ta			1
Kamwe-Futu	*sinəgə* sə^{y}nəgə	*sn-Ø^{y}-ga	*snØ-y-k^{w}a		2
1. ə-epenthesis 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > g; FV: *a > ə					

KOTOKO-ISLAND

Buduma	*hən*	*xn	*xnØ	*sna	1
1. *s > x; ə-epenthesis					

KOTOKO-NORTH

Afade	*surun* sə^{w}rwn	*sr-w^{w}-n	*srØ-k^{w}-n	*sna-y/-k^{w}-n	1
Mpade	*sɨn* sə^{y}n	*sn-Ø^{y}	*snØ-y		2
1. *n > r; *k^{w} > w^{w} > u; ə-epenthesis; +W: ə > u 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

KOTOKO-CENTRAL

Mser	*sɨn* sə^{y}n	*sn-Ø^{y}	*snØ-y	*sna-y(-k^{w}-n)	1
Lagwan	*sɨn* sə^{y}n				1
	sɨnwun sə^{y}nwə^{w}n	*sn-Ø^{y}-w^{w}-n	*snØ-y-k^{w}-n		2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > w^{w}; +W: ə > u					

KOTOKO-SOUTH

Zina	*sə*	*sə	*sØa	*sna(-y-k^{w}a)	1
Mazera	*sɨ^{ŋ}ga* sə^{y}ŋga	*sŋ-Ø^{y}-ga	*snØ-y-k^{w}a		2
1. lexical-final *a > ə 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > g; homorganic assimilation *n > ŋ/_g					

GIDAR

Gidar	*əsəna*	*ə-sna	*Øa-sna	*ma-sna(-y)	1
	əsɨna əsə^{y}na	*ə-sna-Ø^{y}	*Øa-sna-y		2
1. prefixal *a > ə; ə-epenthesis 2. prefixal *a > ə; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

laugh, to

PCC *(Ca-, ma-) **ɣ^{w}(a)b(a)sa**[86] (-a, -y, -k^{w}, -n; FV)

BATA

				√ C C Ca	
Gude	*nwusə* ^{ŋ}w^{w}ə^{w}sə	*Ø^{n}-w^{w}sa	*m^{n}Ø-wØsa	*(Ca-)ma-ɣ^{w}bsa(-y-k^{w})	1
Sharwa	*am^{w}iskə* amwə^{y}skə	*a-m-ws-Ø^{y}-ka	*Øa-mØ-wØsØ-y-k^{w}a		2
				√ CaC Ca	
Tsuvan	*am^{w}eskən* amwa^{y}skən	*a-m-was-Ø^{y}-k-n	*Øa-mØ-waØsØ-y-k^{w}-n	*Ca-ma-ɣ^{w}absa-y-k^{w}-n	3
1. *ɣ^{w} > w^{w}; ə-epenthesis; +W: ə > u; lexical-final *a > ə; *m > Ø^{n}; +N: w > ^{ŋ}w 2. *ɣ^{w} > w; *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; FV *a > ə 3. *ɣ^{w} > w; *k^{w} > k; ə-epenthesis; *y > Ø^{y}; +Y: *a > e					

DABA

				√ C C Ca	
Daba	*mis* mə^{y}s	*ms-Ø^{y}	*mØ-ØØsØ-y	*ma-ɣ^{w}bsa-y	1
				√ C CaCa	
Buwal	*ɓas*	*ʔbasØ		*ɣ^{w}basa	2
Gavar	*ɓas*				2
Mbudum	*ɓas*				2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *ɣ^{w} (> ɣ > g > k) > ʔ; fusion ʔb > ɓ					

MAFA

Mafa	*ng^{w}as* ng^{w}as	*n-g^{w}as	*mØ-g^{w}ØasØ	*ma-ɣ^{w}basa	1
1. *ɣ^{w} > g^{w}; partial assimilation *m > n/_g^{w}					

TERA

Tera	*məs*	*m-s	*mØ-ØØsØ	*ma-ɣ^{w}bsa	1
1. ə-epenthesis					

SUKUR

Sukur	*ɓis* ɓə^{y}s	*ɓs-Ø^{y}	*ʔbsØ-y	*ɣ^{w}bsa-y	1
1. *ɣ^{w} (> ɣ > g > k) > ʔ; fusion ʔb > ɓ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

HURZA

				√ C C Ca	
Vame	*muʃ* mws^{y}	*m-ws-Ø^{y}	*mØ-wØsØ-y	*ma-ɣ^{w}bsa-y(a)	1
	muʃiya mws^{y}ə^{y}ya	*m-ws-y^{y}a	*mØ-wØsØ-ya		2
				√ C CaCa	
Mbuko	*^{m}basay* mbasay	*m-bas-a-y	*mØ-ØbasØ-a-y	*ma-ɣ^{w}basa-a-y	

[86] This root could also be reconstructed with *ɓ rather than *b, and assumed sound shifts would then be *ɓ > b (de-glottalisation) rather than *b > ɓ (glottalisation). Currently, we see no arguments that would strongly favour one of the two solutions. In Sukur and some DABA group languages, the potential *b > ɓ sound change could have been stimulated by a postulated fortition *ɣ^{w} > ʔ and subsequent fusion ʔb > ɓ.

1. *ɣʷ > w > u; *y > Øʸ; +Y: *s > ʃ
2. *ɣʷ > w > u; *y > yʸ; +Y: *s > ʃ; +Y: ə > i

MARGI

Bura	*kumʃi* kʷəʷmsʸy	*kʷms-yʸ	*mØ-kʷØsØ-y	*ma-ɣʷbsa-y	1
	muʃa mwsʸa	*m-wsa-Øʸ	*mØ-wØsa-y		2
	miʃa məʸsʸa	*m-sa-Øʸ	*mØ-ØØsa-y		3

1. *ɣʷ (> gʷ) > kʷ; metathesis mkʷ > kʷm; ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: *s > ʃ
2. *ɣʷ > w > u; *y > Øʸ; +Y: s > ʃ
3. ə-epenthesis; *y > Øʸ; +Y: s > ʃ; +Y: ə > i

MANDARA

Glavda	*ʁuɓasᵊga* ɣʷəʷɓasga	*ɣʷɓas-ga	*ɣʷɓasØ-kʷa	*ɣʷbasa(-kʷa)	1
Dghwede	*gəp'asa* gəɓasa	*gɓasa			2
Podoko	*uɓasa* wɓasa	*wɓasa			3

1. *kʷ (> gʷ) > g; *b > ɓ; ə-epenthesis; +W: ə > u
2. *ɣʷ (> gʷ) > g; *b > ɓ; ə-epenthesis
3. *ɣʷ > w > u; *b > ɓ

MOFU

Ouldeme	*masay*	*ma-s-a-y	*ma-ØØsØ-a-y	*ma-ɣʷbasa(-a-y)	
Moloko	*ᵐbas* mbas	*m-basØ	*mØ-Øbasa		
Merey	*ŋgʷasa* ŋgʷasa	*m-gʷasa	*mØ-gʷØasa		1
Dugwor	*məngʷesey* məᵑgʷaʸsaʸy	*mØ-ᵑgʷas-ayʸ	*mᵑa-gʷØasØ-a-y		2

1. *ɣʷ > gʷ; homorganic assimilation *m > ŋ/_gʷ
2. *ɣʷ > gʷ; ə-epenthesis; *y > yʸ; +Y: *a > e; +N: gʷ > ᵑgʷ

LAMANG

Lamang	*ɣəᵐbasa* ɣəᵐbasa	*Øⁿ-ɣbasa	*mⁿØ-ɣbasa	*(ma-)ɣʷbasa(-a-y)	1
Hdi	*ɣuɓasay* ɣʷəʷɓasay	*ɣʷɓas-a-y	*ɣʷɓasØ-a-y		2

1. *ɣʷ > ɣ; ə-epenthesis; +N: *b > ᵐb
2. *b > ɓ; ə-epenthesis; +W: ə > u

HIGI

Kirya	*ɓwiʃi* ɓwəʸsʸy	*ɓws-yʸ	*wɓsØ-y	*(ma-)ɣʷbsa-y	1
Kamwe-Nkafa	*'uʃi* ʔwsʸy	*ʔws-yʸ	*wʔsØ-y		3
Bana	*'wəʃi* ʔwəsʸy				2
Psikye	*'wuʃi* ʔwəʷsʸy				2
	ŋ'wuʃi ᵑʔwəʷsʸy	*Øⁿ-ʔws-yʸ	*mⁿØ-wʔsØ-yʸ		5
Kamwe-Futu	*uʃi* wsʸy	*wØsØ-yʸ			6

1. *ɣʷ > w; ə-epenthesis; metathesis wɓ > ɓw; *y > yʸ > i; +Y: ə > i; +Y: *s > ʃ
2. *ɣʷ > w; *b > ʔ; metathesis wʔ > ʔw; w > u; *y > yʸ > i; +Y: *s > ʃ
3. *ɣʷ > w; *b > ʔ; metathesis wʔ > ʔw; ə-epenthesis; *y > yʸ > i; +Y: *s > ʃ
4. *ɣʷ > w; *b > ʔ; metathesis wʔ > ʔw; ə-epenthesis; +W: ə > u; *y > Øʸ > i;+Y: *s > ʃ
5. ɣʷ > w; *b > ʔ; metathesis wʔ > ʔw; ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: *s > ʃ; *m > Øⁿ; +N: ʔ > ᵑʔ
6. *ɣʷ > w > u; *y > yʸ > i; +Y: *s > ʃ

Gidar

Gidar	*əmasa* *amasa	*Øa-ma-ØØsa	*Ca-ma-ɣʷbsa	1
1. prefixal *a > ə				

leaf

PCC *(ma-, RED-) **gʷ(a)ɬ(a)ba**[87] (-y, -kʷ; FV)

Daba

Buwal	*gʷałakʷ*	*gʷała-kʷ	*gʷałaØØ-kʷ	*gʷałaba-kʷ	
Gavar	*gʷałak*	*gʷała-k	*gʷałaØØ-k		

Mafa

Mafa	*ɮaᵐbay*	*Øⁿ-ɮab-ay	*mⁿØ-ØØɮabØ-a-y	*ma-gʷałaba-a-y/-kʷ	1
Cuvok	*gamłak*	*gamła-k	*mØ-gałØØa-k		2
1. *ɬ > ɮ; *m > Øⁿ; +N: *b > ᵐb 2. *gʷ > g; *kʷ > k; metathesis mg > gm					

Mandara

					√ C C Ca	
Podoko	*ɮəba(-ha)*	*ɮba		*Øɮba	*gʷɬba	1
Dghwede	*lba(-xa)*	*lba		*Ølba		2
					√ C CaCa	
Mandara	*ɬapa*	*ɬapa		*Øɬapa	*gʷɬaba	3
Matal[88]	*babał ahaf*	*ba-bał(a?)	*RED-bała	*RED-Øɬaba	*RED-gʷɬaba	4
1. *ɬ > ɮ; ə-epenthesis 2. *ɬ > l 3. *b > p 4. metathesis *ɬb > bɬ						

Mofu

				√ C C Ca	
Mada	*ɮba (-h y elle)*	*Øɮba	*Øɮba	*gʷɬba	1
				√ C CaCa	
Dugwor	*ɬaᵐba*	*Øⁿ-ɬaba	*mⁿØ-Øɬaba	*(ma-)gʷɬaba	2
Zulgo	*ɬaᵐba(-h)*				2
Merey	*ɬaᵐba(-h)*				2
Moloko	*ałaᵐba(-h)*	*Øⁿa-ɬaba	*mⁿa-Øɬaba		2
Mofu North	*bała(-h)*	*bała	*Øɬaba		3
1. *ɬ > ɮ 2. *m > Øⁿ; +N: *b > ᵐb 3. metathesis ɬb > bɬ					

[87] Some of the expressions are original compounds containing reduced reflexes of the post- or preposed root ***xʷ(a)fa*** 'tree'.

[88] Word division? The shape of the Matal word for 'tree' is not available in the database. (See footnote 87.)

MAROUA

Giziga-Muturwa	*(ha-)ɬaɓ*	*ɬaɓ	*ØɬaɓØ	*gʷɬaba	1
1. *b > ɓ					

LAMANG

Lamang	*baya*	*ba-ya	*ØØba-ya	*gʷɬba(-ya)	
Hdi	*hl(-xwa)* ɬ(-xʷa)	*ɬ	*ØɬØØ		

GIDAR

				√ CaC Ca	
Gidar	*gałᵐba*	*Øⁿ-gałba	*mⁿØ-gałba	*ma-gʷałba	1
				√ CaCaCa	
	gałaᵐba	*Øⁿ-gałaba	*mⁿØ-gałaba	*ma-gʷałaba	1
1. *m > Øⁿ; +N: *b > ᵐb					

left$_1$

PCC ***gʷ(a)ra*** (-y, -n)

DABA

Buwal	*gʷʊla* gʷəʷla	*gʷla	*gʷra	1
Mbudum	*gula* gʷəʷla			1
1. *r > l; ə-epenthesis; +W: ə > u				

MAFA

Mafa	*gula* gʷəʷla	*gʷla	*gʷra	1
Cuvok	*gula* gʷəʷla			1
1. *r > l; ə-epenthesis; +W: ə > u				

HURZA

Mbuko	*gula* gʷəʷla	*gʷla	*gʷra	1
1. *r > l; ə-epenthesis; +W: ə > u				

MOFU

Moloko	*gəlo* gəlaʷ	*gØʷla	gwla	*gʷra	1
Zulgo	*gula* gʷəʷla	*gʷla			2
Gemzek	*gula* gʷəʷla				2
Merey	*gula* gʷəʷla				2
Dugwor	*gula* gʷəʷla				2
Mofu North	*gula* gʷəʷla				2
Mofu-Gudur	*gula* gʷəʷla				2
1. *r > l; ə-epenthesis; re-segmentalisation *gʷ > g+w; w > Øʷ; +W: a > o 2. *r > l; ə-epenthesis; +W: ə > u					

MAROUA

Giziga-Muturwa	*gula* gʷəʷla	*gʷla	*gʷra	1
Giziga-Marva	*gula* gʷəʷla			
1. *r > l; ə-epenthesis; +W: ə > u				

HIGI

Psikye	*gʷəla* gʷəla	*gʷla		*gʷra	1
1. *r > l; ə-epenthesis					

KOTOKO-NORTH

Malgbe	*geli* gaʸly	*gal-yʸ	*galØ-y	*gʷaʳa-y	1
1. *r > l; *gʷ > g; *y > yʸ > i; +Y: *a > e					

KOTOKO-CENTRAL

Lagwan	*ɣilan* ɣəʸlan	*ɣla-Øʸ-n	*ɣla-y-n	*gʷaʳa-y-n	1
1. *r > l; *gʷ (> g) > ɣ; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

left$_2$

PCC *(na-) **ɮaɓa** (-a, -y)

DABA

Daba	*ɮaɓay*	*ɮaɓa-y	*ɮaɓa-y	
SUKUR				
Sukur	*ɮaɓai* ɮaɓay	*ɮaɓa-y	*ɮaɓa-y	

MANDARA

Mandara	*naɮaɓa*	*na-ɮaɓa		*(na-)ɮaɓa(-y)	
Malgwa	*nadhlaba*				
	nathlaba	*na-ɬaɓa			1
Podoko	*ɮaɓa*	*ɮaɓa			
Dghwede	*ɮaʔa*	*ɮaʔa			2
Glavda	*jaɓa*	*jaɓa			3
	ÿeβa ÿaʸβa	*ÿaβa-Øʸ	*ÿaβa-y		4
	ÿa	*ÿa	*ÿaØØ		5
1. *ɮ > ɬ 2. *ɓ > ʔ 3. *ɮ > j 4. *ɮ > ÿ; *ɓ > β 5. *ɮ > ÿ					

LAMANG

Lamang	*ɮaɓa*	*ɮaɓa	*ɮaɓa	
Hdi	*ɮaɓa*			

HIGI

Bana	*ɮeɓ(i)* ɮaʸɓy	*ɮaɓ-yʸ	*ɮaɓØ-y	*ɮaɓa-y	1
1. *y > yʸ > i; +Y: *a > e					

GIDAR

Gidar	*ɮabay*	*ɮaɓØay	*ɮaɓØ-a-y	*ɮaɓa-a-y	1
1. *ɓ > b					

leopard[89]

PCC ***d(a)g(a)va*** (-y, -k^{w}, -n)

BATA

Jimi	*dəgəv^{w}an* dəgəv^{w}an	*dgva-Ø^{w}-n	*dgva-k^{w}-n	*dgva(-y)-k^{w}(-n)	1
Sharwa	*digv^{w}a* də^{y}gv^{w}a	*dgva-Ø^{y}-Ø^{w}	*dgva-y-k^{w}		2
Tsuvan	*dəgəva*	*dgva			3
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: *v > v^{w} 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > Ø^{w}; +W: *v > v^{w} 3. ə-epenthesis					

SUKUR

				√ C C Ca	
Sukur[90]	*duguvu* də^{w}gə^{w}vw^{w}	*dgv-w^{w}	*dgvØ-k^{w}	*dgva-k^{w}	1
				√ C CaCa	
	dəg^{w}avak	*dgava-kØ^{w}	*dgava-kw^{w}	*dgava-k^{w}	2
1. ə-epenthesis; *k^{w} > w^{w} > u; +W: *ə > u 2. ə-epenthesis; re-segmentalisation *k^{w} > k+w^{w}; w^{w} > Ø^{w}; +W: *g > g^{w}					

MOFU

Zulgo	*dəvar*	*dØva-r	*dgva(-n)	1
Gemzek	*dəvar*			1
Merey[91]	*dəvar*			1
Dugwor[92]	*dəvar*			1
Mofu-Gudur	*dəva*	*dØva		2
1. *n > r; ə-epenthesis 2. ə-epenthesis				

MAROUA

Mbazla[93]	*dəvaŋ garak*	*dva-ŋ	*dØva-k-n	*dgva-k^{w}-n	1
1. *k^{w} > k; fusion kn > ŋ; ə-epenthesis					

[89] As Gravina (2015) points out, "the general sense of the root is 'leopard', though in Dugwor, Mbazla and possibly Merey the root is part of a compound, implying that it may have a different or more generic meaning. The root itself is difficult to reconstruct." Indeed, there is some overlap with words for 'hyena' and 'lion'. As a matter of fact, in Sukur and Psikye the word translates (also) as 'hyena'. In Mbazla the word for 'leopard' is a compound said to involve the root for 'lion'. This may be due to the observation that certain synchronic forms for 'leopard' and 'lion' are quite similar, such as *dəvar* in MOFU and Mbazla (MAROUA) *dəvaŋ (garak)* 'leopard' to be compared to Mbara (MUSGUM) *divaŋ* 'lion'.

[90] Translated as 'hyena' in the database.

[91] The database also gives a parallel compound form *dəvar dzidzege*.

[92] The database gives the full form as *dəvar y peł*.

[93] The database gives a compound *dəvaŋ garak* for 'leopard', and translates *dəvaŋ* as 'lion'. (Note the similar surface form *divaŋ* 'lion' in Mbara (MUSGUM) < PCC ***ɮ(a)v(a)ra**.)

Higi

Kamwe-Futu	*dəɣʷava*	*dɣava-Øʷ	*dɣava-kʷ	*dgava-kʷ	1
Bana	*d(ə)ɣʷava*				1
Psikye[94]	*dəgʷava*	*dgava-Øʷ			2
1. *g > ɣ; *kʷ > Øʷ; +W: ɣ > ɣʷ; ə-epenthesis 2. *kʷ > Øʷ; +W: *g > gʷ; ə-epenthesis					

lie down/sleep, to

Areal root *(ma-) **x(a)na** (-a, -y, -kʷ, -kʷa-na; FV)

Mafa

Cuvok	*naha*	*naxa	*xana	1
1. metathesis nx > xn				

Hurza

				√ C Ca	
Vame	*həna*	*xna		*xna	1
				√ CaCa	
Mbuko	*nahay*	*nax-ay	*naxØ-a-y	*xana-a-y	2
1. ə-epenthesis 2. metathesis nx > xn					

Mandara

Podoko	*həna*	*xna		*(ma-)xna(-y(-kʷa-na))	1
Matal	*mahən*	*ma-xn	*ma-xnØ		1
	mahin maxəʸn	*ma-xn-Øʸ	*ma-xnØ-y		2
Glavda[95]	*xiᵑgana* xəʸŋgana	*xŋ-Øʸ-ga-na	*xn-y-ka-na		3
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *kʷ (> k) > g; ə-epenthesis; *y > Øʸ; +Y: ə > i; homorganic assimilation *n > ŋ/_g					

Mofu

Mofu-Gudur	*n*	*n	*ØnØ	*(ma-)xna((-a)-y)	
Zulgo	*həna*	*xna			1
Merey	*həna*				1
Gemzek	*mehəne* maʸxəna ʸ	*ma-xna-Øʸ	*ma-xna-y		2
Dugwor	*manay*	*ma-n-ay	*ma-ØnØ-a-y		
Mofu North	*meney* maʸnaʸy	*ma-n-ayʸ			3
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: *a > e 3. *y > yʸ; +Y: *a > e					

[94] Translated as 'hyena' in the database. A parallel form *dəgʷava* with glottalised ɗ is here considered a transcription error.

[95] This form in Glavda must be considered irregular under the general observation that the FV /a/ only occurs once per word and in absolute word-final position, i.e. we would expect the ending *-kʷ-na rather than *-kʷa-na. The explanation may provide profound insights into synchronic Glavda phonology and/or grammar.

MAROUA

Giziga-Marva	*hən*	*xn	*xna	1
Mbazla	*hən*			1
1. ə-epenthesis				

LAMANG

				√ C Ca	
Lamang	*hina* xəʸna	*xna-Øʸ	*xna-y	*xna-y	1
				√ CaCa	
Hdi	*xana*	*xana		*xana	
1. ə-epenthesis; *y > Øʸ; +Y: ə > i					

HIGI

				√ C Ca	
Bana	*xəni* xəny	*xn-y	*xnØ-y	*xna-y	1
Kamwe-Nkafa	*hinigʷə* xəʸnəʸgʷə	*xn-Øʸ-gʷa	*xnØ-y-gʷa	(-kʷa)	2
				√ CaCa	
Kirya	*haanə*	*xaØana	*xakana	*xana-kʷa	3
1. ə-epenthesis; *y > i 2. *kʷ > gʷ; ə-epenthesis; *y > Øʸ; +Y: ə > i; FV *a > ə 3. *kʷ > k; metathesis nk > kn; lexical-final *a > ə; vowel length due to loss of intervocalic /k/					

KOTOKO-ISLAND

Buduma	*hənay*	*xn-ay	*xnØ-a-y	*xna-a-y	1
1. ə-epenthesis					

lion$_1$

PCC *(kʷa-) **ɮ(a)vara**[96] (-y, -kʷ)

BATA

			√ C CaCa	
Gude	*livʸara* ləʸvʸara	*lvara-Øʸ	*ɮvara-y	1
			√ CaCaCa	
Tsuvan	*ɮʸaɮʸaware* ɮʸaɮʸawaraʸ	*ɮa-ɮawara-Øʸ	*RED-ɮavara-y	2
1. *ɮ > l; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *v > vʸ 2. *v > w; +Y: ɮ > ɮʸ; *y > Øʸ; +Y: lexical-final *a > e				

[96] Gravina (2015) considers the root unlikely to have existed in Proto-Central Chadic, but rather to be a later innovation or borrowing, mainly in view of his postulated initial consonant *l, which is not a native Central Chadic phoneme. At variance with Gravina, we here consider Tsuvan (BATA) and Daba (DABA) to be archaic in preserving PCC */ɮ/ as the initial root consonant and assume a later sound change *ɮ > r~l in other languages. Borrowing would appear to be somewhat counter-intuitive in the light of the root's wide distribution from southern BATA to northeastern MUSGUM. Nonetheless, as a loan it would be considered a well-integrated Pseudo-PCC root since it takes part in the characteristic Central Chadic distinction of root types depending on the presence or absence of medial */a/.

DABA

			√ C CaCa	
Daba	*ɮʸəvari* ɮʸəvary	*ɮvarØ-yʸ	*ɮvara-y	1
			√ CaCaCa	
Buwal	*levere* laʸvaʸraʸ	*lavara-Øʸ	*ɮavara-y	2
1. ə-epenthesis; *y > yʸ > i; +Y: ɮ > ɮʸ 2. *ɮ > l; *y > Øʸ; +Y : *a > e				

SUKUR

Sukur	*livari* ləʸvary	*lvarØ-yʸ	*ɮvara-y	1
	rivari rəʸvary	*rvarØ-yʸ		2
1. *ɮ > l; ə-epenthesis; +Y: ə > i; *y > i 2. *ɮ > r; ə-epenthesis; +Y: ə > i; *y > i				

HURZA

Vame	*alvare* alvaraʸ	*lvara-Øʸ	*ɮvara-y	1
1. *ɮ > l; a-prothesis; +Y: lexical-final *a > e				

MARGI

Margi-South	*ləvari* ləvary	*lvarØ-y	*ɮvara-y	1
1. *ɮ > l; ə-epenthesis; *y > i				

MANDARA

Podoko	*rəvara*	*rvara		*ɮvara(-y)	1
Glavda	*arvara*	*rvara			2
	arva	*rvaØØ			2
Malgwa	*ərvare* ərvaraʸ	*rvara-Øʸ	*rvara-y		3
Mandara	*evare* aʸvaraʸ	*Øvara-Øʸ	*Øvara-y		4
1. *ɮ > r; ə-epenthesis 2. *ɮ > r; a-prothesis 3. *ɮ > r; ə-prothesis; *y > Øʸ; +Y: lexical-final *a > e 4. *ɮ > r; a-prothesis; *y > Øʸ; +Y: prefixal and lexical-final *a > e					

LAMANG

Lamang	*ərvare* ərvaraʸ	*rvara-Øʸ	*rvara-y	*ɮvara-y	1
Hdi	*rveri* rvaʸry	*rvarØ-yʸ			2
1. *ɮ > r; ə-prothesis; *y > Øʸ; +Y: lexical-final *a > e 2. *ɮ > r; *y > yʸ > i; +Y: *a > e					

HIGI

			√ C CaCa	
Kamwe-Futu	*ləvari* ləvary	*lvarØ-y	*ɮvara-y	1
			√ CaCaCa	
Kirya	*wuravanə* wəʷravanə	*wʷØ-ravana	*kʷa-ɮavara	2
1. *ɮ > l; ə-epenthesis; *y > i 2. *ɮ > r; *r > n; ə-epenthesis; *kʷ > wʷ; +W: ə > u; lexical-final *a > ə				

MUSGUM

Mbara	*divaŋ* dəʸvaŋ	*dvaŋ-Øʸ	*dvanØ-y-k	*ɮvara-y-kʷ	1
1. *ɮ (> l) > d; *r > n; ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion nk > ŋ					

lion$_2$

Areal root/loan? *(ma-, RED-) **bar** (-k^w)

DABA

Mbudum	*mabor* maba^{w}r	*ma-bar-Ø^w		*ma-bar-k^w	1
1. *k^w > Ø^w; +W: *a > o					

MAFA

Cuvok	*mabar*	*ma-bar		*ma-bar	

HURZA

Mbuko	*bərbor* bərba^{w}r	*bØr-bar-Ø^w	*bar-bar-k^w	*RED-bar-k^w	1
1. *k^w > Ø^w; +W: *a > o; ə-epenthesis					

MOFU

Moloko	*mabor* maba^{w}r	*ma-bar-Ø^w	*ma-bar-k^w	*ma-bar(-k^w)	1
Dugwor	*mabor* maba^{w}r				1
Mofu North	*mabar*	*ma-bar			
Mofu-Gudur	*mabar*				
1. *k^w > Ø^w; +W: *a > o					

MAROUA

Giziga-Muturwa	*mobor* ma^{w}ba^{w}r	*ma-bar-Ø^w	*ma-bar-k^w	1
Giziga-Marva	*mobor* ma^{w}ba^{w}r			1
1. *k^w > Ø^w; +W: *a > o				

lion$_3$

Areal root/loan[97] *(ma-) **z(a)y(a)la**

MAFA

Mafa	*ʒele* z^{y}a^{y}la^y	*zaØ^{y}la		*zayla	1
1. *y > Ø^y; +Y: *z > ʒ; +Y: *a > e					

HURZA

Mbuko	*ziyel* zə^{y}ya^{y}l	*zy^{y}al	*zy^{y}alØ	*zyala	1
1. *y > y^y; ə-epenthesis; +Y: ə > i; +Y: *a > e					

MOFU

				√ C C Ca	
Zulgo	*azil* azyl	*a-zyl	*Øa-zylØ	*(ma-)zyla	1
Merey	*zil* zə^{y}l	*zØ^{y}l	*zylØ		2
				√ C CaCa	
Gemzek	*zel* za^{y}l	*zØ^{y}al	*zyalØ	*zyala	3
1. *y > i					

[97] All available examples in the data show the consonant /l/ in C_3 position, which is not reconstructed for PCC. This could be an indication that this root is a loan from outside Chadic or of younger vintage if from within Chadic. On the other hand, reconstructable PCC *r or *ɮ could have changed into /l/ in all those modern CC languages for which we have data. There is no comparative evidence to reconstruct either *l for a loan or *r/ɮ for PCC as the historically underlying final consonant of the root. For no compelling reason, we here assume a loan in the shape of underlying ***z(a)y(a)la**.

2. ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 3. *y > Øʸ; +Y: *a > e					
Higi					
Bana	*ʒil* zʸyl	*zyl	*zylØ	*zyla	1
1. *y > i					

locust

PCC *(ma-) **dz(a)ra** (-a, -y, -kʷ)

Daba

Gavar	*dʒeri* dzʸaʸry	*dzarØ-yʸ	*dzara-y	1
Buwal	*dʒere* dzʸaʸraʸ	*dzara-Øʸ		2
Mbudum	*dʒere* dzʸaʸraʸ			2
1. *y > yʸ > i ; +Y: *dz > dʒ; +Y: *a > e 2. *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e				

Mafa

Mafa	*dzaray*	*dzarØ-ay	*dzara-a-y	
Cuvok	*dʒaray* dzʸaray	*dzarØ-a-yʸ		1
1. *y > yʸ; +Y: *dz > dʒ				

Tera

Tera[98]	*ⁿdʒere* ndzʸaʸraʸ	*n-dzara-Øʸ	*mØ-dzara-y	*(ma-)dzara-y(-kʷ)	1
	ʒoola zʸaʷaʷla	*zala-Øʸ-Øʷ	*zala-y-kʷ		2
1. *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e; homorganic assimilation *m > n/_dz 2. *r > l; *dz > z; *y > Øʸ; +Y: z > ʒ; *kʷ > Øʷ; +W: *a > o; vowel length unaccounted for					

Sukur

Sukur	*dzalai* dzalay	*dzalØ-y	*dzara-a-y	1
1. *r > l				

Hurza

				√ C Ca	
Vame	*dzuray* dzəʷray	*dzr-ay-Øʷ	*dzrØ-ay-kʷ	*dzra-a-y-kʷ	1
				√ CaCa	
Mbuko	*dzaray*	*dzarØ-ay		*dzara-a-y	
1. ə-epenthesis; *kʷ > Øʷ; +W: ə > u					

Mofu

Gemzek	*dzara*	*dzara	*dzara((-a)-y)	
Zulgo	*dzara*			
Mada	*dʒara* dzʸara	*dzara-Øʸ		1
Ouldeme	*dzaray*	*dzarØ-a-y		
Merey	*dzaray*			
Mofu North	*dzaray*			

[98] The two forms stem from the same source and are both derived from the common PCC root. However, the distinct modern surface forms would appear to indicate that *ʒoola* is a borrowing from an as yet unidentified likely (Central) Chadic language that has undergone different sound changes.

Muyang	*dʒaray* dz^{y}aray	*dzarØ-a-y^{y}		2
Moloko	*dʒaray* dz^{y}aray			2
Mofu-Gudur	*dʒaray* dz^{y}aray			2
1. *y > Ø^{y}; +Y: *dz > dʒ 2. *y > y^{y}; +Y: *dz > dʒ				

MAROUA

Giziga-Muturwa	*dʒaray* dz^{y}aray	*dzarØ-a-y^{y}	*dzara-a-y	1
1. *y > y^{y}; +Y: *dz > dʒ				

HIGI

				√ C Ca	
Bana	*dʒir* dz^{y}ə^{y}r	*dzr-Ø^{y}	*dzrØ-y	*dzra-y	1
				√ CaCa	
Kamwe-Futu	*dzala*	*dzala		*dzara	
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *dz > dʒ 2. *r > l					

GIDAR

Gidar	*zaray*	*zara-y	*dzara-y	1
1. *dz > z				

lung

PCC *(ma-, RED-) **b(a)k^{w}(a)ɗ(a)fa** (-RED, -y, -n; FV)

BATA

Gude	*gugufinə* g^{w}ə^{w}g^{w}ə^{w}fynə	*g^{w}-g^{w}f-y-na	*RED-Øg^{w}ØfØ-y-na	*(RED-)bk^{w}ɗa(-y(-na))	1
Sharwa	*byəfi* b^{y}əfy	*bf-y^{y}	*bØØfØ-y		2
1. *k^{w} > g^{w}; +W: ə > u; ə-epenthesis; *y > i; FV *a > ə 2. ə-epenthesis; *y > y^{y} > i; +Y: *b > b^{y}					

DABA

Buwal	*ɣampaf*	*ɣampaf	*mØ-paɣaØfØ	*(ma-)bak^{w}aɗa	1
Gavar	*kampaf*	*kampaf	*mØ-pakaØfØ		2
Mbudum	*bahaf*	*baxaf	*baxaØfØ		3
Daba	*pokoduf* pa^{w}k^{w}a^{w}də^{w}f	*pak^{w}adf	*pak^{w}aɗfØ		4
1. *b > p; *k^{w} (> k > x) > ɣ; multiple metathesis mpɣ > ɣmp 2. *b > p; *k^{w} > k; multiple metathesis mpk > kmp 3. *k^{w} > x 4. *b > p; ə-epenthesis; +W: ə > u; +W: *a > o					

MAFA

Mafa	*baf*	*baf	*baØØfØ	*bak^{w}ɗa(-y)	
Cuvok	*bef* ba^{y}f	*baf-Ø^{y}	*baØØfØ-y		1
1. *y > Ø^{y}; +Y: *a > e					

TERA

Tera	*xuxup* $x^wə^wx^wə^wp$	*x^w-x^wp	*RED-Øx^wØpØ	*RED-bk^{w}dfa	1
	fufuf fə^{w}fə^{w}f	*f^w-f^wf	*RED-Øf^wØfØ		2
1. *k^w > x^w; *f > p; ə-epenthesis; +W: ə > u 2. *k^w (> x^w) > f^w; ə-epenthesis; +W: ə > u					

SUKUR

Sukur	*bəf*	*bf	*bØØfØ	*bk^{w}dfa	1
1. ə-epenthesis					

HURZA

				√ C C C Ca	
Vame	*kukufa* k^{w}ə^{w}k^{w}ə^{w}fa	*k^w-k^{w}fa	*RED-Øk^{w}Øfa	*RED-bk^{w}dfa	1
				√ C C CaCa	
Mbuko	*baf*	*baf	*bØØafØ	*bk^{w}dafa	
1. ə-epenthesis; +W: ə > u					

MARGI

				√ C C C Ca	
Kilba	*guguvi* g^{w}ə^{w}g^{w}ə^{w}vy	*g^w-g^{w}v-y	*RED-Øg^{w}ØvØ-y	*RED-bk^{w}dfa-y	1
				√ C CaC Ca	
Margi-South	*g^{w}ag^{w}avi* g^{w}ag^{w}avy	*g^{w}a-g^{w}av-y	*RED-Øg^{w}aØvØ-y	*RED-bk^{w}adfa-y	2
1. *k^w > g^w; *f > v; ə-epenthesis; +W: ə > u; *y > i 2. *k^w > g^w; *f > v; *y > i					

MANDARA

				√ C C C Ca	
Podoko	*bəfa*	*bfa	*bØØfa	*bk^{w}dfa	
				√ CaC C Ca	
Matal	*pafaf*	*pafa-fØ	*paØØfa-RED	*bak^{w}dfa-RED	1
1. *b > p; ə-epenthesis					

MOFU

				√ CaC C Ca	
Ouldeme	*^{m}bef* mba^{y}f	*m-baf-Ø^y	*mØ-baØØfØ-y	*(ma-)(RED-)bak^{w}dfa	1
Merey	*ba^{m}baf* ba^{m}baf	*Ø^n-ba-baf	*m^{n}Ø-RED-baØØfØ		
Dugwor	*bo^{m}bof* ba^{wm}ba^{w}f	*Ø^n-ba-baØ^{w}f	*m^{n}Ø-RED-bak^{w}ØfØ		2
Zulgo	*abaf*	*Øa-baf	*ba-baf	*RED-baØØfØ	
Gemzek	*abaf*				
				√ CaCaC Ca	
Moloko	*pahav*	*paxav	*paxaØvØ	*(RED-, ma-)bak^{w}adfa(-y)	3
Mada	*am^{m}bahaf*	*m-^{n}baxaf	*m^{n}Ø-baxaØfØ		4
Mofu-Gudur	*babəkaf*	*ba-bØkaf	*RED-bakaØfØ		5
1. *y > Ø^y; +Y: *a > e 2. *k^w > Ø^w; +W: *a > o 3. *k^w (> x^w) > x; *f > v 4. *k^w (> x^w) > x; *m > m^n; +N: b > ^{m}b; a-prothesis 5. *k^w > k; ə-epenthesis					

MAROUA

				√ C C CaCa	
Giziga-Marva	*bubu'of* bwbwʔaʷf	*bw-bwʷʔaf	*RED-bwʔafØ	*RED-bkʷɗafa	1
				√ CaCaC Ca	
Giziga-Muturwa	*bobo^{ŋ}gof* baʷba^{ŋ}gʷaʷf	*ba-Ø^{n}-bagʷaf	*RED-m^{n}Ø-bagʷaØfØ	*(RED-, ma-) bakʷadʃa	2
	bofoko baʷfaʷkʷaʷ	*bafakʷa	*bakʷaØfa		3
				√ CaCaCaCa	
Mbazla	*baagaf*	*baØagaf	*baɗagaf	*bagaɗafØ	*bakʷaɗafa	4
1. *ɗ > ʔ; *kʷ > wʷ > u; +W: *a > o 2. *kʷ > gʷ; +W: *a > o; *m > Ø^{n}; +N: gʷ > ^{ŋ}gʷ 3. metathesis kʷf > fkʷ; +W: *a > o 4. *kʷ (> k) > g; metathesis gɗ > ɗg; vowel length due to loss of intervocalic /ɗ/					

LAMANG

				√ C C C Ca	
Hdi	*bəf*	*bf	*bØØfØ	*bkʷdʃa	1
				√ C CaC Ca	
Lamang	*maxʷafi* maxʷafy	*ma-xʷaf-y	*ma-ØxʷaØfØ-y	*ma-bkʷadʃa-y	2
	maxofi maxʷaʷfy				3
1. ə-epenthesis 2. *kʷ > xʷ; *y > i 3. *kʷ > xʷ; +W: *a > o; *y > i					

HIGI

Kamwe-Nkafa	*gugufə* gʷəʷgʷəʷfə	*gʷ-gʷfa	*RED-ØgʷØfa	*(RED-) bkʷdʃa(-y)	1
Kirya	*gugufi* gʷəʷgʷəʷfy	*gʷ-gʷf-y	*RED-ØgʷØfØ-y		2
Bana	*bəfi* bəfy	*bf-y	*bØØfØ-y		3
1. *kʷ > gʷ; ə-epenthesis; lexical-final *a > ə 2. *kʷ > gʷ; ə-epenthesis; *y > i 3. ə-epenthesis; *y > i					

KOTOKO-NORTH

Afade	*gafo* gafaʷ	*gʷafa	*ØgʷaØfa	*bkʷadʃa	1
Mpade	*kofo* kaʷfaʷ	*kʷafa	*ØkʷaØfa		2
1. *kʷ > gʷ; +W: lexical-final *a > o 2. +W: *a > o					

KOTOKO-SOUTH

Mazera	*ɣʷavɣʷavɨ* ɣʷavɣʷavəʸ	*ɣʷav-ɣʷava-Øʸ	*RED-ØɣʷaØva-y	*RED-bkʷadʃa-y	1
1. *kʷ (> gʷ) > ɣʷ; *f > v; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ					

MUSGUM

				√ C C CaCa	
Mbara	*bubugaf* bəʷbəʷgaf	*b-bgʷaf	*RED-bgʷØafØ	*RED-bkʷɗafa	1
				√ CaCaCaCa	
Vulum	*baagaf*	*baØagaf < *baɗagaf		*bagaɗafØ	*bakʷaɗafa	2
1. *kʷ > gʷ; ə-epenthesis; +W: ə > u 2. *kʷ (> gʷ) > g; metathesis gɗ > ɗg; vowel length due to loss of intervocalic /ɗ/					

man, husband

PCC/Areal root[99] ***z(a)ɗ(a)ra**

MARGI

Margi	*sal*	*sal	*sØalØ	*zɗara	1
Margi-South	*sal*				1
Kilba	*sal*				1
1. *z > s; *r > l					

MANDARA

				√ C C Ca	
Matal	*ʒɪl* $z^{y}ə^{y}l$	*zØ^{y}l	*zylØ	*zɗra	1
Malgwa	*ʒiile* $z^{y}ə^{y}yla^{y}$	*zy^{y}la	*zyla		2
				√ C CaCa	
Mandara	*ʒele* $z^{y}a^{y}la^{y}$	*zØ^{y}ala	*zyala	*zɗara	3
1. *r > l; *ɗ > y > Ø^{y}; ə-epenthesis; +Y: *z > ʒ; +Y: ə > I 2. *r > l; *ɗ > y^{y} > i; ə-epenthesis; +Y: *z > ʒ; +Y: ə > i 3. *r > l; *ɗ > y > Ø^{y}; +Y: *z > ʒ; +Y: *a > e					

MOFU

Moloko	*zar*	*zar	*zØarØ	*zɗara	
Mada	*zala*	*zala	*zØala		1
Muyang	*zal*	*zal	*zØalØ		1
Gemzek	*zal*				1
Merey	*zal*				1
Dugwor	*zel* $za^{y}l$	*zØ^{y}al	*zyalØ		2
Mofu-Gudur	*zel* $za^{y}l$				2
1. *r > l 2. *r > l; *ɗ > y > Ø^{y}; +Y: *a > e					

MAROUA

Giziga-Marva	*zil* zyl	*zyl	*zylØ	*zɗra	1
Mbazla	*zil* zyl				1
	zəl	*zl	*zØlØ		2
1. *r > l; *ɗ > y > i 2. *r > l; ə-epenthesis					

LAMANG

Lamang	*zɗal(a)*	*zɗala	*zɗara	1
1. *r > l				

[99] Reconstructing C_3 as *r is supported by only Mokolo (MOFU), while all other languages show synchronic /l/ (unless deleted). Reconstructing C_2 as *ɗ is only supported directly by Lamang (LAMANG) and indirectly by fairly common *ɗ > y (> Ø^{y}) in other languages. Given the item's geographical distribution, we may be dealing with an areal innovation.

HIGI

Kamwe-Nkafa	*za*	*za	*zØØa	*zɗara	1
Psikye	*za*				1
Kirya	*zal*	*zal	*zØalØ		1
Bana	*zal*				1
1. *r > l					

market

Pseudo-PCC[100] *(RED-) **k(a)s(a)wka** (-y)

TERA

Hwana	*kasu* kasw	*kaswØØ	*kaswka	1
1. *w > u				

SUKUR

Sukur	*səku* səkw	*skw	*ØswkØ	*kswka	1
	suku sə^{w}kw	*skw^{w}	*ØswkØ		2
1. metathesis wk > kw; ə-epenthesis; *w > u 2. metathesis wk > kw; ə-epenthesis; +W: ə > u; *w > u					

HURZA

Mbuko	*k^{w}asuko* k^{w}aswka^{w}	*kasw^{w}ka	*kaswka	1
Vame	*kasuka* kaswka	*kaswka		2
1. *w > w^{w}; +W: *k > k^{w}; +W: lexical-final *a >o 2. *w > u				

MARGI

Kilba	*səku* səkw	*skw	*ØswkØ	*kswka	1
1. metathesis wk > kw; ə-epenthesis; *w > u					

MANDARA

				√ CaC C Ca	
Glavda	*kasuk^{w}a* kaswk^{w}a	*kasw^{w}ka		*kaswka(-y)	1
	kasuk kaswk	*kaswkØ			2
	kasu kasw	*kaswØØ			2
Malgwa	*k^{w}ask^{w}e* k^{w}ask^{w}a^{y}	*kaskØ^{w}a-Ø^{y}	*kasw^{w}ka-y		3
Matal	*k^{w}asək^{w}a*	*kaskØ^{w}a	*kasw^{w}ka		4
	kosuka < ka^{w}swka	*kasw^{w}ka			5
				√ CaCaC Ca	
Podoko	*k^{w}asak^{w}a*	*kasakØ^{w}a	*kasakw^{w}a	*kasawka	6
1. *w > u; *w > Ø^{w}; +W: *k > k^{w} 2. *w > u 3. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}; *y > Ø^{y}; +Y: lexical-final *a > e 4. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}; ə-epenthesis					

[100] This is an obvious loan from/via Kanuri (ultimately from Arabic *suq* and showing a characteristic Kanuri prefix ka-/kə-) and thus qualifies as a 'Pseudo'-PCC root insofar as it has been streamlined into Central Chadic phonology systems to the extent of being apparently 'reconstructable'.

5. *w > u; +W: *a > o 6. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}

MOFU

				√ CaC C Ca	
Zulgo	*k^{w}ask^{w}a*	kasØ^{w}ka	*kasw^{w}ka	*kaswka	1
Ouldeme	*k^{w}ask^{w}a*				1
Muyang	*gosku* ga^{w}skw	gaskw^{w}	*gasw^{w}ka		2
Mada	*gosko* ga^{w}ska^{w}	*gaskØ^{w}a	*gasw^{w}ka		3
				√ CaCaC Ca	
Moloko	*kosoko* ka^{w}sa^{w}ka^{w}	*kasaØ^{w}ka	*kasaw^{w}ka	*kasawka	3
1. *w > Ø^{w}; +W : *k > k^{w} 2. *k > g; *w > u; +W: *a > o 3. *w > Ø^{w}; +W: *a > o					

MAROUA

Giziga-Marva	*kosko* ka^{w}ska^{w}	*kasØ^{w}ka	*kasw^{w}ka	*kaswka	1
1. *w > Ø^{w}					

HIGI

				√ C C C Ca	
Kamwe-Futu	*ʃik^{w}i* s^{y}ə^{y}k^{w}y	*skØ^{w}-y^{y}	*Øsw^{w}kØ-y	*kswka	1
Psikye	*ʃk^{w}u* s^{y}k^{w}w	*skØ^{w}-Ø^{y}			2
				√ C CaCCa	
Psikye	*ʃek^{w}u* s^{y}a^{y}k^{w}w	*sakØ^{w}-Ø^{y}	*Øsaw^{w}kØ-y	*ksawka-y	3
1. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}; ə-epenthesis; +Y: ə > i; +Y: *s > ʃ; *y > i 2. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}; +Y: *s > ʃ; *w > u 3. metathesis wk > kw; *w > Ø^{w}; +W: k > k^{w}; +Y; *a > e; +Y: *s > ʃ; *w > u					

KOTOKO-ISLAND

Buduma	*kaxaguə* kaxagwə	*kaxagwa	*kaxawga	*kasawka	1
1. *s > x ; *k > g ; metathesis wg > gw; *w > u; lexical-final *a > ə					

KOTOKO-NORTH

Mpade	*kasugu* kasə^{w}gw	*kasgw^{w}	*kaswgØ	*(RED-)kaswka(-y)	1
Afade	*gasɨbi* gasə^{y}by	*gasbØØ-y^{y}			2
Malgbe	*gegbi* ga^{y}gbə^{y}	*ga-gØba-Ø^{y}	*RED-gaØbØa-y		3
1. *k > g; metathesis wg > gw; ə-epenthesis; *w > w^{w}; +W: ə > u; *w > u 2. *k > g; *w > b; ə-epenthesis; +Y: ə > ɨ; *y > i 3. *k > g; *w > b; +Y: *a > e; lexical final *a > ə; +Y: ə > ɨ					

KOTOKO-CENTRAL

Lagwan	*kasku* kaskw	*kaskw	*kaswkØ	*kaswka	1
Mser	*kasku* kaskw				1
1. metathesis wk > kw; *w > u					

MUSGUM

Mbara	*kasko* kaska^{w}	*kasØ^{w}ka	*kasw^{w}ka	*kaswka	1
1. metathesis wk > kw; *w > Ø^{w}; +W: *k > k^{w}; +W: *a > o					

meat

PCC *(sa-) **ɬ(a)w(a)ɗa**[101] (-y, -k^{w}, -n)

BATA

Gude	*ləwa*	*lwa	*lwØa	*ɬwɗa(-n)	1
Jimi	*liwən* lywən	*lywa-n	*lwya-n		2
Sharwa	*liwə* lywə	*lywa	*lwya		3
Tsuvan	*ɮiwe* ɮywa^{y}	*ɮywa	*ɮwya		4
1. *ɬ > l; ə-epenthesis 2. *ɬ > l; *ɗ > y > i; metathesis wy > yw; ə-epenthesis; lexical-final *a > ə 3. *ɬ > l; *ɗ > y > i; metathesis wy > yw; lexical-final *a > ə 4. *ɬ > ɮ; *ɗ > y > i; metathesis wy > yw; +Y: lexical-final *a > e					

DABA

				√ C C Ca	
Gavar	*ɮi* ɮy	*ɮ-y	*ɮØyØ	*ɬwɗa	1
Mbudum					1
				√ C CaCa	
Buwal	*ɮey* ɮa^{y}y	*ɮay^{y}	*ɮØayØ	*ɬwaɗa	2
1. *ɬ > ɮ; *ɗ > y > i 2. *ɬ > ɮ; *ɗ > y > y^{y}; +Y: *a > e					

MAFA

				√ C CaCa	
Mafa	*ɮuwed* ɮə^{w}wa^{y}ɗ	*ɮw^{w}aɗ-Ø^{y}	*ɮwadØ-y	*ɬwaɗa-y	1
				√ CaC Ca	
Cuvok	*ɬaw*	*ɬaw	*ɬawØØ	*ɬawɗa	
1. *ɬ > ɮ; *w > w^{w}; +W: ə > u; *y > Ø^{y}; +Y: *a > e					

TERA

Tera	*ɮu* ɮw	*ɮw	*ɮwØØ	*ɬwɗa	1
1. *ɬ > ɮ; *w > u					

SUKUR

Sukur	*ɬuwiy* ɬə^{w}wə^{y}y	*ɬw^{w}y^{y}	*ɬwyØ	*ɬwɗa	1
	ɮui ɬwy	*ɮwy			2
1. ə-epenthesis; *w > w^{w}; +W: ə > u; *ɗ > y > y^{y}; +Y: ə > i 2. *ɬ > ɮ; *w > u; *ɗ > y > i					

HURZA

Mbuko	*ɮuwed* ɮə^{w}wa^{y}ɗ	*ɮw^{w}aɗ-Ø^{y}	*ɮwadØ-y	*ɬwaɗa-y	1
Vame	*ɮuwe* ɮə^{w}wa^{y}	*ɮw^{w}a-Ø^{y}	*ɮwaØØ-y		1
1. *ɬ > ɮ; *w > w^{w}; +W: ə > u; *y > Ø^{y}; +Y: *a > e					

[101] Since */ɗ/ often corresponds to [y] in CC languages irrespective of Y-prosody, phonological *ɗ > y sound changes are hard to tell from morphological palatalisation stemming from *{-y}. Both processes may co-occur with certain lexical items in different languages. Mbuko and Mafa show for this lexical item that palatalisation stems from suffixal *{-y}, while in the BATA, DABA, and SUKUR languages palatalisation is due to root-internal*ɗ > y sound change.

MANDARA

Matal	*łəb*	*łb	*łbØØ	*łwɗa(-y)	1
Podoko	*łəɓa*	*łɓa	*łwʔa		2
Mandara	*hyua* x^{y}wa	*xwa-$Ø^{y}$	*xwØa-y		3
Malgwa	*hyuwa* $x^{y}ə^{w}$wa	*xw^{w}a-$Ø^{y}$			4
Glavda	*łuwa* $łə^{w}$wa	*$łw^{w}$a	*łwØa		5
	ł	*ł	*łØØØ		

1. *w > b; ə-epenthesis
2. *ɗ > ʔ; fusion wʔ > ɓ; ə-epenthesis
3. *ł > x; ə-epenthesis; *y > $Ø^{y}$; +Y: x > x^{y}; *w > u
4. *ł > x; ə-epenthesis; *y > $Ø^{y}$; +Y: x > x^{y}; *w > w^{w}; +W: ə > u
5. ə-epenthesis; *w > w^{w}; +W: ə > u

MOFU

				√ C C Ca	
Ouldeme	*łu* łw	łw	*łwØØ	*łwɗa	1
Zulgo	*łu* łw				1
Muyang	*ału* ałw	*ałw			2
				√ CaC Ca	
Dugwor	*ɬaw*	*ław	*ławØØ	*(sa-)ławɗa	
Mofu North	*ɬaw*				
Merey	*ɬaw*				
	ɮaw	*ɮaw	*ɮawØØ		3
	lo $ła^{w}$	*łaØ^{w}	*ławØØ		4
Gemzek	*lo* $ła^{w}$				4
Mada	*osło* $a^{w}sła^{w}$	*as-łaØ^{w}	*sØ-ławØØ		5
Mofu-Gudur	*aław*	*aØ-ław			2

1. *w > u
2. a-prothesis
3. *ł > ɮ
4. *w > Ø^{w}
5. a-prothesis, *w > Ø^{w}, +W: *a > o

LAMANG

Lamang	*łuwi* $łə^{w}$wy	*$łw^{w}$y	*łwyØ	*łwɗa(-y)	1
Hdi	*łu'i* łwʔy	*łwʔ-y	*łwʔØ-y		2
	hlu'wi $łə^{w}$ʔwy	*lʔw^{w}-y			3

1. *ɗ > y > i; ə-epenthesis; *w > w^{w}; +W: ə > u
2. *ɗ > ʔ; ə-epenthesis; metathesis wʔ > ʔw; *w > u; *y > i
3. *ɗ > ʔ; ə-epenthesis; metathesis wʔ > ʔw; *w > w^{w}; +W: ə > u; *y > i;

HIGI

Kamwe-Futu	*łyi* $ły^{ə}$	*$ły^{y}$a	*łØya	*łwɗa	1
Psikye	*li* ly	*ly	*łØyØ		2
Kirya	*le* $ła^{y}$	*łØ^{y}a	*łØya		3

1. *ɗ > y > y^{y}; lexical final *a > ə; +Y: ə > i
2. *ɗ > y > i
3. *ɗ > y > Ø^{y}; +Y: lexical-final *a > e

KOTOKO-ISLAND

Buduma	*xu* xw	*xw	*xwØØ	*łwdà	

KOTOKO-NORTH

Mpade	*fu* $s^{y}w$	*sw-$Ø^{y}$	*swØØ-y	*łwdà(-y)	1
Malgbe	*łu* łw	*łw	*łwØØ		2
1. *ł > s; *w > u; *y > $Ø^{y}$; +Y: s > ʃ 2. *w > u					

KOTOKO-CENTRAL

Lagwan	*łu* łw	*łw	*łwØØ	*łwdà	1
Mser	su sw	*sw	*swØØ		2
1. *w > u 2. *ł > s; *w > u					

KOTOKO-SOUTH

Zina	*asu* asw	*sw	*swØØ	*łwdà	1
1. a-prothesis; *ł > s; *w > u					

MUSGUM

Vulum	*łuk* łwk	*łw-k	*łwØØ-k^{w}	*łwdà(-k^{w})	1
Mbara	*łuk* łwk				1
Muskum	*łuwut* ł$ə^{w}wə^{w}$t	*łw^{w}t	*łwtØ		2
1. *w > u; *k^{w} > k 2. *ɗ > t; *w > w^{w}; ə-epenthesis; +W: ə > u					

GIDAR

Gidar	*łuwa* ł$ə^{w}$wa	*łw^{w}a	*łwØa	*łwdà	1
1. *w > w^{w}; ə-epenthesis; +W: ə > u					

millet$_1$

Areal/Pseudo-PCC root[102] *(ma-) **dawa**

MAFA

Mafa	*daw*	*dawØ	*dawa	
Cuvok	*daw*			

HURZA

Mbuko	*ⁿdaw* ndaw	*m-daw	*mØ-dawØ	*ma-dawa	1
1. homorganic assimilation *m > n/_d					

MOFU

Zulgo	*daw*	*dawØ	*dawa	
Gemzek	*daw*			
Merey	*daw*			

[102] Gravina (2015) notes the areal characteristics of the distribution of this root in northern parts of Cameroon, and he assumes a spread from Mafa. Its minimal formal variation could also point towards a fairly recent loan. Note that this root is – accidentally? – segmentally identical with *dáawàa* 'guineacorn' in West Chadic Hausa, which is the major lingua franca in the region west of Lake Chad. The root's geographic distribution south of Lake Chad in the Mandara Mountains, however, makes borrowing from Hausa less likely.

MAROUA

Mbazla	*daw*	*dawØ	*dawa	

millet$_2$/sorghum (food)

PCC/areal root[103] ***ɗ̀(a)fa*** (-k^w, -n; FV)

BATA

Jimi	*ɗ̀afan*	*ɗ̀afa-n	*ɗ̀afa-n	

MAFA

Mafa	*ɗ̀af*	*ɗ̀afØ	*ɗ̀afa	
Cuvok	*ɗ̀af*			

SUKUR

Sukur	*ɗ̀af*	*ɗ̀afØ	*ɗ̀afa	

HURZA

			√ C Ca	
Vame	*ɗəʃka*	*ɗ̀fØ-ka	*ɗ̀fa-k^{w}a	1
			√ CaCa	
Mbuko	*ɗ̀af*	*ɗ̀afØ	*ɗ̀afa	
1. ə-epenthesis; *k^w > k				

MARGI

Margi	*ɗəfə*	*ɗ̀fa		*ɗ̀fa(-k^w)	1
Kilba	*ɗəfa*				2
Margi-South	*dufau* ɗə^{w}faw	*ɗ̀fa-w^w	*ɗ̀fa-k^w		3
1. ə-epenthesis; lexical-final *a > ə 2. ə-epenthesis 3. ə-epenthesis; +W: ə > u; *k^w > w > u; (transcription error d = ɗ̀ or ɗ̀ > d?)					

MANDARA

Podoko	*ɗ̀afa*	*ɗ̀afa	*ɗ̀afa	
Mandara	*ɗ̀afa*			
Malgwa	*ɗ̀afa*			

MOFU

Ouldeme	*ɗ̀af*	*ɗ̀afØ	*ɗ̀afa	
Muyang	*ɗ̀af*			
Moloko	*ɗ̀af*			
Zulgo	*ɗ̀af*			
Gemzek	*ɗ̀af*			
Merey	*ɗ̀af*			
Mofu-Gudur	*ɗ̀af*			

MAROUA

Giziga-Muturwa	*ɗ̀af*	*ɗ̀afØ	*ɗ̀afa	
Giziga-Marva	*ɗ̀af*			

[103] This root is found across the Nigerian Plains and the Mandara Mountains. Its consistency of form could point towards a fairly recent areal innovation or loan.

Lamang

Lamang	*ɗafa*	*ɗafa	*ɗafa	
Hdi	*ɗafa*			

Higi

Kamwe-Futu	*ɗafa*	*ɗafa	*ɗafa	
Kirya	*ɗafa*			
Bana	*ɗafa*			

millet$_3$/sorghum (crop)

PCC *(Ca-) **x(a)ya** (-y, -n; FV)

Bata

Sharwa	*hayən*	*xay-n	*xayØ-n	*xaya(-n)	1
Tsuvan	*he* xa^{y}	*xaØ^{y}	*xayØ		2
1. ə-epenthesis 2. *y > Ø^{y}; +Y: *a > e					

Sukur

Sukur	*həi* xəy	*xy	*xyØ	*xya	1
1. ə-epenthesis; *y > i					

Hurza

Vame	*ahay*[104]	*a-xay	*Øa-xayØ	*Ca-xaya	

Mandara

Matal	*həy* xəy	*xy	*xyØ	*xya	1
	hi xy				2
Mandara	*hia* xya	*xya			2
Podoko	*hiya* xə^{y}ya	*xy^{y}a			3
1. ə-epenthesis 2. *y > i 3. ə-epenthesis; *y > y^{y}; +Y: ə > i					

Mofu

Ouldeme	*hay*	*hay	*xayØ	*xaya	
Moloko	*hay*				

Lamang

Lamang	*hiya* xə^{y}ya	*xy^{y}a	*xya	1
Hdi	*hiya* xə^{y}ya			1
1. ə-epenthesis; *y > y^{y}; +Y: ə > i				

Higi

Psikye	*xa*	*xa	*xØa	*xya	
Bana	*xa*				

[104] The initial /a/ in Vame cannot be explained by vowel prothesis and thus must be assumed to reflect the presence of a prefixal root augment, whose initial consonant (if ever present) cannot be identified for lack of comparative evidence from other languages in the database.

Gidar

Gidar	*haya*	*xaya		*xaya(-ya)	
	hayya	*xay-ya	*xayØ-ya		

millet$_4$/sorghum

Areal root *(ma-) **v(a)y(a)wa**

Hurza

Vame	*viyaw* vəʸyaw	*vyʸaw	*vyawØ	*vyawa	1
1. ə-epenthesis; *y > yʸ; +Y: ə > i					

Kotoko-Island

Buduma	*fiyow* fəʸyaʷw	*fyʸawʷ	*fyawØ	*vyawa	1
1. *v > f; *y > yʸ; +Y: ə > i; *w > wʷ; +W; *a > o					

Kotoko-North

				√ C CaCa	
Malgbe	*fiyo* fəʸyaʷ	*fyʸaØʷ	*fyawØ	*(ma-)vyawa	1
Mpade	*fio* fəʸaʷ				1
	mfo mfaʷ	*m-faØʷ	*mØ-fØawØ		2
				√ CaCaCa	
Afade	*feyo* faʸyaʷ	*fayʸaØʷ	*fayawØ	*vayawa	3
1. *v > f; ə-epenthesis; *y > yʸ; +Y: ə > i; *w > Øʷ; +W: *a > o 2. *v > f; *w > Øʷ; +W: *a > o 3. *v > f; *y > yʸ; +Y: a > e; *w > Øʷ; +W: *a > o					

Kotoko-Central

Lagwan	*vio* vyaʷ	*vyaØʷ	*vyawØ	*vyawa	1
1. *y > i; *w > Øʷ; +W: *a > o					

monkey

PCC ***v(a)d(a)ya**[105]

Tera

Tera	*viti* vəʸdʸ	*vdʸʸ	*vdʸØ	*vdya	1
1. *d > dʸ > [t]; *y > yʸ > i; ə-epenthesis; +Y: ə > i					

Mandara

			√ C C Ca	
Malgwa	*vəre* vəraʸ	*vrØʸa	*vdya	1
Glavda	*biri* bəʸryʸ	*bryʸ		2
			√ C CaCa	

[105] We here follow Gravina (2015) by reconstructing this root as triradical, i.e. we consider C_3 */y/ to be part of the simple root and not a reflex of the ubiquitous frozen grammatical marker *{y}. Possibly, the root could be reconstructed as a biradical one with all languages in the database showing reflexes of *{-y(a)}.

Matal	*vəday*	*vday	*vdayØ	*vdaya	3
				√ CaC Ca	
Mandara	*vere* va^{y}ra^{y}	*varØ^{y}a		*vadya	4
1. *d > r; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 2. *d > r; *v > b; ə-epenthesis;*y > y^{y}; +Y: ə > i; *y > i 3. ə-epenthesis 4. *d > r; *y > Ø^{y}; +Y: *a > e					

MOFU

				√ C C Ca	
Muyang	*viri* və^{y}ry	*vry^{y}	*vryØ	*vdya	1
Zulgo	*bire* bə^{y}ra^{y}	*brØ^{y}a			2
Gemzek	*bəre* bəra^{y}				3
Merey	*bəre* bəra^{y}				3
Dugwor	*bəre* bəra^{y}				3
				√ C CaCa	
Ouldeme	*vəray*	*vray	*vrayØ	*vdaya	4
1. *d > r; ə-epenthesis; *y > y^{y} > i; +Y: ə > i 2. *d > r; *v > b; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 3. *d > r; *v > b; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 4. *d > r; ə-epenthesis					

LAMANG

Lamang	*vdze* vdza^{y}	*vdzØ^{y}a	*vdzya	*vdya	1
Hdi	*vdzi* vdzy	*vdzy	*vdzyØ		2
1. *d > dz; *y > Ø^{y}; +Y: lexical-final *a > e 2. *d > dz; *y > i					

KOTOKO-NORTH

Afade	*fili* fə^{y}ly	*fly^{y}	*flyØ	*vdya	1
Mpade	*fli* fly	*fly			2
Malgbe	*fli* fly				2
1. *v > f; *d > l; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *v > f; *d > l; *y > i					

GIDAR

Gidar	*bərya*	*brya	*vdya	1
	briya brə^{y}ya	*bry^{y}a		2
1. *v > b; *d > r; ə-epenthesis 2. *v > b; *d > r; ə-epenthesis; *y > y^{y}; +Y: ə > i				

moon$_{1}$

PCC *(ma-, k^{w}a-) **t(a)ra** (-y, -k^{w}; FV)

DABA

Daba	*təra*	*tra		*(ma-(k^{w}a-))tra	1
Mazagway Hidi	*təra*				1
Buwal	*ŋtəra*	*ŋ-tra	*mØ-kØ-tra		2
Gavar	*ŋtra*				3

Mbudum	*ntəra*	*n-tra	*mØ-tra		4
	ntra				5
1. ə-epenthesis 2. ə-epenthesis; *k^w > k; fusion mk > ŋ 3. *k^w > k; fusion mk > ŋ 4. homorganic assimilation *m > n/_t; ə-epenthesis 5. homorganic assimilation *m > n/_t					

TERA

				√ C Ca	
Hwana	*ⁿdɾe* ndra^y	*n-dra-Ø^y	*mØ-dra-y	*ma-tra-y	1
				√ CaCa	
Tera	*tera* ta^{y}ra	*tara-Ø^y		*tara-y	2
	tʃera ts^{y}a^{y}ra	*tsara-Ø^y	*tsara-y		3
	tʃere ts^{y}a^{y}ra^y				3
1. *t > d; homorganic assimilation *m > n/_d; *y > Ø^y; +Y: lexical-final *a > e 2. *y > Ø^y; +Y: *a > e 3. *t > ts; +Y: ts > tʃ ; *y > Ø^y; +Y: *a > e					

SUKUR

Sukur	*teya* ta^{y}ya	*tØa-y^{y}a	*tra-ya	1
	tya	*tØØ-ya		
1. *y > y^y; +Y : lexical-final *a > e				

MANDARA

Podoko	*təra*	*tra	*tra(-y)	1
Mandara	*təre* təra^y	*tra-Ø^y		2
Malgwa	*təre* təra^y			2
Matal	*təla*	*tla		3
Dghwede	*tile* tə^{y}la^y	*tla-Ø^y		4
Glavda	*k^{y}la* t^{y}la			5
	k^{y}i t^{y}y	*tØØ-y^y		6
1. ə-epenthesis 2. ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e 3. *r > l; ə-epenthesis 4. *r > l; ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e 5. *r > l; *y > Ø^y; +Y: *t > t^y > k^y 6. *y > y^y > i ; +Y: *t > t^y > k^y				

LAMANG

Lamang	*tər(e)* təra^y	*tra-Ø^y	*tra-y	1
Hdi	*tili* tə^{y}ly	*tlØ-y^y		2
1. ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e 2. *r > l; ə-epenthesis; *y > y^y > i; +Y: ə > i				

HIGI

Psikye	*trə*	*tra		*tra(-y/-k^w)	1
Kamwe-Nkafa	*tər«ə* ˚				2
Kirya	*təʈi* tər^{y}y	*trØ-y^y			3
Bana	*tir* tə^{y}r	*tr-Ø^y	*trØ-y		4

Kamwe-Futu	*təro* təra^{w}	*tra-Ø^{w}	*tra-k^{w}		5
1. lexical-final *a > ə 2. ə-epenthesis; lexical-final *a > ə 3. ə-epenthesis; *y > y^{y} > i; +Y: *r > ɾ 4. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 5. ə-epenthesis; +W: lexical-final *a > o					

KOTOKO-NORTH

Afade	*dedî* da^{y}dy	*dad-y^{y}	*dadØ-y	*tara-y	1
Mpade	*tedî* ta^{y}də^{y}	*tadə-Ø^{y}			2
1. *t > d; *r > ɗ; *y > y^{y} > i; +Y: *a > e 2. *r > ɗ; lexical-final *a > ə; +Y: *a > e; +Y: ə > ɨ					

KOTOKO-CENTRAL

Lagwan	*tedî* ta^{y}də^{y}	*tadə-Ø^{y}		*tara-y	1
Mser	*tedî* ta^{y}də^{y}				1
1. *r > ɗ; lexical-final *a > ə; *y > Ø^{y}; +Y: *a > e; +Y: ə > ɨ					

MUSGUM

Vulum	*tle* tla^{y}	*tla-Ø^{y}		*tra-y	1
Mbara	*tile* tə^{y}la^{y}				2
Muskum	*kile* t^{y}ə^{y}la^{y}				3
1. *r > l; *y > Ø^{y}; +Y: lexical-final *a > e 2. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e 3. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *t > t^{y} > k$^{(y)}$; +Y: lexical-final *a > e					

GIDAR

Gidar	*təla*	*tla		*tra(-y)	1
	tila tə^{y}la	*tla-Ø^{y}	*tla-y		2
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

moon$_{2}$

Areal root ***k(a)ya*** (-k^{w}, -x)

MAFA

Mafa	*kiya* kə^{y}ya	*ky^{y}a	*kya	1
Cuvok	*kiya* kə^{y}ya			1
1. ə-epenthesis; *y > y^{y}; +Y: ə > i				

HURZA

Mbuko	*kiya*	*ky^{y}a	*kya	1
Vame	*kiya*			1
1. ə-epenthesis; *y > y^{y}; +Y: ə > i				

MARGI

Margi	*hya*	*xya	*kya	1
Margi-South	*hya*			1
Kilba	*hya*			1
1. *k > x				

MOFU

Mada	*kya*	*kya			
Moloko	*kəya*				1
Dugwor	*kiya* kəʸya	*kyʸa		*kya(-kʷ)	2
Mofu North	*kiya* kəʸya				2
Mofu-Gudur	*kiya* kəʸya				2
Zulgo	*kiye* kəʸyaʸ				3
Gemzek	*kiye* kəʸyaʸ				3
Merey	*kiye* kəʸyaʸ				3
Muyang	*kiyi* kəʸyəʸ				4
Ouldeme	*kʷiyo* kʷəʸyaʷ	*kyʸa-Øʷ	*kya-kʷ		5
1. ə-epenthesis 2. ə-epenthesis; *y > yʸ; +Y: ə > i 3. ə-epenthesis; *y > yʸ; +Y: ə > i; +Y: lexical-final *a > e 4. ə-epenthesis; lexical-final *a > ə; *y > yʸ; +Y: ə > i 5. *kʷ > Øʷ; ə-epenthesis; *y > yʸ; Y: ə > i; +W: lexical-final *a > o					

MAROUA

Giziga-Muturwa	*kiya* kəʸya	*kyʸa	*kya(-x)	1
Giziga-Marva	*kiya* kəʸya			1
Mbazla	*kiya* kəʸya			1
	kiyah kəʸyax	*kyʸa-x		1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

KOTOKO-ISLAND

Buduma	*kiya* kəʸya	*kyʸa	*kya	1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

KOTOKO-SOUTH

Zina	*hiya*	*xyʸa	*kya	1
Mazera	*kiya* kəʸya	*kyʸa		2
1. *k > x; ə-epenthesis; *y > yʸ; +Y: ə > i 2. ə-epenthesis; *y >yʸ; +Y: ə > i				

mortar$_1$

PCC *(y-, ma-) **dz(a)na** (-a, -y, -kʷ, -n, -x; FV)

BATA

Jimi[106]	*aⁿdzərən* aⁿdzərən	*Øⁿa-dzra-n	*mⁿa-dzra-n	*ma-dzna-y/-n	1
Sharwa	*ⁿdʒirə* ndzʸəʸrə	*n-dzra-Øʸ	*mØ-dzra-y		2
1. radical *n > r; ə-epenthesis; lexical-final *a > ə; *m > Øⁿ; +N: dz > ⁿdz 2. radical *n > r; *y > Øʸ; ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; lexical-final *a > ə; homorganic assimilation *m > n/_dz					

[106] The Jimi augmented root poses an interesting question of domains of rule application, namely why simple-root internal *n changes to r, while root-augmentative *n stays /n/.

Daba

Daba	*ⁿdʒer* ndz^{y}a^{y}r	*n-dzar-Ø^{y}	*m-dzarØ-y	*ma-dzana-y	1
1. radical *n > r; *y > Øy; +Y: *dz > dʒ; *y > Ø^{y}; +Y: a > e; homorganic assimilation *m > n/__dʒ					

Sukur

Sukur	*yimdzər* yə^{y}mdzər	*y^{y}-m-dzr	*y-mØ-dzrØ	*y-ma-dzna	1
	yimzər yə^{y}mzər	*y^{y}-m-zr	*y-mØ-zrØ		2
	yimnzər yə^{y}m^{n}zər	*y^{y}-m^{n}-zr	*y-m^{n}Ø-zrØ		3
1. *n > r; ə-epenthesis; *y >y^{y}; +Y: ə > i 2. *n > r; *dz > z; ə-epenthesis; *y >y^{y}; +Y: ə > i 3. *n > r; *dz > z; ə-epenthesis; *y >y^{y}; +Y: ə > i; *m > m^{n}; +N: z > ^{n}z					

Hurza

Vame	*dzəre* dzra^{y}	*dzra-Ø^{y}	*dzra-y	*dzna-y	1
1. *n > r; *y > Ø^{y}; +Y: lexical-final *a > e					

Margi

Bura	*ⁿdʒir* ndz^{y}ə^{y}r	*n-dzr-Ø^{y}	*mØ-dzrØ-y	*ma-dzna-y	1
1. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: *dz > dʒ; +Y: ə > i; homorganic assimilation *m > n/_dz					

Mandara

				√ C Ca	
Podoko	*dzəra*	*dzra		*dzna(-y/-k^{w})	1
Malgwa	*dzəra*				1
Glavda	*d͡zˀra*				1
	dzi dzy	*dz-y	*dzØØ-y		2
Matal	*dzərəw*	*dzr-w	*dzrØ-k^{w}		3
	dzəru dzərw				4
				√ CaCa	
Mandara	*dzera* dza^{y}ra	*dzara-Ø^{y}	*dzara-y	*dzana-y	5
1. *n > r; ə-epenthesis 2. *y > i 3. *n > r; ə-epenthesis; *k^{w} > w 4. *n > r; ə-epenthesis; *k^{w} > w > u 5. *n > r; *y > Ø^{y}; +Y: *a > e					

Mofu

Zulgo	*dzəra*	*dzra		*(ma-)dzna(-y/-k^{w})	1
Mada	*adʒra* adz^{y}ra	*a-dzra-Ø^{y}	*Øa-dzra-y		2
Muyang	*dʒəra* dz^{y}əra	*dzra-Ø^{y}	*dzra-y		3
Ouldeme	*dzəro* dzəra^{w}	*dzra-Ø^{w}	*dzra-k^{w}		4
1. *n > r; ə-epenthesis 2. *n > r; *y > Ø^{y}; +Y: *dz > dʒ 3. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: *dz > dʒ 4. *n > r; ə-epenthesis; *k^{w} > Ø^{w}; +W: lexical-final *a > o					

Lamang

Hdi	*dzər*	*dzr	*dzrØ	*dzna(-k^{w})	1
Lamang	*dzro* dzra^{w}	*dzra-Ø^{w}	*dzra-k^{w}		2
1. ə-epenthesis; *n > r 2. *n > r; *k^{w} > Ø^{w}; +W: lexical-final *a > o					

Higi

Kamwe-Nkafa	*ⁿdziri* ndzə^{y}ry	*n-dzr-y^{y}	*mØ-dzrØ-y	*ma-dzna-y	1
Kamwe-Futu	*ⁿdzir* ndzə^{y}r	*n-dzr-Ø^{y}			2
1. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *y > i; homorganic assimilation *m > n/_dz 2. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; homorganic assimilation *m > n/_dz					

Kotoko-Island

Buduma	*adʒin* adz^{y}ə^{y}n	*a-dzn-Ø^{y}	*Øa-dznØ-y	*ma-dzna-y	1
	aedʒin a^{y}dz^{y}ə^{y}n	*a-dzn-Ø^{y}	*Øa-dznØ-y		2
1. ə-epenthesis; *y > Ø^{y}; +Y: *dz > ʤ; +Y: ə > i 2. ə-epenthesis; *y > Ø^{y}; +Y: *dz > ʤ; +Y: *a > æ; +Y: ə > i					

Kotoko-Central

Mser	*azin* azə^{y}n	*a-zn-Ø^{y}	*Øa-znØ-y	*(ma-)dzna-y(-xa)	1
Lagwan	*zinha* zə^{y}nxa	*zn-Ø^{y}-xa	*znØ-y-xa		1
1. *dz > z; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

Musgum

Muskum	*tiŋ* tə^{y}ŋ	*tŋ-Ø^{y}	*tnØ-y-k	*(ma-)dzna-y(-k^{w})	1
Vulum	*adiŋ* adə^{y}ŋ	*a-dŋ-Ø^{y}	*Øa-dnØ-y-k		2
Mbara	*dinay* də^{y}nay	*dn-ay^{y}	*dnØ-a-y		3
1. *dz > (d >) t; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > k; fusion nk > ŋ 2. *dz > d; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > k; fusion nk > ŋ 3. *dz > d; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

mortar$_2$[107]

Secondary areal root ***RED-dz(a)na** (-y, -k^{w})

Daba

Mbudum	*dʒidʒeŋ* dz^{y}ə^{y}dz^{y}a^{y}ŋ	*dz-dzaŋ-Ø^{y}	*dzØØ-dzanØ-y-k^{w}	*RED-dzana-y-k^{w}	1
1. ə-epenthesis; *y > Ø^{y}; +Y: *dz > ʤ; +Y: ə > i; +Y: *a > e ; *k^{w} > k; fusion *nk > ŋ					

[107] For 'mortar', two likely cognate roots coexist, which also co-occur in a few language groups, while others only have one of the two. The main differences consist of (i) reduplicated vs. non-reduplicated form, (ii) difference in final root consonants (*r vs. *n/ŋ). Possibly and plausibly, the reduplicated form is etymologically derived from the simpler form *__dz(a)na__; it has a fairly restricted geographic distribution. As already suggested by Gravina (2015), reference may be to mortars of different size: a big one for pounding millet etc., and a smaller one for pounding tobacco, ingredients for soup, etc.

HURZA

Mbuko	*dzəⁿdzen* dzndzaʸn	*dzØn-dzan-Øʸ	*dzan-dzanØ-y	*RED-dzana-y	1
1. ə-epenthesis; *y > Øʸ; +Y: *a > e					
MOFU					
				√ C C-C Ca	
Muyang	*dʒidʒiŋ* dzʸəʸdzʸəʸŋ	*dz-dzŋ-Øʸ	*dzØ-dznØ-y-k	*RED-dzna-y-kʷ	1
				√ C C-CaCa	
Moloko	*tʃədʒen* tsʸədzʸaʸn	*ts-dzan-Øʸ	*tsØ-dzanØ-y	*RED-dzana-y(-kʷ)	2
Merey	*dzəⁿdzeŋ* dzəndzaʸŋ	*dzn-dzaŋ-Øʸ	*dzn-dzanØ-y-k		3
Mofu North	*dʒəŋdʒeŋ* dzʸəŋdzʸaʸŋ	*dzŋ-dzaŋ-Øʸ			4
Dugwor	*dʒədʒeŋ* dzʸədzʸaʸŋ	*dz-dzaŋ-Øʸ	*dzØØ-dzanØ-y-k		4
				√ CaC-CaCa	
Gemzek	*dzeŋdzeŋ* dzaʸŋdzaʸŋ	*dzaŋ-dzaŋ-Øʸ	*RED-dzanØ-y-k	*RED-dzana-y-kʷ	5
M.Gudur	*dʒedʒeŋ* dzaʸdzaʸŋ	*dza-dzaŋ-Øʸ	*dzaØ-dzanØ-y-k		6
1. ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ 2. (RED) *dz > ts; ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e 3. ə-epenthesis; *kʷ > k; fusion *nk > ŋ; *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e 4. ə-epenthesis; *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e; *kʷ > k; fusion *nk > ŋ (before REDuplication) 5. *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e; *kʷ > k; fusion *nk > ŋ (before REDuplication) 6. *y > Øʸ; +Y: *dz > dʒ; +Y: *a > e; *kʷ > k; fusion *nk > ŋ					
MAROUA					
				√ C C-C Ca	
G.Muturwa	*dʒidʒiŋ* dzʸəʸdzʸəʸŋ	*dz-dzŋ-Øʸ	*dzØ-dznØ-y-k	*RED-dzna-y-kʷ	1
				√ CaC-CaCa	
G.Marva	*dʒidʒeŋ* dzʸəʸdzʸaʸŋ	*dz-dzaŋ-Øʸ	*dzØØ-dzanØ-y-k	*RED-dzana-y-kʷ	2
1. ə-epenthesis; *y > Øʸ; +Y: dz > dʒ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ 2. ə-epenthesis; *y > Øʸ; +Y: dz > dʒ; +Y: ə > i; +Y: *a > e; *kʷ > k; fusion *nk > ŋ					

mother$_1$

PCC *(RED-) **ma** (-a, -y, -kʷ, -n; FV)

BATA

Tsuvan	*mekən* maʸkən	*ma-Øʸ-k-n	*ma-y-kʷ-n	*ma-y-kʷ-n	1
1. *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: *a > e					

DABA

Gavar	*mama*	*ma-ma	*(RED-)ma(-a-y/-n)
Mbudum	*mama*		
Buwal	*man*	*ma-n	
Daba	*may*	*mØ-a-y	

MAFA

Mafa	*mama*	*ma-ma		*(RED-)ma	
Cuvok	*ma*	*ma			
	mamaŋ < Fr.[108]				

SUKUR

Sukur	*mama*	*ma-ma		*(RED-)ma	
	ma	*ma	*ma		

HURZA

Vame	*mama*	*ma-ma		*(RED-)ma(-a-y/-n)	
Mbuko	*mamay*	*ma-mØ-ay	*RED-ma-a-y		
	may	*m-ay	*mØ-a-y		
	man	*ma-n			

MARGI

Bura	*muma* məma[109]	*mØ-ma	*RED-ma	*(RED-)ma(-ya)	1
	maya	*ma-ya	*ma-ya		
Margi-South	*ama*	*Øa-ma	*RED-ma		
Kilba	*ama*				
1. ə-epenthesis					

MANDARA

Podoko	*mama*	*ma-ma	*RED-ma	*(RED-)ma(-y)	
Mandara	*mama*				
	emma a^{y}mma	*mØ-ma-Ø^{y}	*RED-ma-y		1
Malgwa	*mama*	*ma-ma			
	əmma	*mØ-ma	*RED-ma		2
	uuma ə^{w}wma	*w^{w}Ø-ma			3
	ma	*ma	*ma		
1. a-prothesis; *y > Ø^{y}; +Y: *a > e 2. ə-prothesis 3. *m > w^{w}; ə-prothesis; +W: ə > u; *w > u					

MOFU

Moloko	*mama*	*ma-ma	*RED-ma	*(RED-)ma (-ya/(-k^{w})-n)	
Dugwor	*mama*				
Zulgo	*mama*				
	məmər	*mØ-mØ-r	*RED-ma-n		1
Gemzek	*mamər*	*ma-mØ-r			1
Mada	*məmar*	*mØ-ma-r			1
	amma	*mØ-ma	*RED-ma		2
Muyang	*mma*				

[108] Likely a transfer from French. The recording linguist (R. Gravina) gives as translation not *mère* as in other cases, but *maman*.

[109] It is considered here quite unlikely that phonetic [u] is conditioned by W-prosody, which would presuppose the historical presence of root-augmental *{-k^{w}}. Rather, we assume labialising assimilation from the surrounding bilabial nasals affecting the epenthetic vowel.

Mofu North	*maya*	*ma-ya	*ma-ya		
Merey	*maya*				
	may	*ma-yØ			
Ouldeme	*maŋ*	*ma-ŋ	*ma-k-n		3
Mofu-Gudur	*mamaŋ*[110]				
1. *n > r; ə-epenthesis 2. a-prothesis 3. *k^{w} > k; fusion *kn > ŋ					
Maroua					
G.-Muturwa	*maha*	*ma-xa	*ma-k^{w}a	*(RED-)ma(-k^{w}, -n, FV)	1
	mumuŋ mə^{w}mə^{w}ŋ	*m-m-ŋ^{w}	*RED-mØ-k^{w}-n		2
G.-Marva	*uma* wma	*wØ-ma	*RED-ma		3
Mbazla	*ma*	*ma	*ma		
1. *k^{w} (> k) > x 2. ə-epenthesis; fusion *k^{w}n > ŋ^{w}; +W: ə > u 3. *m > w > u					
Lamang					
Lamang	*mama*	*ma-ma		*RED-ma	
Hdi	*mama*				
Higi					
Kamwe-Futu	*mama*	*ma-ma		*(RED-)ma(-ya)	
Kamwe-Nkafa	*ma*	*ma	*ma		
Psikye	*ma*				
	miyi mə^{y}yə^{y}	*m-y^{y}a	*mØ-ya		1
Kirya	*mayi* mayə^{y}	*ma-y^{y}a	*ma-ya		2
1. ə-epenthesis; lexical-final *a > ə; *y > y^{y}; +Y: ə > i 2. lexical-final *a > ə; *y > y^{y}; +Y: ə > i					
Kotoko-Island					
Buduma	*man*	*ma-n	*ma-n	*ma-n	
Musgum					
Vulum	*amaa*	*ama-a	*Øa-ma-Øa	*(RED-)ma-na	
Muskum	*maana*	*ma-a-na	*ma-Øa-na		
Gidar					
Gidar	*ma*	*ma	*ma	*(RED-)ma	
	mma	*mØ-ma	*RED-ma		
	əəma < əmma				1
1. ə-prothesis; unusual length transfer from consonant to prothetic vowel(?)					

[110] Likely again a transfer from French, but the recording linguist (Hollingworth) gives no indication. In the light of the Ouldeme form, however, a Mofu-internal diachronic development could also be assumed, parallel to the situation in Ouldeme.

mother$_2$

Loan[111] *(RED-) **ya**

MANDARA

Matal	*əya*	*ya	*ya	1
	iya əʸya	*yʸa		2
1. ə-prothesis 2. ə-prothesis; *y > yʸ; +Y: ə > i				

KOTOKO-ISLAND

Buduma	*yay*	*ya-yØ	*RED-ya		
	yə	*ya	*ya	*(RED-)ya	1
	yi yəʸ	*yʸa			2
1. lexical-final *a > ə 2. lexical-final *a > ə; *y > yʸ; +Y: ə > i					

KOTOKO-NORTH

Mpade	*ya*	*ya	*ya	
Afade	*iya* əʸya	*yʸa		1
Malgbe	*iya* əʸya			1
1. ə-prothesis; *y > yʸ; +Y: ə > i				

KOTOKO-CENTRAL

Lagwan	*iya* əʸya	*yʸa	*ya	1
Mser	*iya* əʸya			1
1. ə-prothesis; *y > yʸ; +Y: ə > i				

KOTOKO-SOUTH

Zina	*iya* əʸya	*yʸa	*ya	1
Mazera	*iya* əʸya			1
1. ə-prothesis; *y > yʸ; +Y: ə > i				

MUSGUM

Mbara	*'iya* ʔəʸya	*yØ-yʸa	*RED-ya	*RED-ya	1
1. reduplicated *y > ʔ; ə-epenthesis; *y > yʸ; +Y: ə > i					

[111] As pointed out by Gravina (2015), "[t]his root is borrowed from Kanuri, and is found only in the groups with close contact with Kanuri." The Kanuri word is monoconsonantal and monosyllabic. However, quite a few reflexes in CC languages show a disyllabic structure. At the present time, it is not possible to tell whether this reflects any of the following three plausible options: (a) prothetic vowel insertion, which would be phonologically unmotivated (since prothesis tends to be linked to initial consonant clusters) unless we are dealing with analogy with the root for 'mother$_1$'; (b) root-augmentation by suffixal *{-y(a)}, which would be supported by its occurrence also with the root 'mother$_1$'; (c) remnants of reduplication, which again would be an analogy to the root 'mother$_1$'. The question must remain open. For the current study, we will treat these tentatively as cases of analogical (somewhat irregular) prothesis and REDuplication.

mouse$_1$

PCC *(ma-) **k^{w}(a)s(a)ma** (-y, -k^{w}, -n)

BATA[112]

Gude	*hima* xə^{y}ma	*xma-Ø^{y}	*xØma-y	*k^{w}sma-y(-k^{w}-n)	1
Tsuvan	*himkən* xə^{y}mkən	*xm-Ø^{y}-k-n	*xØmØ-y-k-n		1
1. radical *k^{w} (> k) > x; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; suffixal *k^{w} > k					

MAFA

Mafa	*k^{w}ama*	*k^{w}ama	*k^{w}aØma	*k^{w}asma	

TERA

Tera	*ɣum* ɣ^{w}ə^{w}m	*ɣ^{w}m	*ɣ^{w}ØmØ	*k^{w}sma	1
1. *k^{w} (> g^{w}) > ɣ^{w}; ə-epenthesis; +W: ə > u					

SUKUR

Sukur	*kum* k^{w}ə^{w}m	*k^{w}m	*k^{w}ØmØ	*k^{w}sma	1
1. ə-epenthesis; +W: ə > u					

HURZA

Mbuko	*kuhom* k^{w}ə^{w}xa^{w}m	*k^{w}xam	*k^{w}xamØ	*k^{w}sama	1
Vame	*k^{w}am*	*k^{w}am	*k^{w}ØamØ		
1. *s > x; ə-epenthesis; +W: ə > u; +W: *a > o					

MANDARA

Matal	*k^{w}əfu* k^{w}əfə^{w}	*k^{w}fa	*k^{w}fØa	*k^{w}sma	1
	kufu k^{w}ə^{w}fə^{w}				1
Podoko	*kuma* k^{w}ə^{w}ma	*k^{w}ma	*k^{w}Øma		2
1. *s > f; ə-epenthesis; lexical-final *a > ə; +W: ə > u 2. ə-epenthesis; +W: ə > u					

MOFU[113]

				√ C C Ca	
Ouldeme	*kum* k^{w}ə^{w}m	*k^{w}m	*k^{w}ØmØ	*(ma-)k^{w}sma	1
Merey	*kuhum* k^{w}ə^{w}xə^{w}m	*k^{w}xm	*k^{w}xmØ		2
Muyang	*akfum* akfə^{w}m	*Øa-k^{w}fm	*ma-k^{w}fmØ		3
Moloko	*gəmso* gmsa^{w}	*gØ^{w}msa	*gw^{w}asma		4
				√ CaC Ca	
Ouldeme	*g^{w}amso* g^{w}amsa^{w}	*gØ^{w}amsa	*gw^{w}asma	*k^{w}asma	4
Zulgo	*k^{w}ahum* k^{w}axə^{w}m	*k^{w}axm	*k^{w}axmØ		2
				√ C CaCa	
Mofu North	*h^{w}am*		*x^{w}am	*x^{w}ØamØ	*(ma-)k^{w}sama	5
Mofu-Gudur	*ah^{w}am*		*Øa-x^{w}am	*ma-x^{w}ØamØ		5

[112] There is an interesting problem regarding the diachronic source of the initial /x/ in BATA. It may be a de-labialised and weakened reflex of *k^{w} as we tentatively assume here, but it could also be a reflex of (lost) */s/, which is generally not uncommon in more northeastern Central (and East-) Chadic languages, but also occurs in this root (see examples below). However, in the light of frequent deletions of */s/ and since BATA group languages are spoken at the opposite – namely southwestern – periphery of the CC area, we currently consider this the less plausible hypothesis for BATA. In more general terms, this root appears to have been borrowed between CC languages following different paths and leading to double reflexes in the modern CC languages. This has led Gravina (2015) to reconstruct two different yet cognate roots: *k^{w}isim and *k^{w}ihim.

[113] In the MOFU group, Ouldeme and Moloko show a double reflex of this root, suggesting inter-dialectal borrowing of at least one of the root shapes, which are mainly distinguished

Moloko	*okfom* a^{w}kfa^{w}m	*Øa-k^{w}fam	*ma-k^{w}famØ		6
				√ CaCaCa	
Gemzek	*kohom* k^{w}a^{w}xa^{w}m	*k^{w}axam	*k^{w}axamØ	*k^{w}asama	7
Dugwor	*kohom* k^{w}a^{w}xa^{w}m				7

1. ə-epenthesis; +W: ə > u
2. *s > x; ə-epenthesis; +W: ə > u
3. *s (> x) > f; ə-epenthesis; +W: ə > u
4. *k^{w} (> g^{w}) > g+w^{w}; ə-epenthesis; +W: ə > u; +W: *a > o
5. *k^{w} > x^{w}
6. *s > f; +W: *a > o
7. *s > x; +W: *a > o

LAMANG

Lamang[114]	*mbəga*	*m-mga	*mØ-gØma	*(ma-)k^{w}sma-n	1
Hdi	*muguzur* mə^{w}g^{w}ə^{w}zə^{w}r	*mg^{w}z-r	*g^{w}zmØ-r		2

1. *k^{w} > g; metathesis gm > mg; ə-epenthesis; dissimilation/consonant fortition *mm > mb?
2. *k^{w} > g^{w}; *s > z; *n > r; multiple metathesis g^{w}zm > mg^{w}z; ə-epenthesis; +W: ə > u

HIGI

Psikye	*k^{w}u* k^{w}ə^{w}	*k^{w}a	*k^{w}ØØa	*k^{w}sma	1
Bana	*kum* k^{w}ə^{w}m	*k^{w}m	*k^{w}ØmØ		2

1. lexical-final *a > ə; +W: ə > u
2. ə-epenthesis; +W: ə > u

KOTOKO-NORTH

Mpade	*kusumu* k^{w}ə^{w}sə^{w}mə^{w}	*k^{w}sma		*k^{w}sma(-y)	1
Maltam	*ɓisim* ɓə^{y}sə^{y}m	*ɓsm-Ø^{y}	*ɓsmØ-y		2
Malgbe	*gbim* gbə^{y}m	*gbm-Ø^{y}	*gbØmØ-y		3

1. ə-epenthesis; lexical-final *a > ə; +W: ə > u
2. *k^{w} > ɓ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i
3. *k^{w} > gb; ə-epenthesis; *y > Ø^{y}; +Y: ə > i

KOTOKO-CENTRAL

Lagwan	*xsumi* xsə^{w}my	x^{w}sm-y	*x^{w}smØ-y	*k^{w}sma(-y)	1
Mser	*kusum* k^{w}ə^{w}sə^{w}m	*k^{w}sm	*k^{w}smØ		2

1. *k^{w} > x^{w}; ə-epenthesis; +W: ə > u; *y > i
2. ə-epenthesis; +W: ə > u

KOTOKO-SOUTH

Zina	*aksum* aksə^{w}m	*Øa-k^{w}sm	*ma-k^{w}smØ	*(ma-)k^{w}sma(-y)	1
Mazera	*kusime* k^{w}ə^{w}sə^{y}ma^{y}	*k^{w}sma-Ø^{y}	*k^{w}sma-y		2

1. ə-epenthesis; +W: ə > u
2. ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e

MUSGUM

Vulum	*kusum* k^{w}ə^{w}sə^{w}m	*k^{w}sm	*k^{w}smØ	*k^{w}sma	1
Mbara	*kusum* k^{w}ə^{w}sə^{w}m				1
Muskum	*guzum* g^{w}ə^{w}zə^{w}m	*g^{w}zm	*g^{w}zmØ		2

1. ə-epenthesis; +W: ə > u
2. *k^{w} > g^{w}; ə-epenthesis; +W: ə > u

by the voicing of the initial consonant: *k^{w} vs. g^{w}, with the voiced-initial root also displaying metathesis of the non-initial root consonants. The path of borrowing remains currently obscure, but cf. TERA, LAMANG and Muskum (MUSGUM) for voiced initial consonants.

[114] The cognate status of the Lamang root is likely but remains somewhat doubtful.

mouse$_2$

Areal root ***kat(a)kama*** (-k^w)

DABA

Daba	*katakam*	*katakamØ		*katakama	

MAROUA

Giziga-Muturwa	*kotokom* ka^{w}ta^{w}ka^{w}m	*katakam-Ø^w	*katakamØ-k^w	*katakama-k^w	1
Giziga-Marva	*kotokom* ka^{w}ta^{w}ka^{w}m				1
1. *k^w > Ø^w; +W: *a > o					

GIDAR

Gidar	*katkam*	*katkamØ	*katkama	

mouth[115]

PCC *(ma-, xa-, RED-) **m(a)ya** (-k^w, -n, -t)

BATA

Gude	*ma*	*ma	*maØØ	*maya(-n)	
Sharwa	*ma*				
Tsuvan	*ma*				
Jimi	*man*	*ma-n	*maØØ-n		

DABA

Buwal	*ma*	*ma	*maØØ	*maya	
Gavar	*ma*				
Mbudum	*ma*				
Daba	*ma*				

MAFA

Mafa	*ma*	*ma	*maØØ	*maya	
Cuvok	*ma*				

TERA

Tera	*me* ma^y	*maØ^y	*mayØ	*maya	1
1. *y > Ø^y; +Y: *a > e					

SUKUR

Sukur	*ŋ^{w}u* ŋ^{w}w^w	*ŋ +w^w	*ŋ^w	*mØØØ-k^w	*maya-k^w	1
1. fusion *mk^w > ŋ^w; re-segmentalisation *ŋ^w > ŋ+w^w; w > u						

HURZA

Mbuko	*'am*	*ma-ʔ	*maØØ-k^w	*maya(-k^w)	1
Vame	*me* ma^y	*maØ^y	*mayØ		2
1. *k^w (> k) > ʔ; metathesis mʔ > ʔm 2. *y > Ø^y; +Y: *a > e					

MARGI

Bura	*mya*	*mya	*mya	
Margi-South	*mya*			
	miya mə^{y}ya	*my^{y}a		1
Kilba	*nya*	*nya		2
1. *y > y^y; ə-epenthesis; +Y: ə > i 2. homorganic assimilation *m > n /_y				

[115] This root has a particularly wide range of meanings, including 'beak; front, face, entry; shape; edge, rim; language, word, matter, problem'. See also the root for 'hunger', which is likely

MANDARA

Podoko	*wa*	*wa	*wØa	*(RED-)mya(-y)	1
Mandara	*we* wa^{y}	*wa-Ø^{y}	*wØa-y		2
Malgwe	*we* wa^{y}				2
Dghwede	*wuwe* wə^{w}wa^{y}	*w-w^{w}a-Ø^{y}	*RED-wØa-y		3
1. *m > w 2. *m > w; *y > Ø^{y}; +Y: lexical-final *a > e 3. *m > w^{w}; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e					

MOFU

Ouldeme	*ma*	*ma	*maØØ	*(ma-xa-)maya	
Muyang	*ma*				
Moloko	*ma*				
Merey	*me* ma^{y}	*maØ^{y}	*mayØ		1
Dugwor	*mey* ma^{y}y	*ma^{y}y			2
Mofu North	*mey* ma^{y}y				2
Mofu-Gudur	*mey* ma^{y}y				2
Mada	*mamma*	*ma-x-ma	*ma-xØ-maØØ		3
Zulgo	*ahəm*	*Øa-x-m	*ma-xØ-mØØØ		4
1. *y > Ø^{y}; +Y: *a > e 2. *y > y^{y}; +Y: *a > e 3. assimilation *x > m/_m 4. ə-epenthesis					

MAROUA

Giziga-Marva	*me* ma^{y}	*maØ^{y}	*mayØ	*maya(-k^{w})	1
Mbazla	*me* ma^{y}				1
	*me*ʾ ma^{y}ʔ	*maØ^{y}-ʔ	*mayØ-k^{w}		2
1. *y > Ø^{y}; +Y: *a > e 2. *k^{w} (> k) > ʔ; *y > Ø^{y}; +Y: *a > e					

LAMANG

Lamang[116]	*ewe* a^{y}wa^{y}	*Øa-wØ^{y}a	*ma-wya	*(ma-)mya	1
Hdi	*wi* wy	*wy	*wyØ		2
1. *m > w; *y > Ø^{y}; +Y: *a > e 2. *m > w; *y > i					

HIGI

Kirya	*mi* my	*my	*myØ	*mya	1
Bana	*mi* my				1
1. *y > i					

formally identical but allows for different augmented structures and surface representations, hence we treat them separately. The option to reconstruct PCC ***ma*** for 'mouth' (cf. PC *ba as reconstructed by Newman 1977) is dismissed in the light of reflexes of *y in 10 of the 15 languages groups in which this lexical item has cognate forms, as compared to 12 reflexes in 13 groups for 'hunger'. The alternative option would be to reconstruct PCC ***ma(-ya)*** 'mouth' and ***maya*** 'hunger'.

[116] The underlying form *a^{y}wa^{y} for *ewe* in Lamang is diachronically motivated by comparative evidence and reflects the general diachronic principles that we have found to operate in CC languages. Arguing strictly from a Lamang perspective, which would reflect a stage in Lamang history after */y/ and */w/ had each already undergone a phoneme split and full phonemicisation of their diachronic allophones [i] > /i/ and [u] > /u/, the synchronically underlying representation would be */awi/ (cf. Wolff 2015, Vol. 1: 66-70); this again would be quite close to Hdi *wi* < *wy.

KOTOKO-SOUTH

				√ C Ca	
Zina	*mi* my	*my	*myØ	*mya	1
				√ CaCa	
Mazera	*me* ma^{y}	*maØ^{y}	*mayØ	*maya	2
1. *y > i 2. *y > Ø^{y}; +Y: *a > e					

MUSGUM

Mbara	*may*	*mayØ			
Mulwi	*me^{ŋ}g* ma^{yŋ}g	*maØ^{y}-^{ŋ}g	*mayØ-k^{w}-n	*maya(-t, -k^{w},-n)	1
Vulum	*meŋ* ma^{y}ŋ	*maØ^{y}-ŋ-Ø			2
Muskum	*mut* mwt	*m-w-t	*mØØØ-t-k^{w}		3
1. *y > Ø^{y}; +Y: *a > e; *k^{w} (> g^{w}) > g; fusion gn > ^{ŋ}g 2. *y > Ø^{y}; +Y: *a > e; *k^{w} > k; fusion kn > ŋ 3. metathesis tk^{w} > k^{w}t; *k^{w} > w > u					
GIDAR					
Gidar	*ma*	*ma	*maØØ	*maya(-k^{w})	
	ma'	*ma-ʔ	*maØØ-k^{w}		1
1. *k^{w} (> k) > ʔ					

navel

PCC *(ma-) **z(a)b(a)-x^{w}(a)ɗa**[117] (-y, -n)

BATA

Bata	*su^{m}budə* sə^{wm}bwɗa^{y}	*Ø^{n}-sb-w^{w}ɗa-Ø^{y}	*m^{n}Ø-sbØ-wɗa-y	*ma-zba-x^{w}ɗa (-y(-n))	1
Sharwa	*zi^{m}budə* zə^{ym}bwɗə	*Ø^{n}-zb-wɗa-Ø^{y}	*m^{n}Ø-zbØ-wɗa-y		2
Jimi	*ʒə^{m}b^{w}ədən* z^{y}ə^{m}bwədɗən	* Ø^{n}-z^{m}b-wɗ-Ø^{y}-n	*m^{n}Ø-zbØ-wdØ-y-n		3
1. *z > s; ə-epenthesis; *x^{w} > w^{w} > u; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e; *m > Ø^{n}; +N: b > ^{m}b					

[117] Two observations regarding this obvious compound:

(1) The widespread occurrence of medial * **^{m}b^{w}** in this root is an invitation to reconstruct */ **^{m}b^{w}**/, i.e. **^{x}z(a)^{m}b^{w}(a)ɗa**, but PCC did not have any labialised labials, only labialised velars. Since there is no labialised velar in the simple root, the labialisation feature could have originated from morphological labialisation, which we symbolise in our reconstructions by *{-k^{w}}. However, Gravina's (2015) hypothesis that we are dealing with a compound containing the root for 'belly' (PCC ***x^{w}(a)ɗa**), whose initial consonant would account for the labial feature to be prosodised: ***z(a)^{m}ba** + ***x^{w}(a)ɗa > *z(a)^{m}b-x^{w}(a)ɗa** is quite plausible. We, therefore, tentatively reconstruct such compound, irrespective of the fact that the first part of the compound (***z(a)^{m}ba**) remains obscure. Note, however, that the MANDARA group languages and three KOTOKO-NORTH languages would appear not to use such compound, therefore, there is no labialisation reflex of ***x^{w}(a)ɗa** 'belly'.

(2) Whatever the original meaning of the first part of the compound – it could indeed mean 'navel', besides the compound expression 'belly-navel' – we would want to reconstruct it

2. *x^{w} > w > u; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə; +*m > Ø^{n}; N: b > ^{m}b 3. *x^{w} > w; ə-epenthesis; *y > Ø^{y}; +Y: *z > ʒ; *m > Ø^{n}; +N: b > ^{m}b					

MAFA

Mafa	*zimel* zə^{y}ma^{y}l	*zmal-Ø^{y}	*mØ-zØa-ØlØ-y	*ma-zba-x^{w}ɗa-y	1
1. *ɗ > l; ə-epenthesis; metathesis mz > zm; *y > Ø^{y}; +Y: ə > i; +Y: *a > e					

MARGI

Margi-South	*ʃə^{m}budu* s^{y}ə^{ym}bwɗə^{w}	*Ø^{n}-sb-w^{w}ɗa-Ø^{y}	*m^{n}Ø-sbØ-wɗa-y	*ma-zba-x^{w}ɗa-y	1
Kilba	*ʃi^{m}budu* s^{y}ə^{ym}bwɗə^{w}				2
1. *z > s; *x^{w} > w^{w} > u; ə-epenthesis; *y > Ø^{y}; +Y: s > ʃ; lexical-final *a > ə; +W: ə > u; *m > Ø^{n}; +N: b > ^{m}b 2. *z > s; *x^{w} > w^{w}; w > u; ə-epenthesis; *y > Ø^{y}; +Y: s > ʃ; +Y: ə > i; lexical-final *a > ə; +W: ə > u; *m > Ø^{n}; +N: b > ^{m}b					

MANDARA

				√ C Ca	
Podoko	*ʒi^{m}ba* z^{y}ə^{ym}ba	*Ø^{n}-zba-Ø^{y}	*m^{n}Ø-zba-y	*ma-zba-y	1
Dghwede	*ʒi^{m}be* z^{y}ə^{ym}ba^{y}				2
				√ CaCa	
Mandara	*ʒa^{m}ba* z^{y}a^{m}ba	*Ø^{n}-zaba-Ø^{y}	*m^{n}Ø-zaba-Ø^{y}	*ma-zaba-y	3
Malgwa	*ʒa^{m}ba* z^{y}a^{m}ba				3
Glavda	*ʒa^{m}ba* z^{y}a^{m}ba				3
1. ə-epenthesis; *y > Ø^{y}; +Y: *z > ʒ; +Y: ə > i; *m > Ø^{n}; +N: b > ^{m}b 2. ə-epenthesis; *y > Ø^{y}; +Y: *z > ʒ; +Y: ə > i; +Y: lexical-final *a > e; *m > Ø^{n}; +N: b > ^{m}b 3. *y > Ø^{y}; +Y: *z > ʒ; *m > Ø^{n}; +N: b > ^{m}b					

MOFU

Ouldeme	*zi^{m}bel* zə^{ym}ba^{y}l	*Ø^{n}-zba-l-Ø^{y}	*m^{n}Ø-zba-ØlØ-y	*ma-zba-x^{w}ɗa-y	1
Muyang	*zi^{m}bel* zə^{ym}ba^{y}l				1
1. *ɗ > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e; *m > Ø^{n}; +N: b > ^{m}b					

LAMANG

Lamang	*zi^{m}bo* zə^{ym}ba^{w}	*Ø^{n}-zb-Ø^{w}a-Ø^{y}	*m^{n}Ø-zbØ-w^{w}Øa-y	*ma-zba-x^{w}ɗa-y	1
1. *x^{w} > Ø^{w}; +W: lexical-final *a > o; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *m > Ø^{n}; +N: b > ^{m}b					

HIGI

				√ C C-C Ca	
Kamwe-Nkafa	*ʒi^{m}b^{w}i* z^{y}ə^{ym}bwy	*Ø^{n}-zb-w-y	*m^{n}Ø-zbØ-wØØ-y	*ma-zba-x^{w}ɗa-y	1
Kirya	*ʒi^{m}bur* z^{y}ə^{ym}bwr	*Ø^{n}-zb-wr-Ø^{y}	*m^{n}Ø-zbØ-wrØ-y		2
Bana	*ʒi^{m}ber* z^{y}ə^{ym}ba^{y}r	*Ø^{n}-zba-r-Ø^{y}	*m^{n}Ø-zba-ØrØ-y	*ma-zba-x^{w}ɗa-y	3

without prenasalised **^{m}b**, since we derive all prenasalised consonants that occur in surface forms from underlying and historical simple consonants by either +N prosody or segmental fusion of nasal plus consonant.

				√ CaC-C Ca	
Kamwe-Futu	*ʒe^{m}b^{w}i* z^{y}a^{ym}bwy	*Ø^{n}-zab-w-y^{y}	*m^{n}Ø-zabØ-x^{w}ØØ-y	*ma-zaba-x^{w}ɗa-y	4
1. *x^{w} > w; ə-epenthesis; +Y: ə > i; +Y: *z > ʒ; *y > i; *m > Ø^{n}; +N: b > ^{m}b 2. *x^{w} > w; *ɗ > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *z > ʒ; w > u; *m > Ø^{n}; +N: b > ^{m}b 3. *ɗ > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *z > ʒ; +Y: *a > e; *m > Ø^{n}; +N: b > ^{m}b 4. *x^{w} > w; +Y: a > e; *y > i; *m > Ø^{n}; +N: b > ^{m}b					

KOTOKO-NORTH

				√ C Ca[118]	
Afade	*tsimtsim* tsə^{y}mtsə^{y}m	*tsm-tsm-Ø^{y}	*RED-mØ-tsØØ-y	*RED-ma-zba-y	1
Maltam	*simsim* sə^{y}msə^{y}m	*sm-sm-Ø^{y}	*RED-mØ-sØØ-y		2
Mpade	*simsim* sə^{y}msə^{y}m				2
				√ CaC-C Ca	
Mpade	*sa^{m}bu* sa^{m}bw	*Ø^{n}-sab-w	*m^{n}Ø-sabØ-wØØ	*ma-zaba-x^{w}ɗa	3
1. *z > ts; metathesis mts > tsm; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. *z > s; ə-epenthesis; metathesis ms > sm; *y > Ø^{y}; +Y: ə > ɨ 3. *z > s; *x^{w} > w > u; *m > m^{n} > Ø^{n}; *m > Ø^{n}; +N: b > ^{m}b					

neck$_1$, voice

PCC ***ɣ^{w}(a)r(a)ya*** (-k^{w}, -n; FV)

BATA

Sharwa	*wura* wə^{w}ra	*w^{w}ra	*wrØa	*ɣ^{w}rya(-n)	1
Jimi	*wuran* wə^{w}ran	*w^{w}ra-n	*wrØa-n		1
Gude	*uura* ə^{w}wra	*w^{w}ra	*wrØa		2
Tsuvan	*wula* wə^{w}la	*w^{w}la	*wlØa		3
1. *ɣ^{w} > w^{w}; ə-epenthesis; +W: ə > u 2. *ɣ^{w} > w^{w} > u; ə-prothesis; +W: ə > u 3. *r > l; *ɣ^{w} > w^{w}; ə-epenthesis; +W: ə > u					

DABA

Gavar	*wəla*	*wla	*wlØa	*ɣ^{w}rya	1
Daba	*wəla*				1
Buwal	*ula* wla				2
Mbudum	*wula* wə^{w}la	*w^{w}la			3
1. *r > l; *ɣ^{w} > w; ə-epenthesis 2. *r > l; *ɣ^{w} > w > u 3. *r > l; *ɣ^{w} > w^{w}; ə-epenthesis; +W: ə > u					

[118] In these non-compound forms (see MANDARA group languages), reduplication compensates for the lost second element of the compound structure.

MAFA

Mafa	*daya*	*daya	*Ødaya	*ɣʷraya	1
1. *r > d					

SUKUR

Sukur	*'oy* ʔaʷy	*Øʷʔay	*ɣʷʔayØ	*ɣʷraya	1
1. *r (> ɗ) > ʔ; *ɣʷ > Øʷ; +W: *a > o					

MARGI

Bura	*wulya* wəʷlya	*wʷlya	*wlya	*ɣʷrya	1
Kilba	*wulya* wəʷlya				1
Margi-South	*gyuliya* gʸəʷləʸya	*gʷlyʸa	*gʷlya		2
1. *r > l; *ɣʷ > wʷ; ə-epenthesis; +W: ə > u 2. *r > l; *ɣʷ > gʷ; ə-epenthesis; +W: ə > u; *y > yʸ; +Y: ə > i					

MOFU

				√ C C Ca	
Gemzek	*biyɗa* bəʸyɗà	*byʸɗà	*bɗya	*ɣʷrya	1
Zulgo	*ɗà*	*ɗà	*ØɗØa		2
				√ C CaCa	
Merey	*ɗay*	*ɗày	*ØɗàyØ	*ɣʷraya	2
Dugwor	*ɗay*				2
Mofu-Gudur	*ɗay*				2
1. *r > ɗ; *ɣʷ (> gʷ) > b; ə-epenthesis; *y > yʸ; +Y: ə > i 2. *r > ɗ					

MAROUA

Giziga-Marva	*ay*	*ay	*ØØayØ	*ɣʷraya	
Mbazla	*'ay*	*ʔay	*ØɗayØ		1
	ayi' ayəʸʔ	*ayʸəʔ	*ØʔayaØ		2
1.*r (> ɗ) > ʔ 2. *r (> ɗ) > ʔ; metathesis ʔy > yʔ; lexical-final *a > ə; *y > yʸ; +Y: ə > i					

LAMANG

Lamang	*uleke* wlaʸkaʸ	*wlaØʸ-ka	*wlayØ-ka	*ɣʷraya-kʷa	1
1. *r > l; *ɣʷ > w > u; *kʷ > k; *y > Øʸ; +Y: *a > e					

HIGI

Kamwe-Nkafa	*wulyə* wəʷlyə	*wʷlya	*wlya	*ɣʷrya	1
Kamwe-Futu	*wulyi* wəʷlyəʸ	*wʷlyʸa			2
Kirya	*wuɽi* wəʷrʸy	*wʷryʸ	*wryØ		3
Bana	*wəri* wəry	*wry			4
1. *r > l; *ɣʷ > wʷ; ə-epenthesis; +W: ə > u; lexical-final *a > ə 2. *r > l; *ɣʷ > wʷ; ə-epenthesis; +W: ə > u; lexical-final *a > ə; *y > yʸ; +Y: ə > i 3. *ɣʷ > wʷ; ə-epenthesis; +W: ə > u; *y > yʸ; +Y: *r > ɽ; *y > i 4. *ɣʷ > wʷ; ə-epenthesis; *y > i					

KOTOKO-SOUTH

Zina	*wuni* wəʷny	*wʷny	*wʷnyØ	*ɣʷrya	1
Mazera	*yule* ɣʷəʷlaʸ	*ɣʷlØʸa	*ɣʷlya		2
1. *r > n; *ɣʷ > wʷ; ə-epenthesis; +W: ə > u; *y > i 2. *r > l; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e					

MUSGUM

Mulwi	*wile* wəʸlaʸ	*wlØʸa	*wlya	*ɣʷrya	1
1. *r > l; *ɣʷ > w; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

GIDAR

Gidar	*wula* wəʷla	*wʷla	*wʷlØa	*ɣʷrya(-kʷ)	1
	wəla'	*wla-ʔ	*wlØa-kʷ		2
1. *r > l; *ɣʷ > wʷ; ə-epenthesis; +W: ə > u 2. *r > l; *ɣʷ > w; *kʷ (> k) > ʔ; ə-epenthesis					

neck$_2$

Areal root ***ɣ(a)w(a)ya**

MAFA

Cuvok	*uway* wway	*wwayØ	*ɣwaya	1
	uway əʷway	*ØwʷayØ		2
1. *ɣ > w > u 2. alternative analysis: ə-prothesis; *w > wʷ; +W: ə > u				

MOFU

Ouldeme	*hʷay* xway	*xwayØ	*ɣwaya	1
1. *ɣ > x				

KOTOKO-ISLAND

Buduma	*wuy* wəʷy	*ØwʷyØ	*ɣwya	1
1. ə-epenthesis; *w > wʷ; +W: ə > u				

KOTOKO-NORTH

Afade	*we* waʸ	*waØʸ	*ØwayØ	*ɣwaya	1
Mpade	*we* waʸ				1
Malgbe	*we* waʸ				1
1. *y > Øʸ; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*ɣʷae* ɣwaʸ	*ɣwaØʸØ	*ɣwaya	1
Mser	*wa*	*ØwaØØ		
1. *y > Øʸ; +Y: lexical-final *a > æ				

night

PCC *(ma-, sa-, ta-, xa-) **r(a)v(a)ɗa** (-a, -y, -kʷ, -n; FV)

BATA

Gude	*vəɗa* vəɗà	*Øvɗà		*rvɗa(-y/-n)	1
Sharwa	*viɗə* vəʸɗə	*vɗà-Øʸ	*Øvɗa-y		2
Jimi	*vəɗən* vəɗən	*Øvɗà-n			3
1. ə-epenthesis 2. ə-epenthesis; *y > Øʸ; +Y: ə > i; lexical-final *a > ə 3. ə-epenthesis; lexical-final *a > ə					

MAFA

Mafa	*vaɗ*	*ØvadØ		*rvaɗa(-kʷ-n)	
Cuvok	*vaɗ*				
	ləvaŋ	*lva-ŋ	*lvaØØ-k-n		1
1. *r > l; *kʷ > k; fusion kn > ŋ; ə-epenthesis					

TERA

Tera	*viɗki* vəʸdky	*vɗ-k-yʸ	*ØvdØ-y-kʷ	*rvɗa-y-kʷ(-na)	1
Hwana	*fiɗîgɹa* fəʸdygra	*fɗ-yʸ-k-ra	*ØfdØ-y-kʷ-ra		2
1. *kʷ > k; metathesis yk > ky; ə-epenthesis; *y > yʸ > i;+Y: ə > i 2. *v > f; *n > r; *kʷ > k; *k > g; ə-epenthesis; *y > yʸ; +Y: ə > i; *y > i					

SUKUR

				√ C C Ca	
Sukur	*vəɗ*	*ØvdØ		*rvɗa	1
				√ C CaCa	
	vay	*ØvayØ		*rvaɗa	2
1. ə-epenthesis 2. *ɗ > y					

HURZA

				√ C C Ca	
Mbuko	*luvon* ləʷvaʷn	*lva-Øʷ-n	*lvØa-kʷ-n	*rvɗa-kʷ-n	1
				√ C CaCa	
Vame	*luvaɗ* ləʷvaɗ	*lvaɗ-Øʷ	*lvadØ-kʷ	*rvaɗa-kʷ	2
1. *r > l ; ə-epenthesis; *kʷ > Øʷ; +W: ə > u; +W: lexical-final *a > o 2. *r > l; ə-epenthesis; *kʷ > Øʷ; +W: ə > u					

MARGI

Bura	*vir(i)* vəʸry	*vr-yʸ	*ØvrØ-y	*rvɗa-y(-kʷ)	1
Margi	*vi'i* vəʸʔy	*vʔ-yʸ	*ØvdØ-y		2
Margi-South	*vʷi'i* vʷəʸʔy	*vʔ-yʸ-Øʷ	*ØvdØ-y-kʷ		3
Kilba	*vu'i* vəʷʔy	*vʔ-y-Øʷ	*ØvdØ-y-kʷ		4
1. *ɗ > r; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *ɗ > ʔ; ə-epenthesis; +*y > yʸ > i; Y: ə > i 3. *ɗ > ʔ; ə-epenthesis; +W: *v > vʷ; *y > yʸ > i; +Y: ə > i 4. *ɗ > ʔ; ə-epenthesis; +W: ə > u; *y > i					

MANDARA

				√ C C Ca	
Matal	*vəɗ*	*vɗ	*ØvdØ	*rvɗa(-y)	1
Podoko	*vəɗa*	*vɗa	*Øvɗa		1
Glavda	*avʸd(a)*				2
Dghwede	*vit'e* vəʸɗaʸ	*vɗa-Øʸ	*Øvɗa-y		3
	vit'e vəʸɗaʸ				4
				√ C CaCa	
Mandara	*vayia* vaɗʸya	*ØvadØ-yʸa		*rvaɗa-ya	5
1. ə-epenthesis 2. a-prothesis					

3. ə-epenthesis; *y > Øʸ; +Y: ə > i 4. ə-epenthesis; *y > Øʸ; +Y: ə > i 5. *y > yʸ; +Y: *ɗ > ɗʸ > y; *y > i					
Mofu					
				√ C C Ca	
Zulgo	*həvəɗ* xəvəɗ	*xØ-ØvdØ		*xa-rvɗa	1
				√ C CaCa	
Muyang	*vaɗ*	*ØvadØ		*(xa-/ta-/sa-) rvaɗa(-y)	
Gemzek	*həvaɗ*	*xØ-ØvadØ			1
Mofu-Gudur	*tavaɗ*	*ta-ØvadØ			
Mofu North	*sevad* saʸvad	*sa-vad-Øʸ	*sa-ØvadØ-y		2
				√ CaCaCa	
Ouldeme	*lavaɗ*	*lavadØ		*ravaɗa	3
1. ə-epenthesis 2. *y > Øʸ; +Y: *a > e; (transcription error d = ɗ or ɗ > d?) 3. *r > l					
Maroua					
Mbazla	*avuɗ* avəʷɗ	*vɗ-Øʷ	*ØvdØ-kʷ	*rvɗa-kʷ	1
	avut avəʷt				2
1. a-prothesis; ə-epenthesis; *kʷ > Øʷ; +W: ə > u 2. a-prothesis; ə-epenthesis; *kʷ > Øʷ; +W: ə > u; *ɗ > t					
Lamang					
Lamang	*rvidî* rvəʸɗy	*rvdØ-yʸ		*rvɗa-y(-kʷ)	1
Hdi	*rəvidîk* rəvəʸɗyk	*rvdØ-yʸ-k			1
1. ə-epenthesis; *kʷ > k; *y > yʸ > i; +Y: ə > i					
Higi					
Kamwe-Futu	*vidî* vəʸɗy	*ØvdØ-yʸ		*rvɗa(-y)	1
Psikye	*vidî* vəʸɗy				1
Kamwe-Nkafa	*vərə*	*Øvra			2
	vəɹə				3
Kirya	*vəle* vəlaʸ	*Øvla-Øʸ			4
1. ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *ɗ > r; ə-epenthesis; lexical-final *a > ə 3. *ɗ > ɹ; ə-epenthesis; lexical-final *a > ə 4. *ɗ > l; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e					
Kotoko-North					
Afade	*faɗe* faɗaʸ	*faɗa-Øʸ	*Øfaɗa-y	*rvaɗa(-y)	1
Mpade	*faɗe* faɗaʸ				1
Malgbe	*faɗe* faɗaʸ				1
1. *v > f; *y > Øʸ; +Y: lexical-final *a > e					
Kotoko-Central					
Mser	*nvaɗe* nvaɗaʸ	*n-Øvaɗa-Øʸ	*mØ-rvaɗa-y	*ma-rvaɗa-y	1
Lagwan	*nvaɗe* nvaɗaʸ				1
	mvaɗe mvaɗaʸ	*m-Øvaɗa-Øʸ			2
1. homorganic assimilation *m > n/_r (> Ø); *y > Øʸ; +Y: lexical-final *a > e					

2. *y > Øʸ; +Y: lexical-final *a > e				

KOTOKO-SOUTH

Zina	*ləvin* ləvyn	*lvyØ-n	*rvɗa-n	1
1. *r > l; *ɗ > y > i; *ə-epenthesis				

MUSGUM

Mulwi	*divik* dəʸvyk	*dvyʸØ-k		*rvɗa(-a-y, -kʷ)	1
Vulum	*dɨvɨk* dəʸvəʸk	*dvØʸ-k	*dvyØ-k		2
Mbara	*divi'day* dəʸvəʸɗay	*dvɗ-ayʸ	*dvɗØ-a-y		3
Muskum	*arvil* arvəʸl	*rvl-Øʸ	*rvlØ-y		4
1. *r > d; *ɗ > y > yʸ > i; ə-epenthesis; +Y: ə > i 2. *r > d; *ɗ > y > Øʸ; *kʷ > k; ə-epenthesis; +Y: ə > ɨ 3. *r > d; ə-epenthesis; *y > Øʸ; +Y: ə > i 4. *ɗ > l; a-prothesis; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

GIDAR

Gidar	*dəfɗa*	*dfɗa	*rvɗa	1
1. *r > d; *v > f; ə-epenthesis				

nose

PCC *(ma-) **xʷ(a)ts(a)na** (-a, -y, -kʷ, -n)

BATA

Sharwa	*tʃinə* tsʸəʸnə	*tsna-Øʸ	*Øtsna-y	*(ma-)xʷtsna-y(-n)	1
Gude	*ʃina* sʸəʸna	*sna-Øʸ	*Øsna-y		3
Bata	*ʃine* sʸəʸnaʸ				2
Jimi	*ʃənən* sʸənən	*sna-Øʸ-n	*Øsna-y-n		4
Tsuvan	*mətʃine* mətsʸəʸnaʸ	*m-tsna-Øʸ	*mØ-Øtsna-y		5
1. ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i; lexical-final *a > ə 2. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i 3. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i; +Y: lexical-final *a > e 4. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; lexical-final *a > ə 5. ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i; +Y: lexical-final *a > e					

DABA

				√ C C Ca	
Daba	*mitʃi'n* məʸtsʸəʸʔn	*m-Øtsʔ-Øʸ-n	*mØ-xʷtsrØ-y-n		1
Gavar	*mtsər*	*m-Øtsr	*mØ-xʷtsrØ	*ma-xʷtsna(-y(-n))	2
Mbudum	*ntʃur* ntsʸəʷr	*n-Øʷtsr-Øʸ	*mØ-xʷtsrØ-y		3
				√ C CaCa	
Buwal	*mtʃar* mtsʸar	*m-Øtsar-Øʸ	*mØ-xʷtsarØ-y	*ma-xʷtsana-y	4
1. root-internal *n (> r > ɗ) > ʔ; ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i 2. *n > r; ə-epenthesis 3. *n > r; homorganic assimilation *m > n/_ts; ə-epenthesis; *xʷ > Øʷ; +W: ə > u; *y > Øʸ; +Y: *ts > tʃ 4. *n > r; *y > Øʸ; +Y: *ts > tʃ					

MAFA

Mafa	*hətsan*	*xtsan	*xtsanØ	*x^{w}tsana(-k^{w})	1
Cuvok	*hətaŋ*	*xtaŋ-Ø	*xtanØ-k		2
1. *x^{w} > x; ə-epenthesis 2. *x^{w} > x; *ts > t; ə-epenthesis; *k^{w} > k; fusion *nk > ŋ					

SUKUR

Sukur	*ʃin* $s^{y}ə^{y}n$	*sn-$Ø^{y}$	*ØsnØ-y	*x^{w}tsna-y	1
1. *ts > s; *y > $Ø^{y}$; +Y: *s > ʃ; +Y: ə > i					

HURZA

Mbuko	*tʃœn* $ts^{y}a^{wy}n$	*^{w}tsan-$Ø^{y}$	*Ø^{w}tsanØ-y	*x^{w}tsana-y(-k^{w})	1
Vame	*hətʃeŋ* $xəts^{y}a^{y}ŋ$	*xtsaŋ-$Ø^{y}$-Ø	*xtsanØ-y-k		2
1. *x^{w} > $Ø^{w}$; *y > $Ø^{y}$; +Y: *ts > tʃ; combined +W+Y: *a > œ 2. *x^{w} > x; ə-epenthesis; *y > $Ø^{y}$; +Y: *ts > tʃ; +Y: *a > e; *k^{w} > k; fusion *nk > ŋ					

MARGI

Bura	*kutʃir* $k^{w}ə^{w}ts^{y}ə^{y}r$	*k^{w}tsr-$Ø^{y}$	*k^{w}tsrØ-y	*(ma-)x^{w}tsna-y	1
Margi	*mtʃir* $mts^{y}ə^{y}r$	*m-tsr-$Ø^{y}$	*mØ-ØtsrØ-y		2
Margi-South	*tʃir* $ts^{y}ə^{y}r$	*tsr-$Ø^{y}$	*ØtsrØ-y		2
Kilba	*tʃir* $ts^{y}ə^{y}r$				
1. *n > r; *x^{w} > k^{w}; ə-epenthesis; +W: ə > u; *y > $Ø^{y}$; +Y: *ts > tʃ; +Y: ə > i 2. *n > r; ə-epenthesis; *y > $Ø^{y}$; +Y: *ts > tʃ; +Y: ə > i					

MANDARA

				√ C C Ca	
Podoko	*fətəra*	*ftra		*x^{w}tsna(-y)	1
Glavda	*$x^{ə}$tra*	*xtra			2
	xətə	*xta	*xtØa		3
Dghwede	*xtire* $xtə^{y}ra^{y}$	*xtra-$Ø^{y}$	*xtra-y		4
Matal	*tɪr* $tə^{y}r$	*tr-$Ø^{y}$	*ØtrØ-y		5
				√ C CaCa	
Mandara	*ektare* $a^{y}ktara^{y}$	*ktara-$Ø^{y}$	*ktara-y	*x^{w}tsana-y	6
Malgwa	*əktare* $əktara^{y}$				7
1. *n > r; *x^{w} > f; *ts > t; ə-epenthesis 2. *n > r; *x^{w} > x; *ts > t; ə-epenthesis 3. *x^{w} > x; *ts > t; ə-epenthesis; lexical-final *a > ə 4. *n > r; *x^{w} > x; *ts > t; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > i; +Y: lexical-final *a > e 5. *n > r; *ts > t; ə-epenthesis; *y > $Ø^{y}$; +Y: ə > I 6. *n > r; *x^{w} > k; *ts > t; a-prothesis; *y > $Ø^{y}$; +Y: *a > e 7. *n > r; *x^{w} > k; *ts > t; ə-prothesis; *y > $Ø^{y}$; +Y: lexical-final *a > e					

MOFU

				√ C C Ca	
Muyang	*hi^{n}dir* $xə^{yn}də^{y}r$	*Ø^{n}-xdr-$Ø^{y}$	*m^{n}Ø-xtrØ-y	*(ma-)x^{w}tsna-y	1
Zulgo	*hitir* $xə^{y}tə^{y}r$	*xtr-$Ø^{y}$	*xtrØ-y		2
				√ C CaCa	
Ouldeme	*hu^{n}dar* $x^{w}ə^{wn}dar$	*Ø^{n}-x^{w}dar	*m^{n}Ø-x^{w}tarØ		3

Mada[119]	*hⁿdoer* xⁿdaʷʸr	*Øⁿ-xʷdar-Øʸ	*mⁿØ-xʷtarØ-y	*(ma-)xʷtsana(-y)	4
Moloko	*həⁿder* xəⁿdaʸr	*Øⁿ-xdar-Øʸ	*mⁿØ-xtarØ-y		5
Gemzek	*həter* xətaʸr	*xtar-Øʸ	*xtarØ-y		6
Merey	*həter* xətaʸr				6
Dugwor	*məter* mətaʸr	*m-tar-Øʸ	*mØ-ØtarØ-y		7
				√ CaCaCa	
Mofu North	*hatar*	*xatarØ		*xʷatsana(-y)	8
Mofu-Gudur	*heter* xaʸtaʸr	*xatar-Øʸ	*xatarØ-y		9
1. *n > r; *xʷ > x; *ts (> t) > d; ə-epenthesis; *y > Øʸ; +Y: ə > i; *m > Øⁿ; +N: d > ⁿd 2. *n > r; *xʷ > x; *ts > t; ə-epenthesis; *y > Øʸ; +Y: ə > i 3. *n > r; *ts (> t) > d; ə-epenthesis; +W: ə > u; +*m > Øⁿ; N: d > ⁿd 4. *n > r; *ts (> t) > d; *y > Øʸ; combined +Y+W: *a > œ; *m > Øⁿ; +N: d > ⁿd 5. *n > r; *ts (> t) > d; *y > Øʸ; +Y: *a > e; *m > Øⁿ; +N: d > ⁿd 6. *n > r; *xʷ > x; *ts > t; ə-epenthesis; *y > Øʸ; +Y: *a > e 7. *n > r; *ts > t; ə-epenthesis; *y > Øʸ; +Y: *a > e 8. *n > r; *ts > t 9. *n > r; *ts > t; *y > Øʸ; +Y: *a > e					

Maroua

				√ C C Ca	
Giziga-Muturwa	*hutuŋ* xʷəʷtəʷŋ	*xʷtŋ-Ø	*xʷtnØ-k	*xʷtsna-y/-kʷ	1
Mbazla	*kitiŋ* kəʸtəʸŋ	*ktŋ-Øʸ-Ø	*ktnØ-y-k		2
				√ C CaCa	
Giziga-Marva	*huton* xʷəʷtaʷn	*xʷtanØ		*xʷtsana	3
1. *ts > t; ə-epenthesis; +W: ə > u; *kʷ > k; fusion *nk > ŋ 2. *xʷ > k; *ts > t; ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ 3. *ts > t; ə-epenthesis; +W: ə > u; +W: *a > o					

Lamang

Lamang	*htsini* xtsəʸny	*xtsn-yʸ	*xtsnØ-y	*xʷtsna-y(-kʷ)	1
	htsiŋi xtsəʸŋy	*xtsn-k-yʸ < *xtsnØ-yʸ-k	*xtsnØ-y-k		2
	hciŋ xtsʸəʸŋ	*xtsnØ-Øʸ-k			3
Hdi	*hətsiŋ* xətsəʸŋ	*xtsnØ-Øʸ-k			3
1. *xʷ > x; ə-epenthesis; *m > Øⁿ; *m > Øⁿ; *y > yʸ > i; +Y: ə > i 2. *xʷ > x; ə-epenthesis; metathesis yk > ky; *y > yʸ > i; +Y: ə > i; *kʷ > k; fusion *nk > ŋ 3. *xʷ > x; ə-epenthesis; +Y: *ts > c; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ					

Higi

Kamwe-Nkafa	*ntʃhi* ntsʸxy	*n-tsx-yʸ	*mØ-xtsØØ-y	*(ma-)xʷtsna-y	1
Kamwe-Futu	*ntʃi* ntsʸy	*n-ts-yʸ	*mØ-ØtsØØ-y		2
Kirya	*ntʃin* ntsʸəʸn	*n-tsn-Øʸ	*mØ-ØtsnØ-y		3
Bana	*kʃən* ksʸən	*ksn-Øʸ	*ksnØ-y		4
1. *xʷ > x; *y > yʸ > i;+Y: *ts > tʃ; metathesis xts > tsx; homorganic assimilation *m > n/_ts 2. *y > yʸ > i; +Y: *ts > tʃ; homorganic assimilation *m > n/_ts					

[119] We are here reading the transcription *hⁿdoer* to indicate IPA œ, which is the characteristic Central Chadic allophone of /a/ under combined Y- and W-prosodies.

3. ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i; homorganic assimilation *m > n/_ts 4. *xʷ > k; *ts > s; ə-epenthesis; *y > Øʸ; +Y: *s > ʃ					

KOTOKO-ISLAND

Buduma	*tʃənay* tsʸənay	*tsn-ayʸ	*ØtsnØ-a-y	*xʷtsna-a-y	1
1. *y > yʸ; +Y: *ts > tʃ; ə-epenthesis					

KOTOKO-NORTH

				√ C C Ca	
Afade	*tsin* tsəʸn	*tsn-Øʸ	*ØtsnØ-**y**	*xʷtsna-y	1
Maltam	*sin* səʸn	*sn-Øʸ	*ØsnØ-**y**		2
Malgbe	*skin* skəʸn	*skn-Øʸ	*ksnØ-**y**		3
				√ C CaCa	
Malgbe	*skare* skaraʸ	*skara-Øʸ	*ksara-y	*xʷtsana-y	4
				√ CaCaCa	
Mpade	*hasan*	*xasanØ		*xʷatsana	5
1. *y > Øʸ; +Y: ə > ɨ 2. *ts > s; *y > Øʸ; +Y: ə > ɨ 3. *xʷ > k; *ts > s; metathesis ks > sk; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 4. *xʷ > k; *ts > s; metathesis ks > sk; *y > Øʸ; +Y: lexical-final *a > e 5. *xʷ > x; *ts > s					

KOTOKO-CENTRAL

				√ C C Ca	
Lagwan	*xsini* xsəʸny	*xsn-yʸ	*xsnØ-y	*xʷtsna-y	1
				√ CaC Ca	
Mser	*asin* asəʸn	*asn-Øʸ	*ØasnØ-y	*xʷatsna-y	2
1. *xʷ > x; *ts > s; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *ts > s; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

KOTOKO-SOUTH

Mazera	*hitʃine* xəʸtsʸəʸnaʸ	*xtsna-Øʸ	*xtsna-y	*xʷtsna-y(-kʷ)	1
Zina	*hiskini* xəʸskəʸny	*xskn-yʸ	*xsnØ-y-k		2
1. *xʷ > x; ə-epenthesis; *y > Øʸ; +Y: *ts > tʃ; +Y: ə > i; +Y: lexical-final *a > e 2. *xʷ > x; *ts > s; *kʷ > k; multiple metathesis nyk > kny; ə-epenthesis; *y > yʸ > i; +Y: ə > i					

oil, fat

PCC *(ma-) **m(a)ra** (-y, -t, -kʷ, -n)

BATA

Sharwa	*marə*	*mara	*mara(-n)	1
Jimi	*marən*	*mara-n		1
1. lexical-final *a > ə				

DABA

Buwal	*mel* maʸl	*mal-Øʸ	*malØ-y	*mara-y	1
Gavar	*mali* maly	*mal-y			2

1. *r > l; *y > Ø^{y}; +Y: *a > e 2. *r > l; *y > i					

MAFA

Cuvok	*mal*	*mal	*malØ	*(ma-)mara	1
Mafa	*^{m}bar* mbar	*mØ-bar	*ma-barØ		2
1. *r > l 2. dissimilation *m > b/m_					

TERA

Tera	*mar*	*mar	*marØ	*mara(-k^{w})	
	mor ma^{w}r	*mar-Ø^{w}	*marØ-k^{w}		1
1. *k^{w} > Ø^{w}; +W: *a > o					

SUKUR

Sukur	*mir* mə^{y}r	*mr-Ø^{y}	*mrØ-y	*mra-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

HURZA

Mbuko	*amar*	*Øa-mar	*ma-marØ	*(ma-)mara	
Vame	*a^{m}bar*	*Ø^{n}a-bar	*m^{n}a-barØ		1
1. dissimilation *m > b/m_; *m > m^{n}; +N: b > ^{m}b					

MARGI

Bura	*mal*	*mal	*malØ	*mara	1
Kilba	*mal*				1
1. *r > l					

MANDARA

Matal	*amal*	*Øa-mal	*ma-malØ	*(ma-)mara	1
Podoko	*mala*	*mala			1
Glavda	*wala*	*wala			2
	wal	*wal	*walØ		2
	wa	*wa	*waØØ		3
1. *r > l 2. *r > l; *m > w 3.*m > w					

MOFU

Zulgo	*mal*	*mal	*malØ	*(ma-)mara	1
Gemzek	*mal*				1
Mofu North	*mal*				1
Mofu-Gudur	*mal*				1
Merey	*mal*				1
Ouldeme	*amal*	*Øa-mal	*ma-malØ		1
Muyang	*amal*				1
Mada	*amal*				1
Moloko	*amar*	*Øa-mar	*ma-marØ		
1. *r > l					

Maroua

Giziga-Muturwa	*mal*	*mal	*malØ	*mara	1
Giziga-Marva	*mal*				1
1. *r > l					

Kotoko-South

Zina	*amәl*	*Øa-ml	*ma-mlØ	*ma-mra(-y)	1
Mazera	*amle* amla^{y}	*Øa-mla-Ø^{y}	*ma-mla-y		2
1. *r > l; ə-epenthesis 2. *r > l; *y > Ø^{y}; +Y: lexical-final *a > e					

Musgum

				√ C Ca	
Muskum	*miltuw* mə^{y}ltə^{w}w	*ml-Ø^{y}-t-w^{w}	*mlØ-y-t-k^{w}	*mra-y-t-k^{w}	1
				√ CaCa	
Mbara	*mal*	*mal	*malØ	*(ma-)mara(-y)	2
Vulum	*amel* ama^{y}l	*Øa-mal-Ø^{y}	*ma-malØ-y		3
1. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > w^{w}; +W: ə > u 2. *r > l 3. *r > l; *y > Ø^{y}; +Y: a > e					

Gidar

Gidar	*mele* ma^{y}la^{y}	*mala-Ø^{y}	*mala-y	*mara-y	1
1. *r > l; *y > Ø^{y}; +Y: a > e					

path, way, road[120]

PCC *(ma-, k^{w}a-, RED-) **ts(a)v(a)ɗa** (-a, -y, -k^{w}, -n)

Bata

Sharwa	*tivə* tə^{y}və	*tvØ^{y}a	*tvy^{y}a	*tsvɗa(-n)	1
Tsuvan	*təve* təva^{y}				2
Jimi	*təvən*	*tvə-n	*tvØa-n		3
1. *ts > t; ə-epenthesis; *ɗ > y > Ø^{y}; +Y: ə > i; lexical-final *a > ə 2. *ts > t; ə-epenthesis; *ɗ > y > Ø^{y}; +Y: lexical-final *a > e 3. *ts > t; ə-epenthesis					

Daba

				√ C C Ca	
Gavar	*təf*	*tf	*tfØØ	*(k^{w}a-)tsvɗa	1
Daba	*katəf'* katfʔ	*ka-tfʔ	*ka-tfɗØ		2
				√ CaC Ca	
Buwal	*taf*	*taf	*tafØØ	*(k^{w}a-)tsavɗa	3
Mbudum	*kataf*	*ka-taf	*ka-tafØØ		4

[120] This lexical item poses a challenge to our methodological principle of giving analytical priority to phonological over morphological Y-prosody, since *ɗ > y is a fairly common sound change in CC languages. Some languages retain *ɗ and still show Y-prosody, which then must be assumed to be of morphological origin stemming from *{-y}. In examples where *ɗ is absent but Y-prosody occurs, we reconstruct sound change *ɗ > y (with prosodising effect: *ɗ > y^{y}).

1. *ts > t; *v > f; ə-epenthesis 2. *ts > t; *v > f; *ɗ > ʔ; *k^{w} > k; ə-epenthesis 3. *ts > t; *v > f 4. *ts > t; *v > f; *k^{w} > k

MAFA

Mafa	*tʃiveɗ* ts^{y}ə^{y}va^{y}ɗ	*tsvaɗ-Ø^{y}	*tsvadØ-y	*tsvaɗa(-y)	1
Cuvok	*tʃəvey* ts^{y}əva^{y}y	*tsvay^{y}	*tsvayØ		2
1. ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: ə > i; +Y: *a > e 2. ə-epenthesis; *ɗ > y > y^{y}; +Y: *ts > tʃ; +Y: ə > i; +Y: *a > e					

TERA

Tera	*^{n}dəva* ndəva	*n-dva	*mØ-dvØa		1
	^{ŋg}g^{n}dʒiva ŋg^{n}dz^{y}ə^{y}va	*ŋ-g-^{n}dzvØ^{y}a	*m^{n}Ø-kØ-dzvya	*ma-(k^{w}a-)tsvaɗa	2
1. *ts > d; homorganic assimilation *m > n/_d; ə-epenthesis 2. *ts > dz; ə-epenthesis; *ɗ > y > y^{y}; +Y: *dz > ʤ; +Y: ə > i; *k^{w} (> k) > g; *m > m^{n}; +N: dz > ^{n}dz; homorganic assimilation *m > ŋ/_g					

SUKUR

Sukur	*tʃivi* ts^{y}ə^{y}vy	*tsvy^{y}	*tsvyØ	*tsvaɗa	1
1. ə-epenthesis; *ɗ > y > y^{y} > i; +Y: *ts > tʃ; +Y: ə > i					

HURZA

Mbuko	*tʃəveɗ* ts^{y}əva^{y}ɗ	*tsvaɗ-Ø^{y}	*tsvadØ-y	*tsvaɗa-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: *a > e					

MANDARA

				√ C C Ca	
Podoko	*tive* tə^{y}va^{y}	*tvØ^{y}a	*tvy^{y}a	*tsvaɗa	1
				√ CaC Ca	
Matal	*tet^{i}v(i)* ta^{y}tə^{y}vy	*ta-tØvy^{y}Ø	*RED-tavya	*RED-tsavaɗa	2
1. *ts > t; ə-epenthesis; *ɗ > y > Ø^{y}; +Y: *ə > i; +Y: lexical-final *a > e 2. *ts > t; ə-epenthesis; *ɗ > y > y^{y} > i; +Y: *ə > i; +Y: *a > e					

MOFU

				√ C C Ca	
Ouldeme	*tivi* tə^{y}vy	*tvy^{y}	*tvyØ	*tsvaɗa	1
Muyang	*divi* də^{y}vy	*dvy^{y}	*dvyØ		2
				√ C CaCa	
Moloko	*ʧəveɗ* ts^{y}əva^{y}ɗ	*tsvaɗ-Ø^{y}	*tsvadØ-y	*tsvaɗa-y	3
Merey	*ʧəveɗ* ts^{y}əva^{y}ɗ				3
Dugwor	*ʧəveɗ* ts^{y}əva^{y}ɗ				3
Mofu North	*ʧəveɗ* ts^{y}əva^{y}ɗ				3
Mofu-Gudur	*ʧəveɗ* ts^{y}əva^{y}ɗ				3
1. *ts > t; ə-epenthesis; *ɗ > y > y^{y} > i; +Y: *ə > i 2. *ts (> t) > d; ə-epenthesis; *ɗ > y > y^{y} > i; +Y: *ə > i 3. ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: *a > e					

MAROUA

				√ C C Ca	
Mbazla	*dʒivi* dzʸəʸvy	*dzvyʸ	*dzvyØ	*tsvɗa(-y)	1
	divi dəʸvy	*dvyʸ	*dvyØ		2
	ɗ'ivi' ɗəʸvyʔ	*ɗvʔ-yʸ	*ɗvʔØ-y		3
				√ C CaCa	
Giziga-Marva	*dʒived'* dzʸəʸvaʸɗ'	*dzvaɗ-Øʸ	*dzvaɗ'Ø-y	*tsvaɗa-y	4
1. *ts > dz; ə-epenthesis; *ɗ' > y > yʸ > i; +Y: dz > dʒ; +Y: *ə > i 2. *ts (> t) > d; ə-epenthesis; *ɗ' > y > yʸ > i; +Y: *ə > i 3. *ts (> t) > ɗ; *ɗ' > ʔ; ə-epenthesis; *y > yʸ > i; +Y: *ə > i 4. *ts > dz; ə-epenthesis; *y > Øʸ; +Y: dz > dʒ; +Y: *ə > i; +Y: *a > e					

LAMANG

Lamang	*tve* tvaʸ	*tvØʸa	*tvya	*tsvɗa	1
Hdi	*tvi* tvy	*tvy	*tvyØ		2
1. *ts > t; *ɗ' > y > Øʸ; +Y: lexical-final *a > e 2. *ts > t; *ɗ' > y > i					

MUSGUM

Vulum	*futii* fəʷtəʸy	*ftØʸa-y-Øʷ	*tfyʸa-y-kʷ	*tsvɗa(-a)-y(-kʷ)	1
Mulwi	*futii* fəʷtəʸy				1
Mbara	*tifay* təʸfay	*tfØʸ-ay	*tfyʸØ-a-y		2
1. *ts > t; *v > f; metathesis tf > ft; ə-epenthesis; *ɗ' > y > Øʸ; +Y: ə > i; *kʷ > Øʷ; +W: ə > u; lexical-final *a > ə; *y > i 2. *ts > t; *v > f; ə-epenthesis; *ɗ' > y > Øʸ; +Y: ə > i					

GIDAR

Gidar	*tive* təʸvaʸ	*tvØʸa	*tvyʸa	*tsvɗa	1
1. *ts > t; ə-epenthesis; *ɗ' > y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

porcupine$_1$

Areal root *(ma-, va-, RED-) **ts(a)xʷ(a)ɗa** (-y, -n; FV)

HURZA

Mbuko	*mətsah*	*mØ-tsax	*ma-tsaxØØ	*ma-tsaxʷɗa	1
Vame	*anzah* aⁿzax	*Øⁿa-zax	*mⁿa-zaxØØ		2
1. *xʷ > x; ə-epenthesis 2. *ts > z; *xʷ > x; *m > mⁿ; +N: z > ⁿz					

MARGI

Bura	*mantsina* maⁿtsyna	*mⁿa-ts-y-na	*mⁿa-tsØØØ-y-na	*ma-tsxʷɗa(-y-na)	1
Margi South	*mətsa*	*mØ-tsa	*ma-tsØØa		2
1. *m > mⁿ; +N: ts > ⁿts; *y > i 2. ə-epenthesis					

MANDARA

				√ C C Ca	
Matal	*Θtʃhi* a^{y}ts^{y}xy	*Øa-tsx-y^{y}	*ma-tsxØØ-y	*(ma(-va-)/RED-) tsx^{w}ɗà(-y)	1
Malgwa	*tʃitʃiha* ts^{y}ə^{y}ts^{y}ə^{y}xa	*ts-tsxa-Ø^{y}	*RED-tsxØa-y		2
Glavda	*avandʒ͡za* ava^{n}dʒ͡za	*Ø^{n}a-va-dza	*m^{n}a-va-dzØØa		3
				√ CaC Ca	
Mandara	*tʃetʃehwe* ts^{y}a^{y}ts^{y}a^{y}x^{w}a^{y}	*tsa-tsax^{w}a-Ø^{y}	*RED-tsax^{w}Øa-y	*RED-tsx^{w}ɗà-y	4

1. *x^{w} > x; *y > y^{y} > i; +Y: *ts > tʃ; +Y: *a > Θ
2. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: *ts > tʃ; +Y: ə > i
3. *ts > dz; *m > m^{n}; +N: dz > ^{n}dz
4. *y > Ø^{y}; +Y: *ts > tʃ; +Y: a > e

MOFU

				√ C C Ca	
Ouldeme	*atsih^{w}i* atsə^{y}x^{w}y	*Øa-tsx^{w}-y^{y}	*ma-tsx^{w}ØØ-y	*ma-tsx^{w}ɗà-y	1
Muyang	*etʃihi* a^{y}ts^{y}ə^{y}xy	*Øa-tsx-y^{y}	*ma-tsxØØ-y		2
				√ C CaCa	
Gemzek	^{n}*dzəhed* ndzəha^{y}ɗ	*n-dzxaɗ-Ø^{y}	*mØ-dzxadØ-y	*ma-tsx^{w}adà-y	3
Merey	^{n}*dzəhed* ndzəha^{y}ɗ				3
Mofu North	^{n}*dzəhed* ndzəha^{y}ɗ				3
				√ CaCaCa	
Zulgo	*tsehe* tsa^{y}xa^{y}	*tsaxa-Ø^{y}	*tsaxØa-y	*ma-tsax^{w}adà-y	4
Moloko	*e^{n}dʒehed* a^{y}^{n}dz^{y}a^{y}ha^{y}ɗ	*Ø^{n}a-tsax^{w}adà-Ø^{y}	*m^{n}a-tsax^{w}adà-y		5
Dugwor	^{n}*dʒehed* ndz^{y}a^{y}ha^{y}ɗ	*n-tsaxadà-Ø^{y}	*mØ-tsaxadà-y		6

1. ə-epenthesis; *y > y^{y} > i; +Y: ə > i
2. *x^{w} > x; ə-epenthesis; *y > y^{y} > i; +Y: *ts > tʃ; +Y: *a > e; +Y: ə > i
3. *ts > dz; *x^{w} > x; homorganic assimilation *m > n/_dz; *y > Ø^{y}; +Y: *a > e
4. *x^{w} > x; *y > Ø^{y}; +Y: *a > e
5. *ts > dz; *x^{w} > x; *m > Ø^{n}; +N: dz > ^{n}dz; *y > Ø^{y}; +Y: dz > dʒ; +Y: *a > e
6. ts > dz; *x^{w} > x; homorganic assimilation *m > n/_ dz; *y > Ø^{y}; +Y: dz > dʒ; +Y: *a > e

porcupine$_2$

PCC/areal root[121] *(ma-) **dz(a)m(a)k^{w}a** (-y, -n; FV)

BATA

				√ C C Ca	
Gude	*dəməya*	*dm-ya	*dmØØ-ya	*dzmk^{w}a-ya	1

[121] According to Gravina (2015) and by reference to his own sub-classification (Gravina 2007, 2011), this root "may be an innovation in Proto-Central Chadic South, since it is found in at least four of the five groups within the South sub-branch of Central Chadic, and in few other languages."

				√ C CaCa	
Sharwa	*dima'a* dəʸmaʔa	*dmaʔa-Øʸ	*dmaʔa-y	*dzmakʷa-y	2
Tsuvan	*dima'a* dəʸmaʔa				2
1. *dz > d; ə-epenthesis 2. *dz > d; *kʷ > ʔ; ə-epenthesis; *y > Øʸ; +Y: ə > i					

Daba

				√ C C Ca	
Gavar	*ʒimam* zʸəʸmam	*zmØa-Øʸ-n	*zmkʷa-y-n	*dzmkʷa-y-n	1
				√ C CaCa	
Buwal	*zəmeŋ* zəmaʸŋ	*zmaØʸŋ	*zmaykØ-n	*dzmakʷa-y-n	2
				√ CaC Ca	
Mbudum	*zeᵐbəŋ* zaʸᵐbəŋ	*Øⁿ-zabØʸŋ	*mⁿØ-zabykØ-n	*ma-dzamkʷa-y-n	3
Daba	*zaᵐban*	*Øⁿ-zabØa-n	*mⁿØ-zabka-n	*ma-dzamkʷa-n	4
1. *dz > z; ə-epenthesis; *y > Øʸ; +Y: z > ʒ; +Y: ə > i; assimilation (?) *n > *m (see 3.4.5) 2. *dz > z; ə-epenthesis; metathesis kʷy > ykʷ; *kʷ > k; fusion kn > ŋ; *y > Øʸ; +Y: lexical-final *a > e 3. *dz > z; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; *y > Øʸ; +Y: *a > e; ə-epenthesis; metathesis kʷy > ykʷ; *kʷ > k; fusion kn > ŋ 4. *dz > z; *kʷ > k; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb					

Mafa

				√ C C Ca	
Cuvok	*dəᵐbəkw*	*Øⁿ-dbkʷ	*mⁿØ-dbkʷØ	*ma-dzmkʷa	1
				√ C CaCa	
Cuvok	*dəᵐbekw* dəᵐbaʸkʷ	*Øⁿ-dbakʷ-Øʸ	*mⁿØ-dbakʷØ-y	*ma-dzmakʷa-y	2
Mafa	*diᵐbek* dəʸᵐbaʸkʷ				3
1. *dz > d; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; ə-epenthesis 2. *dz > d; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: *a > e 3. *dz > d; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

Sukur

Sukur	*dʒimək* dzʸəʸmək	*dzmk-Øʸ	*dzmkØ-y	*dzmkʷa-y	1
1. *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *dz > ʤ					

Mandara

Podoko	diᵐbiɨke dəʸᵐbəʸkaʸ	*Øⁿ-dbka-Øʸ	*mⁿØ-dbka-y	*ma-dzmkʷa-y	1
1. *dz > d; *kʷ > k; radical m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y: lexical-final *a > e					

Mofu

Mofu-Gudur	*damyakʷ*	*damyakʷ	*damkʷa-y	*dzamkʷa-y	1
1. *dz > d; metathesis *kʷy > ykʷ					

Lamang

Hdi	*diᵐbikʷ* dəʸᵐbəʸkʷ	*Øⁿ-dbkʷ-Øʸ	*mⁿØ-dbkʷØ-y	*ma-dzmkʷa-y	1
1. *dz > d; radical m > b (dissimilation); prefixal *m > Øⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: ə > i					

Higi

Bana	*tʃíməkə* tsʸəʸməkə	*tsmka-Øʸ		*dzmkʷa-y	1
Kirya	*tʃíməhu* tsʸəʸməxw	*tsmxw-Øʸ	*tsmxʷØ-y		2
1. *dz > ts; *kʷ > k; *y > Øʸ; +Y: ts > tʃ; +Y: ə > i; ə-epenthesis; lexical-final *a > ə 2. *dz > ts; *kʷ > xʷ; *y > Øʸ; +Y: ts > tʃ; +Y: ə > i; ə-epenthesis; re-segmentalisation xʷ > x+w; w > u					

pus

PCC *(ma-, RED-) **r(a)w(a)ɗa** (-y, -kʷ, -n, -t; FV)

Bata

				√ C C Ca	
Gude	*rə'unə* rəʔwna	*rʔw-na	*rwʔØ-na	*rwɗa-y-kʷ/-n(a)	1
Jimi	*ru'un* rwʔəʷn	*rwʷʔ-n	*rwʔØ-n		2
Sharwa	*ryəɓʷək* rʸəɓʷək	*rØʷɓ-Øʸ-k	*rwɓØ-y-kʷ		3
				√ CaCaCa	
Bata	*reeto* raʸaʸtaʷ	*raØa-Øʸ-t-Øʷa	*rawaØØ-y-t-kʷa	*rawaɗa-y-t-kʷa	4
1. *w > u; *ɗ > ʔ; metathesis wʔ > ʔw; ə-epenthesis; FV *a > ə 2. *w > wʷ > u; *ɗ > ʔ; ə-epenthesis; +W: ə > u 3. assimilation *ɗ > ɓ/w_; *w > Øʷ; +W: ɓ > ɓʷ; *y > Øʸ; +Y: *r > rʸ; *kʷ > k; ə-epenthesis 4. *kʷ > Øʷ; +W: FV *a > o; *y > Øʸ; +Y: *a > e ; vowel length due to loss of intervocalic /w/					

Daba

				√ C C Ca	
Mbudum	*wiliɓ* wəʸləʸɓ	*wlɓ-Øʸ	*lwɓØ-y	*rwɗa-y	1
				√ C CaCa	
Buwal	*uleɗ* wlaʸɗ	*wlaɗ-Øʸ	*lwaɗØ-**y**	*rwaɗa-y	2
Gavar	*wəleɗ* wlaʸɗ				3
Daba	*wileɗ* wəʸlaʸɗ				4
1. *r > l; assimilation *ɗ > ɓ/w_; metathesis lw > wl; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *r > l; metathesis lw > wl; *w > u; *y > Øʸ; +Y: *a > e 3. *r > l; metathesis lw > wl; ə-epenthesis; *y > Øʸ; +Y: *a > e 4. *r > l; metathesis lw > wl; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

Mafa

				√ CaC Ca	
Cuvok	*leleɓ* laʸlaʸɓ	*la-laØɓ-Øʸ	*RED-lawɓØ-y	*RED-rawɗa-y	1
				√ CaCaCa	
Mafa	*voroɓ* vaʷraʷɓ	*varaɓ-Øʷ	*rawaɓØ-kʷ	*rawaɗa-kʷ	2
1. *r > l; assimilation *ɗ > ɓ/w_; *y > Øʸ; +Y: *a > e 2. assimilation *ɗ > ɓ/w_; metathesis rw > wr; *w > v; *kʷ > Øʷ; +W: *a > o					

Tera

Tera	*ra*	*ra	*rØØa	*rwɗa	

SUKUR

Sukur	*məru* mərw	*mØ-rw	*ma-rwØØ	*ma-rwɗa	1
	mərəu mərəw				1
1. ə-epenthesis; *w > u					

HURZA

				√ C C Ca	
Vame	*dîru* ɗəʸrw	*ɗrwa-Øʸ	*ɗrwa-y	*rwɗa-y	1
				√ C CaCa	
Pelasla	*dîraw* ɗəʸraw	*ɗraw-Øʸ	*ɗrawØ-y	*rwaɗa-y	2
Mbuko	*dərew* ɗəraʸw				3
1. multiple metathesis rwɗ > ɗrw; *w > u; ə-epenthesis; *y > Øʸ; +Y: *ə > i 2. multiple metathesis rwɗ > ɗrw; ə-epenthesis; *y > Øʸ; +Y: *ə > i 3. multiple metathesis rwɗ > ɗrw; ə-epenthesis; *y > Øʸ; +Y: *a > e					

MARGI

Bura	*lu* lw	*lw	*lwØØ	*rwɗa	1
Margi	*lu'u* lwʔəʷ	*lwʷʔa	*lwʔa		2
Kilba	*lu'u* lwʔəʷ				2
1. *r > l; *w > u 2. *r > l; *ɗ > ʔ; *w > wʷ > u; lexical-final *a > ə; +W: ə > u					

MANDARA

				√ C C Ca	
Podoko	*ləɓa*	*lØɓa	*lwɗa	*rwɗa(-y)	1
Glavda	*lu* lw	*lw	*lwØØ		2
	luwa ləʷwa	*lwʷa	*lwØa		3
Malgwa	*luwa* ləʷwa				3
	əluwe ələʷwaʸ	*lwʷa-Øʸ	*lwØa-y		4
Mandara	*lua* lwa	*lwa	*lwØa		2
				√ CaC Ca	
Matal	*alaw*	*Øa-law	*ma-lawØØ	*ma-rawɗa	5
1. *r > l; assimilation *ɗ > ɓ/w_ (> Ø); ə-epenthesis 2. *r > l; *w > u 3. *r > l; ə-epenthesis; *w > wʷ; +W: ə > u 4. *r > l; ə-prothesis; ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e 5. *r > l					

MOFU

				√ C C Ca	
Muyang	*alu* alw	*Øa-lw	*ma-lwØØ	*ma-rwɗa	1
Gemzek	*aləɓ*	*Øa-lØɓ	*ma-lwdØ		2
Ouldeme	*aləl*	*Øa-ll	*ma-lØdØ		3
Mada	*ollo* aʷllaʷ	*Øa-lØʷla	*ma-lwɗa		4
				√ CaC Ca	
Moloko	*oroh* aʷraʷx	*a-raØʷ-xʷ	*Øa-rawØØ-kʷ		5
	aloeɓ alaʷʸɓ	*a-laØʷɓ-Øʸ	*Øa-lawdØ-y		6
Merey	*leloeɓ* laʸlaʷʸɓ	*la-laØʷɓ-Øʸ	*RED-lawdØ-y		7

	*lolo*ɓ la^{w}la^{w}ɓ	*la-laØ^{w}ɓ	*RED-lawɗØ	*ma-/RED-rawɗ̂a(-y/-k^{w})	8
Dugwor	*lolo*ɓ la^{w}la^{w}ɓ				8
Mofu-Gudur	*lalaɓ*	*la-laØɓ	*RED-lawɗØ		9
Mofu North	*lalaw*	*la-law	*RED-lawØØ		10
1. *r > l; *w > u 2. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø); ə-epenthesis 3. *r > l; assimilation *ɗ̂ > l/l_ ; ə-epenthesis 4. *r > l; assimilation *ɗ̂ > l/l_ ; *w > Ø^{w}; +W: *a > o 5. *w > Ø^{w}; +W: *a > o; *k^{w} (> x^{w}) > x 6. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø); *w > Ø^{w}; *y > Ø^{y}; +W+Y: *a > œ 7. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø); *w > Ø^{w}; *y > Ø^{y}; +Y: *a > e; +W+Y: *a > œ 8. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø); *w > Ø^{w}; +W: *a > o 9. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø) 10. *r > l					

Maroua

				√ C C Ca	
Giziga-Muturwa	*lulu* lwlw	*lw-lw	*RED-lwØØ	*RED-rwɗ̂a	1
				√ CaC Ca	
Giziga-Marva	*lulo*ɓ lə^{w}la^{w}ɓ	*l-laØ^{w}ɓ	*RED-lawɗØ	*RED-rawɗ̂a	2
1. *r > l; *w > u 2. *r > l; assimilation *ɗ̂ > ɓ/w_ (> Ø); ə-epenthesis; *w > Ø^{w}; +W: ə > u; +W: *a > o					

Higi

Bana	*lə'wə*	*lʔwə	*lwʔa	*rwɗ̂a(-y)	1
Kamwe-Nkafa	*lə'uwə* ləʔə^{w}wə	*lʔw^{w}ə			2
	ləɠwə ləɗ^{ʒ}wə	*ldwə-Ø^{y}	*lwɗ̂a-y		3
Kamwe-Futu	*ləuo* ləwa^{w}	*lw^{w}Øa	*lwØa		4
1. *r > l; *ɗ̂ > ʔ; metathesis wʔ > ʔw; ə-epenthesis; lexical-final *a > ə 2. *r > l; *ɗ̂ > ʔ; metathesis wʔ > ʔw; ə-epenthesis; *w > w^{w}; +W: ə > u; lexical-final *a > ə 3. *r > l; metathesis wɗ̂ > dw; *y > Ø^{y}; +Y: *ɗ̂ > d^{y} > ɠ; ə-epenthesis; lexical-final *a > ə 4. *r > l; ə-epenthesis; *w > w^{w} > u; +W: lexical-final *a > o					

Musgum

Mulwi	*alu* alw	*Øa-lw	*ma-lwØØ	*ma-rwɗ̂a	1
1. *r > l; *w > u					

Gidar

Gidar	*wili* wə^{y}ly	*wl-y^{y}	*lwØØ-y	*rwɗ̂a-y	1
1. *r > l; metathesis lw > wl; ə-epenthesis; *y > y^{y} > i; +Y: ə > i					

quiver

PCC/Areal root[122] ***ɣʷ(a)dza** (-y, -n, -r)

BATA

Gude	*kʷadza*	*kʷadza	*ɣʷadza(-n)	1
Sharwa	*kʷadza*			1
Jimi	*kʷadzan*	*kʷadza-n		1
1. *ɣʷ (> gʷ) > kʷ				

SUKUR

Sukur	*wadzi* wadzy	*wadzØ-y	*ɣʷadza-y	1
	wadzəi wadzəy	*wadza-y		2
1. *ɣʷ > w; *y > i 2. *ɣʷ > w; lexical-final *a > ə ; *y > i				

MARGI

Margi South	*kʷadza*	*kʷadza	*ɣʷadza(-y)	1
Bura	*kʷadʒa* kʷadzʸa	*kʷadza-Øʸ		2
Kilba	*gʷadʒa* gʷadzʸa	*gʷadza-Øʸ		3
1. ɣʷ (> gʷ) > kʷ 2. ɣʷ (> gʷ) > kʷ; *y > Øʸ; +Y: *dz > dʒ 3. ɣʷ > gʷ; *y > Øʸ; +Y: *dz > dʒ				

LAMANG

Lamang	*ɣʷedze* ɣʷaʸdzaʸ	*ɣʷadza-Øʸ	*ɣʷadza-y	1
Hdi	*ɣʷadzi* ɣʷadzy	*ɣʷadzØ-y		2
1. *y > Øʸ; +Y : *a > e 2. *y > i				

HIGI

Kamwe-Nkafa	*gutʃə* gʷəʷtsʸə	*gʷtsa-Øʸ	*ɣʷdza-y(-r)	1
Bana	*gutʃî* gʷəʷtsʸy	*gʷtsØ-yʸ		2
Kirya	*gutʃîl* gʷəʷtsʸyl	*gʷtsØ-yʸ-l		2
1. *ɣʷ > gʷ; *dz > ts; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: ts > tʃ; lexical-final *a > ə 2. *ɣʷ > gʷ; *dz > ts; ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: ts > tʃ; *r > l (in Kirya)				

rain

PCC *(ma-, na-) **v(a)na** (-y, -kʷ, -n)

BATA

				√ C Ca	
Gude	*vəna*	*vna		*vna(-kʷ-n)	1
Sharwa	*vʷənə*	*vna-Øʷ	*vna-kʷ		2
Jimi	*vuunən* vəʷwnən	*vwʷn-n	*vnØ-wʷ-n		3

[122] According to Gravina (2015), this root is found in languages around the Nigerian Plains area, where it reflects a technological innovation rather than an ancient Proto-Central Chadic root.

				√ CaCa	
Tsuvan	*v^{w}ene* v^{w}a^{y}na^{y}	*vana-Ø^{y}-Ø^{w}	*vana-y-k^{w}	*vana-y-k^{w}	4
1. ə-epenthesis 2. *k^{w} > Ø^{w}; +W: *v > v^{w}; ə-epenthesis; lexical-final *a > ə 3. *k^{w} > w^{w}; metathesis wn > nw; ə-epenthesis; +W: *ə > u; lexical-final *a > ə 4. *y > Ø^{y}; *k^{w} > Ø^{w}; +W: *v > v^{w}; +Y: *a > e					

DABA

Buwal	*van*	*van	*vanØ	*(ma-na-)vana(-k^{w})	
Daba	*van*				
Mbudum	*vaŋ*	*vaŋ	*vanØ-k		1
Gavar	*manavan*	*ma-na-van	*ma-na-vanØ		
1. *k^{w} > k; fusion *nk > ŋ					

HURZA

Mbuko	*iven* ə^{y}va^{y}n	*Øa-van-Ø^{y}	*ma-vanØ-y	*ma-vana-y(-k^{w})	1
Vame	*aveŋ* ava^{y}ŋ	*Øa-vaŋ-Ø^{y}	*ma-vanØ-y-k		2
1. prefixal *a > ə; *y > Ø^{y}; +Y: ə > i; +Y: *a > e 2. *y > Ø^{y}; +Y: *a > e; *k^{w} > k; fusion *nk > ŋ					

MARGI

Margi	*padə*	*padə	*paɗa	*vana	1
Kilba	*par*	*par	*parØ		2
1. *v (> b) > p; *n (> r) > ɗ; lexical-final *a > ə 2. *v (> b) > p; *n > r					

MOFU

				√ C Ca	
Ouldeme	*avər*	*a-vr	*Øa-vrØ	*ma-vna	1
Muyang	*avər*				1
				√ CaCa	
Moloko	*var*	*var	*varØ	*vana	2
Mofu-Gudur	*var*				2
1. *n > r; ə-epenthesis 2. *n > r					

MAROUA

Giziga-Marva	*von* va^{w}n	*van-Ø^{w}	*vanØ-k^{w}	*vana-k^{w}	1
1. *k^{w} > Ø^{w}; +W: *a > o					

HIGI

Kamwe-Nkafa	*va*	*va	*vaØØ	*vana	
Kamwe-Futu	*va*				
Psikye	*va*				
Kirya	*van*	*van	*vanØ		
Bana	*van*				

MUSGUM

Vulum	*faŋ*	*faŋ	*fanØ-k	*vana-k^{w}	1
Mulwi	*faŋ*				1
1. *v > f; *k^{w} > k; fusion *nk > ŋ					

GIDAR

Gidar	*buna* bəʷna	*bna-Øʷ	*bna-kʷ	*vna-kʷ	1
1. *v > b; ə-epenthesis; *kʷ > Øʷ; +W: ə > u					

rainbow, drought, famine[123]

PCC *(ma-) **kʷ(a)ra** (-a, -y, -x)

DABA

Buwal	*kʷalay*	*kʷal-ay	*kʷalØ-a-y	*(ma-)kʷara-a-y	1
Mbudum	*kolay* kʷaʷlay				2
Gavar	*ŋkʷalay* ŋkʷalay	*ŋ-kʷal-ay	*mØ-kʷalØ-a-y		3
1. *r > l 2. *r > l; +W: *a > o 3. *r > l; homorganic assimilation *m > ŋ/_kʷ					

MAFA

Mafa	*kʷaray*	*kʷar-ay	*kʷarØ-a-y	*kʷara-a-y	
Cuvok	*kʷalay*	*kʷal-ay	*kʷalØ-a-y		1
1. *r > l					

HURZA

Mbuko	*kulay* kʷəʷlay	*kʷl-ay	*kʷlØ-a-y	*kʷra-a-y	1
1. *r > l; ə-epenthesis; +W: ə > u					

MOFU

				√ C Ca	
Dugwor	*kulay* kʷəʷlay	kʷl-ay	*kʷlØ-a-y	*(ma-)kʷra(-a-y/-x)	1
Gemzek	*kula* kʷəʷla	*kʷla			1
	makəlah	*ma-kla-x			2
Merey	*makəlah*				2
Zulgo	*makəlah*				2
				√ CaCa	
Mofu North	*kʷalay*	*kʷal-ay	*kʷalØ-a-y	*(ma-)kʷara(-a-y)	3
Mofu-Gudur	*kʷalay*				3
Moloko	*kolay* kʷaʷlay				4
Ouldeme	*makʷalay*	*ma-kʷal-ay	*ma-kʷalØ-a-y		3
Muyang	*makʷal*	*ma-kʷal	*ma-kʷalØ		3
1. *r > l; ə-epenthesis; +W: ə > u 2. *r > l; ə-epenthesis 3. *r > l 4. *r > l; +W: *a > o					

[123] Semantically, in some CC languages 'rainbow' is explained to stand for the stopping of rainfall leading into dry periods, which potentially entail drought and famine. Note the almost identical reconstruction for the verb 'refuse, to' (grammaticalised in some CC languages to 'without, no(ne)'), which may indicate etymological identity.

MAROUA

Giziga-Muturwa	*kʷalay*	*kʷal-ay	*kʷalØ-a-y	*kʷara-a-y	1
Giziga-Marva	*kolay* kʷaʷlay				2
1. *r > l 2. *r > l; +W: a > o					

rainy season

PCC ***vya*** (-kʷ, -n; FV)

BATA

Gude	*vyanə* vyanə	*vya-na	*vya(-n(a))	1
Jimi	*vyan*	*vya-n		
Sharwa	*vya*	*vya		
1. FV *a > ə				

DABA

Buwal	*vəya*	*vya	*vya	1
Gavar	*viya* vəʸya	*vyʸa		2
Mbudum	*viya* vəʸya			2
Daba	*viya* vəʸya			2
1. ə-epenthesis 2. ə-epenthesis; *y > yʸ; +Y: ə > i				

MAFA

Mafa	*viya* vəʸya	*vyʸa	*vya	1
Cuvok	*viya* vəʸya			1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

SUKUR

Sukur	*vi* vy	*vy	*vyØ	*vya	1
1. *y > i					

HURZA

Mbuko	*viya* vəʸya	*vyʸa	*vya	1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

MARGI

Margi	*viya* vəʸya	*vyʸa		*vya(-kʷ)	1
Bura	*viya* vəʸya				1
	aviya avəʸya				2
Margi-South	*vʷiya* vʷəʸya	*vyʸa-Øʷ			3
	vuya vəʷya	*vya-Øʷ	*vya-kʷ		4
Kilba	*uvuya* əʷvəʷya				5
1. ə-epenthesis; *y > yʸ; +Y: ə > i 2. a-prothesis; ə-epenthesis; *y > yʸ; +Y: ə > i 3. ə-epenthesis *kʷ > Øʷ; +W: *v > vʷ; *y > yʸ; +Y: ə > i 4. ə-epenthesis;+*kʷ > Øʷ; W: ə > u 5. ə-prothesis; ə-epenthesis; *kʷ > Øʷ; +W: ə > u					

MANDARA

Matal	*vʲya* vəʸya	*vyʸa	*vya	*vya(-kʷ)	1
Podoko	*viya* vəʸya				1
Malgwa	*viya* vəʸya				1
Mandara	*via* vya	*vya			2
Glavda	*viak* vyak	*vya-k	*vya-kʷ		3
1. ə-epenthesis; *y > yʸ; +Y: ə > i 2. *y > i 3. *kʷ > k; *y > i					

MOFU

Muyang	*vi* vy	*vy	*vyØ	*vya(-kʷ)	1
Moloko	*vəya*	*vya			2
Dugwor	*viya* vəʸya	*vyʸa	*vya		3
Zulgo	*viye* vəʸyaʸ				3
Gemzek	*viye* vəʸyaʸ				3
Ouldeme	*viyo* vəʸyaʷ	*vya-Øʷ	*vya-kʷ		4
Mofu North	*piya* pəʸya	*pyʸa	*pya		5
Mofu-Gudur	*piya* pəʸya				5
1. *y > i 2. ə-epenthesis 3. ə-epenthesis; *y > yʸ; +Y: ə > i; +Y: lexical-final *a > e 4. *kʷ > Øʷ; +W: lexical-final *a > o 5. *v (> b) > p; ə-epenthesis; *y > yʸ; +Y: ə > i					

MAROUA

Giziga-Muturwa	*viya* vəʸya	*vyʸa	*vya	1
Giziga-Marva	*viya* vəʸya			1
Mbazla	*viya* vəʸya			1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

LAMANG

Lamang	*viya* vəʸya	*vyʸa	*vya	1
Hdi	*viya* vəʸya			1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

HIGI

Kamwe-Futu	*viya* vəʸya	*vyʸa	*vya	1
Kirya	*viya* vəʸya			1
Bana	*viya* vəʸya			1
1. ə-epenthesis; *y > yʸ; +Y: ə > i				

MUSGUM

Vulum	*apiya* apəʸya	*pyʸa	*pya	*vya	1
Mbara	*piya* pəʸya				2
1. *v (> b) > p; a-prothesis; ə-epenthesis; *y > yʸ; +Y: ə > i 2. *v (> b) > p; ə-epenthesis; *y > yʸ; +Y: ə > i					

ram

PCC *(ma-) **g^{w}(a)z(a)ma** (-y)

MAFA

Cuvok	*zem* za^{y}m	*zam-Ø^{y}	*ØzamØ-y	*g^{w}zama-y	1
1. *y > Ø^{y}; +Y: *a > e					

MANDARA

Matal	*magadzaw*	*ma-gadzawØ	*ma-g^{w}azama	1
1. *g^{w} > g; *z > dz; *m > w				

MOFU [124]

Mofu North	*zem* za^{y}m	*zam-Ø^{y}	*ØzamØ-y	*g^{w}zama-y	1
Dugwor	*azem* aza^{y}m				2
Mofu-Gudur	*ezem* a^{y}za^{y}m				2
1. *y > Ø^{y}; +Y: *a > e 2. a-prothesis; *y > Ø^{y}; +Y: *a > e					

MAROUA

				√ C C Ca	
Giziga-Marva	*izim* ə^{y}zə^{y}m	*zm-Ø^{y}	*ØzmØ-y	*g^{w}zma-y	1
				√ CaCaCa	
Mbazla	*'aʒem* ʔaz^{y}a^{y}m	*ʔazamØ-Ø^{y}		*g^{w}azama-y	2
	'eʒem ʔa^{y}z^{y}a^{y}m				2
1. ə-prothesis; ə-epenthesis; *y > Ø^{y}; +Y : ə > i 2. *g^{w} (> g > k) > ʔ; *y > Ø^{y}; +Y: *z > ʒ; +Y: *a > e					

KOTOKO-NORTH

				√ C C Ca	
Afade[125]	*s'im* sʔə^{y}m	*sʔm-Ø^{y}	*ʔsm-y	*g^{w}zma-y	1
				√ C CaCa	
Mpade	*sam*	*ØsamØ		*g^{w}zama-y	2
Malgbe	*wiyam* wə^{y}yam	*wyamØ-Ø^{y}			3
1. *g^{w} (> g > k) > ʔ; *z > s; metathesis ʔs > sʔ (> sʔ ?); ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *z > s 3. *g^{w} > w; *z (> s) > y; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

KOTOKO-CENTRAL

			√ C C Ca	
Lagwan	*uzimi* wzə^{y}my	*wzmØ-y^{y}	*g^{w}zma-y	1
			√ C CaCa	
Mser	*uzam* wzam	*wzamØ	*g^{w}zama-y	2
1. *g^{w} > w > u; ə-epenthesis; *y > y^{y} > i; +Y: ə > i 2. *g^{w} > w > u				

[124] For Dugwor and Mofu-Gudur, we assume vowel prothesis based on the original situation of the initial consonant cluster *g^{w}z.

[125] The transcription of initial s' could reflect both an underlying glottal cluster sʔ or glottalisation of s > [s^{ʔ}] by ʔ-prosody; we here opt for glottal cluster analysis.

rat

PCC/Areal root[126] *(ma-, RED-) **d(a)w(a)na** (-y, -k^w)

DABA

Buwal	*ma^nduwan* $ma^ndə^wwan$	*m^na-dw^wan	*m^na-dwanØ	*ma-dwana	1
Daba	*ma^ndəwan*	*m^na-dwanØ	*m^na-dwanØ		2
1. ə-epenthesis; *m > m^n; +N: *d > ^{n}d; *w > w^w; +W: ə > u 2. ə-epenthesis; *m > m^n; +N: *d > ^{n}d					

MAFA

Mafa	*madəwa*	*ma-dwa	*ma-dwaØØ	*ma-dwana(-k^w)	1
	maduwa $mədə^wwa$	*ma-dw^wa			2
Cuvok	*madwaŋ*	*ma-dwaŋ	*ma-dwanØ-k		3
1. ə-epenthesis 2. ə-epenthesis; *w > w^w; +W: ə > u 3. *k^w > k; fusion *nk > ŋ					

SUKUR

Sukur	*mədwan*	*m-dwan	*mØ-dwanØ	*ma-dwana	1
	mudwan $mə^wdwan$	*m-dw^wan			2
1. ə-epenthesis 2. ə-epenthesis; *w > w^w; +W: ə > u					

HURZA

Mbuko	*mədəduwan* $mədədə^wwan$	*m-d-dw^wan	*mØ-RED-dwanØ	*ma-RED-dwana	1
1. ə-epenthesis; *w > w^w; +W: ə > u					

MANDARA

Podoko	*madəwana*	*ma-dwana	*ma-dwana	1
1. ə-epenthesis				

MOFU

				√ C C Ca	
Zulgo	*mediwiŋ* $ma^ydə^ywə^yŋ$	*ma-dwŋ-$Ø^y$	*ma-dwnØ-y-k	*ma-dwna-y-k^w	1
				√ C CaCa	
Moloko	*mədəwan*	*m-dwan	*mØ-dwanØ	*ma-dwana(-k^w)	2
Muyang	*madwaŋ*	*ma-dwaŋ	*ma-dwanØ-k		3
Gemzek	*maduwaŋ* $madə^wwaŋ$	*ma-dw^waŋ			4
Merey	*maduwaŋ* $madə^wwaŋ$				4
Mofu-Gudur	*ma^ndəwaŋ*	*ma-^{n}dwaŋ	*m^na-dwanØ-k		5
1. metathesis yk^w > k^wy; *k^w > k; fusion *nk > ŋ; ə-epenthesis; *y > $Ø^y$; +Y: ə > i 2. ə-epenthesis					

[126] The geographically restricted distribution of this root suggests an areal origin rather than stemming from PCC.

3. *k^w > k; fusion *nk > ŋ 4. ə-epenthesis; *w > w^w; +W: ə > u; *k^w > k; fusion *nk > ŋ 5. ə-epenthesis; *k^w > k; fusion *nk > ŋ, *m > m^n; +N: *d > ^{n}d

razor$_1$

PCC ***p(a)ɗ(a)k^{w}a*** (-y, -d)

BATA

Gude	*pidə̂k^{w}a* pəʸdə̂k^{w}a	*pɗk^{w}a-Øʸ		*pɗ'k^{w}a-y	1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i					

DABA

				√ C C Ca	
Mbudum	*pʸɗed'* pʸɗəʸɗ'	*pɗə-Øʸ-ɗ'	*pɗØa-y-ɗ'	*pɗ'k^{w}a-y-ɗ'	1
				√ C CaCa	
Buwal	*pədek^w* pədaʸk^w	*pɗak^w-Øʸ	*pɗak^{w}Ø-y	*pɗak^{w}a-y	2
Daba	*pidek* pəʸdaʸk	*pɗak-Øʸ	*pɗakØ-y		3
1. *y > Øʸ; +Y: *a > e 2. *ɗ' > d (transcription error d = ɗ' or ɗ' > d ?); ə-epenthesis; *y > Øʸ; +Y: *a > e; 3. *ɗ' > d (transcription error d = ɗ' or ɗ' > d ?); ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

MAFA

Cuvok	*pədek^w* pədəʸk^w	*pɗak^w-Øʸ	*pɗak^{w}Ø-y	*pɗak^{w}a-y	1
1. ə-epenthesis; *y > Øʸ; +Y: *a > e					

SUKUR

				√ C C Ca	
Sukur[127]	*pidîk'u* pəʸdəʸk'w	*pɗk^{w}Ø-Øʸ		*pɗ'k^{w}a-y	1
				√ C CaCa	
	pidoek' pəʸdə̂ʸ^{w}k	*pɗak^{w}Ø-Øʸ		*pɗak^{w}a-y	2
1. ə-epenthesis; *y > Øʸ; +Y: *ə > i; re-segmentalisation *k^w > k+w; w > u (for glottalisation of final k, see footnote 127) 2. ə-epenthesis; *y > Øʸ; +Y: *ə > i; +Y+W: *a >œ (for glottalisation of final k, see footnote 127)					

HURZA

Mbuko	*pədœ̂k* pədə̂ʸ^{w}k	*pɗak^{w}Ø-Øʸ		*pɗak^{w}a-y	1
1. ə-epenthesis; *y > Øʸ; +Y+W: *a > oe					

MARGI

Bura	*perku* paʸrkw	*park^{w}a-Øʸ		*paɗ'k^{w}a-y	1
	pʸerku pʸaʸrkw				2
1. *ɗ' > r; re-segmentalisation *k^w > k+w; w > u; *y > Øʸ; +Y: *a > e					

[127] The two Sukur forms given in the database pose problems for the interpretation of transcription and analysis. If *pidîk'u* was a correct transcription and k' symbolised a glottal velar, the co-occurrence of two different glottal consonants within the same word must be considered highly unusual in (Central) Chadic languages. Comparative evidence strongly supports C_2 to be glottalised *ɗ'. If, however, *pidoek'* was a correct transcription, the problem would not arise and this form would testify to glottalisation prosody via re-segmentalisation: *ɗ' > d+ʔ, ʔ > Øˀ, +ʔ: *k^w > $k^{wˀ}$.

2. *ɗˇ > r; re-segmentalisation *k^{w} > k+w; w > u; *y > Ø^{y}; +Y: *a > e ; +Y : p > p^{y}					
MANDARA					
Matal	*p^{ʔ}ɗ^{ʔ}ɛk^{w} pɗ^{y}a^{y}k^{w}	*pɗ̂ak^{w}Ø-Ø^{y}		*pɗ̂ak^{w}a-y	1
1. *y > Ø^{y}; +Y: *ɗˇ > ɗ^{y}; +Y: *a > E					
MOFU					
Mofu-Gudur	*pəɗ̂ɛk^{w} pəɗ̂a^{y}k^{w}	*pɗ̂ak^{w}-Ø^{y}	*pɗ̂ak^{w}Ø-y	*pɗ̂ak^{w}a-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: *a > e					
LAMANG					
Lamang	*paka*	*pØaka		*pɗ̂ak^{w}a	1
1. *k^{w} > k					
HIGI					
Kamwe-Futu	*pəɗ̂i* pəɗy	*pɗ̂-y	*pɗØØ-y	*pɗ̂k^{w}a-y	1
Bana	*pirə* pə^{y}rə	*pra-Ø^{y}	*prØa-y		2
Kirya	*piruku* pə^{y}rə^{w}kw	*prk^{w}-Ø^{y}	*prk^{w}Ø-y		3
1. ə-epenthesis; *y > i 2. *ɗˇ > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə 3. *ɗˇ > r; ə-epenthesis; re-segmentalisation *k^{w} > k+w^{w}; w^{w} > u; *+W: ə > u; y > Ø^{y}; +Y: ə > i;					

razor$_2$

Loan[128] ***b(a)la*** (-y)

MARGI

Bura	*bel* ba^{y}l	*bal-Ø^{y}	*balØ-y	*bala-y	1
1. *y > Ø^{y}; +Y : *a > e					

MANDARA

Mandara	*bila* bə^{y}la	*bla-Ø^{y}		*bla-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y : ə > i					

MOFU

				√ C Ca	
Ouldeme	*bila* bə^{y}la	*bla-Ø^{y}		*bla-y	1
Mofu North	*bila* bə^{y}la				1
Mofu-Gudur	*bila* bə^{y}la				1
				√ C C Ca	
Zulgo[129]	*biyila* bə^{y}yə^{y}la	*by^{y}la		*byla	2
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. ə-epenthesis; *y > y^{y}; +Y: ə > i					

[128] This obvious loan ***beli*** from Kanuri (partly via Fulfulde ***beliihi***) has been adapted to Central Chadic phonology and is treated as if it were a retention from PCC (i.e. a 'Pseudo'-PCC root). Its likely integration would have been via ***b(a)ɮa-y***, but since no documented modern CC language has retained ɮ, we refrain from reconstructing *ɮ but opt for the borrowed phoneme *l instead.

[129] Zulgo appears to be unique insofar as it obviously reanalyses the root to be triradical of the root type √ C C Ca, namely ***byla***. Note that *bil(a)* could also be analysed as reflecting such triliteral structure.

KOTOKO-NORTH

Afade	*bil* bəʸl	*bl-Øʸ	*bla-y	1
Mpade	*bil* bəʸl			1
Malgbe	*bila* bəʸla	*bla-Øʸ		1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i				

KOTOKO-CENTRAL

Lagwan	*bel* baʸl	*bal-Øʸ	*bala-y	1
Mser	*bel* baʸl			1
1. *y > Øʸ; +Y: *a > e				

MUSGUM

Mbara	*bele* baʸlaʸ	*bala-Øʸ	*bala-y	1
1. *y > Øʸ; +Y: *a > e				

refuse, to[130]

PCC *(ma-) **kʷ(a)ra** (-y, -n, -x; FV)

BATA

Gude	*kaaree* karaʸ	*kara-Øʸ	*kara-y	*kʷara-y/-na(-n)	1
Jimi	*karanən*[131]	*kara-na-n			2
1. *kʷ > k; *y > Øʸ; +Y: lexical-final *a > e (vowel length remains unaccounted for) 2. *kʷ > k; FV *a > ə					

DABA

Gavar	*ŋkal*	*ŋ-kalØ	*mØ-kʷala	*ma-kʷara	1
1. *r > l; *kʷ > k; homorganic assimilation *m > ŋ/_k					

SUKUR

Sukur	*kar*	*karØ	*kʷara	1
1. *kʷ > k				

HURZA

Vame	*kəra*	*kra	*kʷra	1
1. *kʷ > k; ə-epenthesis				

MANDARA

Podoko	*kʷala*	*kʷala	*kʷara	1
Mandara	*kʷala*			1
1. *r > l				

MOFU

			√ C Ca	
Merey	*kərah*	*kra-x	*kʷra-x	1
			√ CaCa	
Ouldeme	*kʷal*	*kʷalØ	*kʷara(-y)	2

[130] See footnote 123 on 'rainbow'.

[131] This is a case of double appearance of root-augmentative *-n, unless we are dealing with a synchronic formative of sorts that found its way into the elicited form of this verb. We must leave a historical analysis of the double occurrence aside.

Muyang	*keley* ka^{y}la^{y}y	*kala-y^{y}	*kala-y		3
1. *k^{w} > k; ə-epenthesis 2. *r > l 3. *r > l; *y > y^{y}; +Y: *a > e					

LAMANG [132]

				√ C Ca	
Hdi	*kul* k^{w}ə^{w}l	*k^{w}lØ		*k^{w}ra	1
				√ CaCa	
Lamang	*k^{w}ol(o)* k^{w}a^{w}la^{w}	*k^{w}ala		*k^{w}ara	2
1. *r > l; ə-epenthesis 2. *r > l; +W: *a > o					

HIGI

Kamwe-Nkafa	*kəlyə*	*kl-ya	*klØ-ya	*k^{w}ra-ya	1
	kəryə	*kr-ya	*krØ-ya		2
1. *k^{w} > k; *r > l; ə-epenthesis; FV *a > ə 2. *k^{w} > k; ə-epenthesis; FV *a > ə					

ripen, to

PCC *(k^{w}a-, ma-, ta-) **n(a)xa** (-a, -y, -k^{w}, -n; FV)

BATA

Gude	*na*	*na	*nØa	*nxa(-n)	
Jimi	*nan*	*na-n	*nØa-n		

DABA

Buwal	*na*	*na	*nØa	*(k^{w}a-)nxa	
Gavar	*na*				
Daba	*na*				
Mbudum	*kəna*	*k-na	*k^{w}Ø-nØa		1
1. *k^{w} > k; ə-epenthesis					

MAFA

Cuvok	*nəhay*	*nx-ay		*nxØ-a-y	*(ma-/ta-)nxa(-a-y)	1
	manha	*ma-nxa				
Mafa	*^{n}dəh* ndəx	*ndx	*tØ-nx	*ta-nxØ		2
1. ə-epenthesis 2. metathesis tn > nt; *t > d; ə-epenthesis						

SUKUR

Sukur	*nəh*	*nx	*nxØ	*nɣa	1
1. *ɣ > x; ə-epenthesis					

[132] In LAMANG group languages, and possibly in other CC languages as well, this verb is a likely source for grammaticalisation to yield a negative marker 'without' that also functions synchronically to negate conjugational paradigms etc., which we here add from more recent lexicographic sources. As a tentative suggestion, this verb may be etymologically linked to the Hausa particle *kada/kar/kal* (i.e. the grammaticalised marker for negative subjunctive/imperative). The database (Gravina 2015) gives *k^{w}alaɣuta* for Hdi, which is an extended/derived stem of a simple √ CaCa type verb root **k^{w}ala*.

Hurza

				√ C Ca	
Vame	*ⁿdəha* ndəxa	*ndxa	*tØ-nxa	*ta-nxa	1
				√ CaCa	
Mbuko	*nah*	*nax	*naxØ	*naxa	
1. metathesis tn > nt; *t > d; ə-epenthesis					

Margi

Bura	*nya*	*nɣa		*nxa	1
Kilba	*na*	*na	*nØa		
1. *x > ɣ					

Mandara

Matal	*mahᵊnay*	*ma-xn-ay	*ma-nxØ-a-y	*(ma-)nxa-a-y	1
Malgwa	*na*	*na	*nØa		
1. metathesis nx > xn					

Mofu

				√ C Ca	
Mofu-Gudur	*nəh*	*nx	*nxØ	*(ma-)nxa (-a-y/-kʷ)	1
Ouldeme	*nuhw* nəʷxʷ	*nx-Øʷ	*nxØ-kʷ		2
	anuhw anəʷxʷ	*Øa-nx-Øʷ	*ma-nxØ-kʷ		2
Dugwor	*mənəhey* mənəxaʸy	*mØ-nx-ayʸ	*ma-nxØ-a-y		3
				√ CaCa	
Merey	*nah*	*nax	*naxØ	*(ma-)naxa (-y(-kʷ-n)	
Moloko	*nah*				
Gemzek	*manaha*	*ma-naxa			
	menehe maʸnaʸxaʸ	*ma-naxa-Øʸ	*ma-naxa-y		4
	menehi maʸnaʸxy	*ma-nax-yʸ	*ma-naxØ-y		5
Mada	*manah*	*ma-nax	*ma-naxØ		6
	menehəŋ maʸnaʸxaʸŋ	*ma-naxa-Øʸ-ŋ	*ma-naxa-y-kʷ-n		
1. ə-epenthesis 2. ə-epenthesis; *kʷ > Øʷ; +W: x > xʷ; +W: ə > u 3. ə-epenthesis; *y > yʸ; +Y: *a > e 4. *y > Øʸ; +Y: *a > e 5. *y > yʸ; > i; +Y: *a > e 6. *y > Øy; +Y: *a> e; *kʷ > k; kn > ŋ					

Maroua

Giziga-Muturwa	*nih(i)* nəʸxy	*nxa-yʸ		*ma-nxa -y(-kʷ)-n	1
Giziga-Marva	*mənihan* mənəʸxan	*mØ-nxa-Øʸ-n	*ma-nxa-y-n		2
	mənihaŋ mənəʸxaŋ	*mØ-nxa-Øʸ-ŋ	*ma-nxa-y-k-n		3
1. ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: ə > i 3. ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion *kn > ŋ					

Higi

Psikye	*naka*	*naka	*naxa	1
Bana	*naka*			1
1. *x > k				

KOTOKO-ISLAND

Buduma	*no* naʷ	*na-Øʷ	*nØa-kʷ	*nxa-kʷ	1
1. *kʷ > Øʷ; +W: lexical-final *a > o					

KOTOKO-NORTH

Afade	*nona* naʷna	*na-Øʷ-na	*nØa-kʷ-na	*nxa(-kʷ-n(a))	1
Mpade	*na*	*na	*nØa		2
Malgbe	*nawun* nawəʷn	*na-wʷ-n	*nØa-kʷ-n		
1. *kʷ > Øʷ; +W: lexical-final *a > o 2. *kʷ > wʷ; ə-epenthesis; +W: ə > u					

KOTOKO-CENTRAL

				√ C Ca	
Mser	*tina* təʸna	*tØ-na-Øʸ	*ta-nØa-y	*ta-nxa-y	1
				√ CaCa	
	naha	*naxa		*naxa	
1. ə-epenthesis; *y > Øʸ; +Y: ə > ɨ					

KOTOKO-SOUTH

Zina	*wunha* wəʷnxa	*wʷ-nxa	*kʷØ-nxa	*kʷa-nxa	1
1. *kʷ > wʷ; ə-epenthesis; +W: ə > u					

MUSGUM

Mulwi	*niyi* nəʸyəʸ	*n-yʸa	*nØØ-ya	*nxa-ya	1
1. ə-epenthesis; FV *a > ə; *y > yʸ; +Y: ə > i					

GIDAR

Gidar	*ənaha*	*Øa-naxa	*ma-naxa	*ma-naxa(-kʷ)	1
	unaha əʷnaxa	*Øa-naxa-Øʷ	*ma-naxa-kʷ		2
1. prefixal *a > ə 2. prefixal *a > ə; *kʷ > Øʷ; ə > u					

roast, to

PCC *(ma-) **t(a)w(a)sa** (-a, -y)

BATA

Gude	*ətsa*	*tsa	*tØsa	*twsa	1
1. ə-prothesis					

MARGI

Kilba	*tas(a)*	*tasa	*taØsa	*tawsa	

MOFU

				√ C C Ca	
Muyang	*tusay* twsay	*tws-ay	*twsØ-a-y	*(ma-)twsa((-a)-y)	1
Gemzek	ⁿ*dusa* ndwsa	*n-dwsa	*mØ-dwsa		2
Mofu-Gudur	*təs*	*ts	*tØsØ		3
				√ C CaCa	
Dugwor	*mətəsew* mətəsaʸw	*m-tsaw-Øʸ	*mØ-twasØ-y	*ma-twasa-y	4
1. *w > u 2. *t > d; *w > u; homorganic assimilation *m > n/_d					

3. ə-epenthesis 4. ə-epenthesis; metathesis ws > sw; *y > Øʸ; +Y: *a > e				
Maroua				
Giziga-Marva	*tusa* twsa	*twsa	*twsa	1
1. *w > u				
Lamang [133]				
			√ C C Ca	
Hdi	*fsa*	*fsa	*twsa	1
			√ C CaCa	
Lamang	*fasa*	*fasa	*twasa	1
1. fusion *t+w > f				
Higi				
Kamwe-Nkafa	*tswå*	*tswa	*twsa	*twsa	1
Kamwe-Futu	*tswa*				1
Kirya	*tswa*				1
1. metathesis ws > sw				

root

PCC *(RED-) **ɬ(a)r(a)ka** (-a, -y, kʷ, -n; FV)

Bata					
				√ C C Ca	
Sharwa	*ɬʲərʸəgi* ɬʲərʸəgy	*ɬrgØ-yʸ		*ɬrka-y(-n(a))	1
Jimi	*ɬərəgin* ɬərəgyn	*ɬrgØ-y-n			2
Gude	*lhərəginə* ɬərəgynə	*ɬrgØ-y-na			3
				√ CaC Ca	
Tsuvan	*ɬere* ɬaʸraʸ	*ɬara-Øʸ	*ɬarØa-y	*ɬarka-y	4
1. *k > g; ə-epenthesis; *y > yʸ > i; +Y: *ɬ > ɬʸ; +Y : *r > rʸ 2. *k > g; ə-epenthesis; *y > i 3. *k > g; ə-epenthesis; *y > i; FV *a > ə 4. *y > Øʸ; +Y: *a > e					
Daba					
Buwal	*ɬaɬalay*	*ɬa-ɬal-ay	*RED-ɬalØØ-ay	*RED-ɬarka-y	1
1. *r > l					
Mafa					
Cuvok	*ɬaɬalay*	*ɬa-ɬal-ay	*RED-ɬalØØ-ay	*RED-ɬarka-y	1
1. *r > l					
Sukur					
Sukur	*ɬi* ɬy	*ɬØØØ-y		*ɬrka-y	1
	ɬəi ɬəy	*ɬØØa-y			2
1. *y > i 2. lexical-final *a > ə ; *y > i					

[133] If the Lamang group root was at all cognate, it would testify to a unique fusion of t+w > f.

HURZA

Mbuko	*ləlay* ləlay	*łlØØ-a-y	*łrka(-a)-y	1
Vame	*ləlke* ləlkaʸ	*łlka-Øʸ		2
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e				

MANDARA

			√ C C Ca	
Dghwede	*ləla* ləla	*łlØa	*łrka(-y)	1
Matal	*łil ıh* ləʸləʸx	*łlxØ-Øʸ		2
			√ CaC Ca	
Mandara	*łalwe* łalwaʸ	*łalwa-Øʸ	*łarka-y(a)	3
Glavda	*thlaliya* łaləʸya	*łalØa-yʸa		4
			√ CaCaCa	
Malgwa	*thlalawe* łalawaʸ	*łalawa-Øʸ	*łaraka-y	5
1. *r > l; ə-epenthesis 2. *r > l; *k > x; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: ə > I 3. *r > l; *k > w; *y > Øʸ; +Y: *a > e 4. *r > l; ə-epenthesis; *y > yʸ; +Y: ə > i 5. *r > l; *k > w; *y > Øʸ; +Y: lexical-final *a > e				

MOFU

				√ C C Ca	
Ouldeme	*łikili* łəʸkəʸly	*łkl-yʸ	*łlkØ-y	*(RED-)rka (-a)-y	1
Gemzek	*ɮəle* ɮəlaʸ	*ɮla-Øʸ	*ɮlØa-y		2
Zulgo	*ɮile* ɮəʸlaʸ				3
Moloko	*ləlay* ləlay	*łl-ay	*łlØØ-a-y		4
Merey	*ɮəlay* ɮəlay	*ɮl-ay	*ɮlØØ-a-y		5
Mofu North	*ləfay* ləfay	*łf-ay	*łØfØ-a-y		6
Dugwor	*ɮəɮəlay* ɮəɮəlay	*ɮ-ɮl-ay	*RED-ɮlØØ-a-y		5
				√ CaC Ca	
Mofu-Gudur	*łałalay*	*ła-łal-ay	*RED-łalØØ-ay	*RED-łarka-y	7
1. *r > l; metathesis lk > kl; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *r > l; *ł > ɮ ; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 3. *r > l; *ł > ɮ ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 4. *r > l; ə-epenthesis 5. *r > l; *ł > ɮ ; ə-epenthesis 6. *k > f; ə-epenthesis 7. *r > l					

MAROUA

			√ C C Ca	
Mbazla	*ʃilki* sʸəʸlky	*slkØ-yʸ	*łrka-y	1
	hiliki xʲʸəʸləʸky	*xlkØ-yʸ		2
			√ CaC Ca	
Mbazla	*tʃelki* tsʸaʸlky	*tsalkØ-yʸ	*łarka-y	3
			√ CaCaCa	
Giziga-Muturwa	*łałalak(a)*	*ła-łalaka	*RED-łaraka	4

Giziga-Marva	*łałalak(a)*				4
1. *r > l; *ł > s; ə-epenthesis; *y > y^y > i; +Y: ə > i; +Y: s > ʃ 2. *r > l *ł > x; ə-epenthesis; *y > y^y > i; +Y: ə > i; +Y: x > x^y 3. *r > l; *ł > ts; *y > y^y > i; +Y: ts > tʃ; +Y: a > e 4. *r > l					

LAMANG

Lamang	*łərŋi* łərŋy	*łrŋ-y	*łrkØ-n-y	*łrka(-y)-n	1
Hdi	*łərəŋ* łərəŋ	*łrŋ	*łrkØ-n		2
1. multiple metathesis kyn > nky; fusion nk > ŋ; ə-epenthesis; *y > i 2. fusion nk > ŋ; ə-epenthesis					

HIGI

Psikye	*ługu* łə^{w}gw	*łg-w^w	*łØgØ-k^w	*łrka(-RED) (-y)-k^w/-na	1
Bana	*x^yililiŋə* x^yə^{y}lylyŋə	*xl-y^y-ly^y-ŋa	*łlØØ-y-RED-k-na		2
Kirya	*łir^{n}ga* łə^{y}rŋga	*łrØ^{y}nga	* łrg-y^y-na		3
Kamwe-Nkafa	*thlərəna* lərəna	*łr-na	*lrØØ-na		4
	thərna lərna				
1. ə-epenthesis; *k > g; *k^w > w^w > u; +W: ə > u 2. ə-epenthesis; *k^w > k; fusion kn > ŋ; *ł > x ; *r > l; *y > y^y > i; +Y: ə > i; lexical-final *a > ə 3. *k > g; metathesis gn > ng; homorganic assimilation n > ŋ/_g; ə-epenthesis; *y > Ø^y; +Y: ə > ɨ 4. ə-epenthesis					

GIDAR

Gidar	*łalwaya*	*łalwa-ya	*łarka-ya	1
1. *r > l; *k > w				

rope, string

PCC *(ma-) **z(a)w(a)**ɗə̂ (-y, -k^w, -n)

BATA

				√ C C Ca	
Sharwa	*zə'ə*	*zʔə	*zØʔa	*zwɗə̂	1
				√ CaC Ca	
Gude	*za'wa*	*zaʔwa	*zawʔa	*zawɗə̂	2
1, *ɗ > ʔ; ə-epenthesis; lexical-final *a > ə 2. *ɗ > ʔ; metathesis wʔ > ʔw					

TERA

Tera	*zo* za^w	*zaØ^w	*zawØØ	*zawɗə̂	1
1. *w > Ø^w; +W: *a > o					

SUKUR

Sukur	*ʒiɓi* z^{y}ə^{y}ɓy	*zɓ-y^y	*zwɗØ-y	*zwɗə̂-y	1
1. fusion *wɗ > ɓ; ə-epenthesis; *y > y^y > i; +Y: *z > ʒ; +Y: ə > i					

HURZA

				√ C CaCa	
Vame	*azəway*	*Øa-zway	*ma-zwayØ	*ma-zwaɗa	1
				√ CaCaCa	
Mbuko	*zaway*	*zaway		*zawaɗa	
1. *ɗˇ > y; ə-epenthesis					

MARGI

Bura	*suwa* səʷwa	*swʷa	*swØa	*zwɗa(-y)	1
	sua swa	*swa			2
Kilba	*si'i* səʸʔy	*sʔ-yʸ	*sØʔØ-**y**		3
1. *z > s; ə-epenthesis; *w > wʷ; +W: ə > u 2. *z > s; *w > u 3. *z > s; *ɗˇ > ʔ; ə-epenthesis; *y > yʸ > i; +Y: ə > i					

MANDARA

Mandara	*zawa*	*zawa	*zawØa	*zawɗa	
Malgwa	*zawa*				
Glavda	*zawa*				
	zaw	*zaw	*zawØØ		
Dghwede	*zap'a*	zaɓa	*zawɗa		1
1. fusion *wɗˇ > ɓ					

MOFU

				√ C CaCa	
Merey	*zuwedˇ* zəʷwaʸɗˇ	*zwʷaɗˇ-Øʸ	*zwadØ-y	*zwaɗa-y	1
Mofu North	*zəwedˇ* zəwaʸɗˇ	*zwaɗˇ-Øʸ			2
				√ CaCaCa	
Dugwor	*azewed* azaʸwaʸd	*a-zawad-Øʸ	*Øa-zawadØ-**y**	*(ma-)zawaɗa-y	3
Moloko	*ezewedˇ* aʸzaʸwaʸɗˇ	*a-zawaɗˇ-Øʸ			3
Mofu-Gudur	*zewedˇ* zaʸwaʸɗˇ	*zawaɗˇ-Øʸ	*zawadØ-**y**		3
1. ə-epenthesis; *w > wʷ; +W: ə > u; *y > Øʸ; +Y: a > e 2. ə-epenthesis; *y > Øʸ; +Y: a > e 3. *ɗˇ > d (transcription error?); *y > Øʸ; +Y: a > e 4. *y > Øʸ; +Y: a > e					

MAROUA

				√ C C Ca	
Mbazla	*ʒiwiŋ* zʸəʸwyŋ	*zwyʸ-ŋ	*zwyØ-k-n	*zwɗa-kʷ-n	1
	žwiwiŋ zʸʷəʸwyŋ	*zwyʸ-ŋ			2
				√ CaCaCa	
Giziga-Marva	*azewedˇ* azaʸwaʸɗˇ	*Øa-zawaɗˇ-Øʸ	*ma-zawadØ-**y**	*ma-zawaɗa-y	3
1. ə-epenthesis; *kʷ > k; fusion kn > ŋ; *ɗˇ > y > yʸ > i; +Y: *z > ʒ; +Y: ə > i 2. ə-epenthesis; *kʷ > k; fusion kn > ŋ; *ɗˇ > y > yʸ > i: +W+Y: *z > ʒʷ; +Y: ə > i 3. *y > Øʸ; +Y: a > e					

LAMANG

Lamang	*zuwi* zəʷwy	*zwʷy	*zwyØ	*zwɗa(-y)	1
Hdi	*zu'i* zwʔy	*zwʔ-y	*zwʔØ-**y**		2
1. *ɗˇ > y > i; ə-epenthesis; *w > wʷ; +W: ə > u 2. *ɗˇ > ʔ; *w > u; *y > i					

Higi

Bana	*zəʔwə*	*zʔwə	*zwʔa	*zwɗa	1
Kirya	*zəw*	*zw	*zwØØ		2
Kamwe-Nkafa	*zəwə*	*zwa	*zwØa		3
Psikye	*zəwə*				3
Kamwe-Futu	*ziwə* zəʸwə	*zwØʸa	*zwya		4
1. ə-epenthesis; *ɗ > ʔ; metathesis wʔ > ʔw; lexical-final *a > ə 2. ə-epenthesis 3. ə-epenthesis; lexical-final *a > ə 4. ə-epenthesis; *ɗ > y > Øʸ; +Y: ə > i; lexical-final *a > ə					

Kotoko-North

Mpade	*sare* saraʸ	*sara-Øʸ	*saØra-y	*zawɗa-y	1
Malgbe	*se* saʸ	*sa-Øʸ	*sØØØa-y		2
1. *z > s; *ɗ > r; *y > Øʸ; +Y: lexical-final a > e 2. *z > s; *y > Øʸ; +Y: lexical-final a > e					

Kotoko-Central

Mser	*sadɨ* sadəʸ	*sadɨa-Øʸ	*saØdɨa-y	*zawdɨa-y	1
	sadɨe sadɨaʸ	*sadɨa-Øʸ			2
1. *z > s; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ 2. *z > s; *y > Øʸ; +Y: lexical-final a > e					

run, to

PCC *(ma-, RED-) **x(a)w(a)ya** (-a, -y, -n)

Bata

Jimi	*huyən* xwyən	*xwy-n	*xwyØ-n	*xwya-n	1
1. ə-epenthesis; *w > u					

Daba

				√ C C Ca	
Mbudum	*hi* xy	*xy	*xØyØ	*xwya	1
				√ C CaCa	
Buwal	*hey* xaʸy	*xayʸ	*xØayØ	*xwaya	
1. *y > i 2. *y > yʸ; +Y: *a > e					

Mafa

Mafa	*ha*	*xa	*xØØØa	*xwaya	
Cuvok	*hʷay* xway	*xway	*xwayØ		

Sukur

Sukur	*huwi* xəʷwy	*xwʷy	*xwyØ	*xwya	1
	hui xwy				2
1. ə-epenthesis; *w > wʷ; +W: ə > u; *y > i 2. *w > u; *y > i					

Hurza

Mbuko	*haw*	*xaw	*xawØØ	*xawya	

MARGI

Bura	*hʷi* xwy	*xwy	*xwyØ	*xwya	1
Margi-South	*hʷi* xwy				1
Kilba	*hʷi* xwy				1
Margi	*wi* wy	*wy	*ØwyØ		1
1. *y > i					

MANDARA

Matal	*mahʷɔyay* maxwaʷyay	*ma-xwʷay-ay	*ma-xwayØ-a-y	*ma-xwaya-a-y	1
1. *w > wʷ; +W; *a > ɔ					

MOFU

Mofu-Gudur	*hʷ(a)* xwa	*xwa	*xwØØa	*(ma-)xwaya	
Merey	*hʷay* xway	*xway	*xwayØ		
Dugwor	*mahʷay* maxway	*ma-xway	*ma-xwayØ		
Mofu North	*mahʷay* maxway				

LAMANG

Hdi	*hʷayay* xwayay	*xway-ay	*xwayØ-a-y	*xwaya-a-y	

HIGI

				√ C C Ca	
Kirya	*hʷyi* xwyy	*xwy-y	*xwyØ-y	*xwya-y	1
Psikye	*xʷe* xwaʸ	*xwa-Øʸ	*xwØa-y		2
				√ C CaCa	
Kamwe-Nkafa	*hʷehʷə* xwaʸxwə	*xwa-xwaØʸ	*RED-xwayØ	*RED-xwaya	3
Kamwe-Futu	*hoho* xaʷxaʷ	*xØʷa-xØʷa	*RED-xwaØØ		4
1. *y > i 2. *y > Øʸ; +Y: lexical-final *a < e 3. *y > Øʸ; reduplication +Y: lexical-final *a > e; root lexical-final *a > ə 4. *w > Øʷ; +W: *a > o					

scorpion

PCC *(ma-) **x(a)r(a)dza** (-RED, -a, -y, -kʷ, -n; FV)

BATA

				√ C C Ca	
Tsuvan	*hərdekən* xərdaʸkən	*xrda-Øʸ-k-n	*xrda-y-k-n	*xrdza-y-k-n	1
				√ CaC Ca	
Sharwa	*ardə*	*arda	*Øarda	*xardza(-RED, -na)	2
Gude	*arədədənə*	*ard-d-na	*ØardØ-RED-na		3
				√ C CaCa	
Jimi	*redzən* raʸdzən	*radza-Øʸ-n	*Øradza-y-n	*xradza-y-n	4
1. *dz > d; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. *dz > d; lexical-final *a > ə 3. *dz > d; ə-epenthesis; FV *a > ə 4. *y > Øʸ; +Y: *a > e					

DABA

				√ C C Ca	
Daba	*irdi* əʸrdy	*rd-yʸ	*ØrdØ-y	*xrdza-y	1
Gavar	*rədʒi* rədzʸy	*rdz-yʸ	*ØrdzØ-y		2
				√ C CaCa	
Buwal	*redʒe* raʸdzʸaʸ	*radza-Øʸ	*Øradza-y	*xradza-y	3
1. *dz > d; ə-prothesis; *y > Øʸ > i; Y: ə > i 2. ə-epenthesis; *y > yʸ > i; +Y: dz > dʒ 3. *y > Øʸ; +Y: dz > dʒ; +Y: *a > e					

MAFA

Mafa	*varadza*[134]	*varadza		*xaradza	1
Cuvok	*rats*	*rats	*ØØratsØ		2
1. *x (> f) > v 2. *dz > ts					

SUKUR

Sukur	*ᵐbərdai* mbərday	*m-brd-ay	*mØ-brdØ-a-y	*ma-xrdza-a-y	1
1. *x (> f > v) > b; *dz > d; ə-epenthesis					
HURZA					
Mbuko	*redʒe* raʸdzʸaʸ	*radza-Øʸ	*Øradza-y	*xradza-y	1
1. *y > Øʸ; +Y: dz > dʒ; +Y: *a > e					

MARGI

Bura	*hidi* xəʸdy	*xd-yʸ	*xØdØ-y	*xrdza-y	1
Kilba	*ida* əʸda	*da-Øʸ	*ØØda-y		2
1. *dz > d; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *dz > d; ə-prothesis; *y > Øʸ; +Y: ə > i					

MANDARA

				√ C C Ca	
Matal	*aliʒ* aləʸzʸ	*lz-Øʸ	*ØlzØ-y	*xrdza(-y)	1
Mandara	*erdze* aʸrdzaʸ	*rdza-Øʸ	*Ørdza-y		2
Malgwa	*ərdza*	*rdza	*Ørdza		3
Glavda	*ard͡za*				4
	ard	*rd	*ØrdØ		5
				√ C CaCa	
Podoko	*raⁿdza*	*Øⁿ-radza	*mⁿØ-Øradza	*ma-xradza	6
1. a-prothesis *r > l; *dz > z; ə-epenthesis; *y > Øʸ; +Y: z > ʒ; +Y: ə > i 2. a-prothesis; *y > Øʸ; +Y: *a > e 3. ə-prothesis 4. a-prothesis 5. a-prothesis; *dz > d 6. *m > Øⁿ; +N: dz > ⁿdz					

[134] There is only weak comparative indication to analyse the initial /v/ as a rather unusual reflex of PCC */x/ rather than as part of a likewise rare prefixal root-augment *{va-}. For the present study, we have opted to assume a change from initial velar */x/ to labial /v~b/ (likely via intermediate f).

MOFU

				√ C C Ca	
Muyang	*a^{n}dra*	*Ø^{n}a-dra	*m^{n}a-Ørda	*(ma-)xrdza(-RED, -y)	1
Ouldeme	*arda*	*rda	*Ørda		2
Dugwor	*arəde* arəda^{y}	*rda-Ø^{y}	*Ørda-y		3
Zulgo	*hirde* xə^{y}rda^{y}	*xrda-Ø^{y}	*xrda-y		4
Gemzek	*hərdede* xərda^{y}da^{y}	*xrda-da-Ø^{y}	*xrda-RED-y		5
Merey	*hərdəde* xərdəda^{y}				6
				√ CaCaCa	
Moloko	*harats*	*xarats	*xaratsØ	*xaradza	7
Mofu-Gudur	*arats*	*arats	*ØaratsØ		7

1. *dz > d; metathesis rd > dr; *m > Ø^{n}; +N: d > ^{n}d
2. *dz > d; a-prothesis
3. *dz > d; a-prothesis; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e
4. *dz > d; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e
5. *dz > d; ə-epenthesis; *y > Ø^{y}; +Y: *a > e
6. *dz > d; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e
7. *dz > ts

MAROUA

				√ CaC Ca	
Mbazla	*'arif* ʔarə^{y}s^{y}	*ʔars-Ø^{y}	*ʔarsØ-y	*xardza-y	1
				√ CaCaCa	
Mbazla	*'aretf* ʔara^{y}ts^{y}	*ʔarats-Ø^{y}	*ʔaratsØ-y	*xaradza-y	2
Giziga-Marva	*'aratʃe* ʔarats^{y}a^{y}	*ʔaratsa-Ø^{y}	*ʔaratsa-y		2

1. *x > ʔ; *dz (> ts) > s; ə-epenthesis; *y > Ø^{y}; +Y: s > ʃ; +Y: ə > i
2. *x > ʔ; *dz > ts; *y > Ø^{y}; +Y: s > ʃ; +Y: *a > e

LAMANG

Lamang	*arda*	*rda	*Ørda	*xrdza	1
	ərda				2
	rda				3
Hdi	*rda*				3
	rəda				4

1. *dz > d; a-prothesis
2. *dz > d; ə-prothesis
3. *dz > d
4. *dz > d; ə-epenthesis

MUSGUM

Vulum	*hirduu* xə^{y}rdə^{w}w	*xrd-Ø^{y}-w^{w}	*xrdØ-y-k^{w}	*xrdza(-y)-k^{w}(a)	1
Mulwi	*hirduu* xə^{y}rdə^{w}w				1
Mbara	*hurtuway* xə^{w}rtə^{w}way	*xrt-w^{w}a-y	*xrtØ-y-k^{w}a		2
Muskum	*hurut* xə^{w}rə^{w}t	*xrt-Ø^{w}	*xrtØ-k^{w}		3

1. *dz > d; ə-epenthesis; *k^{w} > w^{w} > u; +W: ə > u; *y > Ø^{y}; +Y: ə > ɨ
2. *dz > t; ə-epenthesis; metathesis yk^{w} > k^{w}y; *k^{w} > w^{w}; +W: ə > u
3. *dz > t; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u

GIDAR

Gidar	*hərziya* xərzəʸya	*xrz-yʸa	*xrzØ-ya	*xrdza-ya	1
1. *dz > z; ə-epenthesis; *y > yʸ; +Y: ə > i					

see, to

PCC *(ma-) **n(a)ɣa** (-a, -y, -kʷ, -n; FV)

BATA

				√ C Ca	
Jimi	*nəᵑgən* nəŋgən	*n-ŋg-n	*mØ-ngØ-n	*ma-nɣa-n	1
				√ CaCa	
Gude	*nee* naʸaʸ	*naa-Øʸ	*naØa-y	*naɣa-y	2
1. *ɣ > g; ə-epenthesis; root: homorganic assimilation *n > ŋ/_g; prefix: partial assimilation *m > n/_ŋ 2. *y > Øʸ; +Y: *a > e; (vowel length due to intervocalic loss of /ɣ/)					

TERA

Tera	*na*	*na	*nØa	*nɣa	

MANDARA

				√ C Ca	
Malgwa	*na*	*na	*nØa	*(ma-)nɣa(-a-y/-kʷa)	
Glavda	*niʁga* nəʸɣga	*nɣ-Øʸ-ga	*nɣØ-y-kʷa		1
Matal	*manᵊŋay*	*ma-nⁿɣ-ay	*mⁿa-nɣØ-a-y		2
				√ CaCa	
Podoko	*naka*	*naka		*naɣa	3
Mandara	*naha*	*naxa			4
1. *kʷ > g; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *m > Øⁿ; +N: ɣ > ᵑɣ > ŋ 3. *ɣ (> x) > k 4. *ɣ > x					

MOFU

Mofu North	*menəkey* maʸnəkaʸy	*ma-nk-ayʸ	*ma-nkØ-a-y	*(ma-)nɣa(-a-y)	1
Mofu-Gudur	*nək*	*nk	*nkØ		2
1. *ɣ (> x) > k; ə-epenthesis; +Y: *a > e 2. *ɣ (> x) > k; ə-epenthesis					

MAROUA

Mbazla	*nahi'* naxyʔ	*nax-y-ʔ	*naxØ-y-k	*naɣa-y-kʷ	1
1. *ɣ > x; *y > i; *kʷ (> k) > ʔ					

LAMANG

Lamang	*nɣa*	*nɣa		*nɣa(-a-y)	
Hdi	*nəɣay*	*nɣ-ay	*nɣØ-a-y		1
1. ə-epenthesis					

HIGI

				√ C Ca	
Bana	*niɣə* nəʸɣə	*nɣa-Øʸ	*nɣa-y	*nɣa(-y/-na)	1
Kirya	*nə*	*na	*nØa		2
Kamwe-Nkafa	*nənə*		*nØa-na		3
Psikye	*nəwə*		*nwa		4
				√ CaCa	
	nake nakaʸ	*naka-Øʸ	*naka-y	*naɣa-y	5
Kamwe-Futu	*negə* naʸgə	*naga-Øy	*naga-y		6
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; lexical-final *a > ə 2. lexical-final *a > ə 3. lexical-final *a > ə; FV *a > ə 4. *ɣ > w; ə-epenthesis; lexical-final *a > ə 5. *ɣ (> x) > k; *y > Øʸ; +Y: lexical-final *a > e 6. *ɣ > g; *y > Øʸ; +Y: *a > e; lexical-final *a > ə					

send, to

PCC *(ma-, kʷa-) **ɬ(a)na** (-y, -kʷ, -t; FV)

DABA

Gavar	*ɮən*	*ɮnØ	*ɬna	1
Daba	*ɮən*			1
1. *ɬ > ɮ; ə-epenthesis				

MAFA

				√ C Ca	
Mafa	*ɮiʲgd* ɮəʸŋgd	*ɮŋ-Øʸ-g-d	*ɮnØ-y-t-kʷ	*ɬna(-y-t-kʷ)	1
Cuvok	*ɮəra*	*ɮra			2
				√ CaCa	
	ɮar	*ɮarØ		*ɬana	3
1. *ɬ > ɮ; *kʷ (> k) > g; *t > d; metathesis dg > gd; homorganic assimilation *n > ŋ/_g; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *ɬ > ɮ; *n > r; ə-epenthesis 3. *ɬ > ɮ; *n > r					

HURZA

			√ C Ca	
Vame	*ɬəna*	*ɬna	*ɬna	1
			√ CaCa	
Mbuko	*ɬan*	*ɬanØ	*ɬana	
1. ə-epenthesis				

MARGI

Bura	*ɬenta* ɬaʸnta	*ɬan-Øʸ-ta	*ɬanØ-y-ta	*ɬana-y-ta	1
	hyenta xʸaʸnta	*xan-Øʸ-ta			2
1. *y > Øʸ; +Y: a > e 2. *ɬ > x; *y > Øʸ; +Y: x > xʸ; +Y: a > e					

MANDARA

Matal	*matəlay*	*ma-ɬl-ay	*ma-ɬlØ-a-y	*ma-ɬna-a-y	1
1. *n (> r) > l; ə-epenthesis					

MOFU

				√ C Ca	
Ouldeme	*ɬər*	*ɬr	*ɬrØ	*(ma-)ɬna((-a)-y)	1
Zulgo	*ɬər*				1
Merey	*ɬər*				1
Mofu-Gudur	*ɬər*				1
Mada	*maɬla*	*ma-ɬla			2
Dugwor	*məɬərey* məɬəraʸy	*m-ɬr-ayʸ	*mØ-ɬrØ-a-y		3
Gemzek	*meɬəre* maʸɬəraʸ	*ma-ɬra-Øʸ	*ma-ɬra-y		3
				√ CaCa	
Moloko	*ɬar*	*ɬarØ		*ɬana	4
1. *n > r; ə-epenthesis 2. *n (> r) > l 3. *n > r; ə-epenthesis; *y > yʸ; +Y: *a > e 4. *n > r					

MAROUA

Giziga-Muturwa	*ɬin* ɬəʸn	*ɬn-Øʸ	*ɬnØ-y	*ɬna-y(-kʷ-na)	1
Giziga-Marva	*ɬəŋne* ɬəŋnaʸ	*ɬŋ-Øʸ-na	*ɬnØ-y-k-na		2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *kʷ > k; fusion *nk > ŋ; ə-epenthesis; *y > Øʸ; +Y: FV *a > e					

KOTOKO-NORTH

Mpade	*tʃ'am* tsʸʔam	*tsam-Øy-ʔ	*tsamØ-y-k	*ɬana-y-kʷ	1
	tʃ'am tsʸʔam	*tsam-Øʸ-Øˀ	*tsamØ-y-ʔ	*ɬana-y-kʷ	2
1. *ɬ(> s) > ts; *kʷ> k > ʔ; *n > m (see 3.4.5); *y > Øy; + Y: ts > tʃ; metathesis mʔ > ʔm 2. Alternative analysis: *ɬ(> s) > ts; *kʷ> k > ʔ > Øʔ; *n > m (see 3.4.5); *y > Øy; + Y: ts > tʃ; +ʔ: tʃ > tʃʔ					

KOTOKO-CENTRAL

					√ C Ca	
Lagwan	*ɬini* ɬəʸny	*ɬn-yʸ		*ɬnØ-y	*ɬna-y(-kʷ-n)	1
	ɬ'im ɬʔəʸm	*ɬm-Øʸ-ʔ		*ɬmØ-y-k		2
	ɬ'imwun ɬʔəʸmwəʷn	*ɬm-Øʸ-ʔwʷ-n		*ɬmØ-y-kʷ-n		3
Mser	*sin (bilam)* səʸn	*sn-Øʸ		*snØ-y		4
					√ CaCa	
	s'am	*sʔam	*sam-ʔ	*samØ-k	*ɬana-kʷ	5
1. ə-epenthesis; *y > yʸ > i; +Y: ə > ɨ 2. *kʷ > k > ʔ; *n > m (see 3.4.5); *y > Øʸ; +Y: ə > ɨ 3. re-segmentalisation *kʷ > ʔ+wʷ; *n > m (see 3.4.5); ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: ə > ɨ; metathesis mʔ > ʔm; ʔ > Øˀ; +ʔ: *ɬʔ > ɬˀ 4. *ɬ > s; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 5. *ɬ > s; *kʷ > k > ʔ; *n > m (see 3.4.5); metathesis mʔ > ʔm; ʔ > Øˀ; +ʔ: s > sˀ						

KOTOKO-SOUTH

Mazera	*sine* səʸnaʸ	*sna-Øʸ	*sna-y	*ɬna-y	1
1. *ɬ > s; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ; +Y lexical-final *a > e					

MUSGUM

Mulwi	*ɬini* ɬəʸny	*ɬn-yʸ	*ɬnØ-y	*ɬna-y	1
1. ə-epenthesis; *y > yʸ > i; +Y: ə > ɨ					

GIDAR

Gidar	*wələna*	*wØ-łna	*k^{w}a-łna	1
1. *k^{w} > w; ə-epenthesis				

seven$_{1}$

Areal root *(ma-) **m(a)ɗ(a)fa** (-y, -k^{w}; FV)

BATA

Gude	*mədəfə*	*mɗfa		*(ma-)mɗfa	1
Jimi	*^{m}bərəfiŋ* mbərəfyŋ	*m-brf-y-ŋ	*mØ-brfØ-y-k-n	(-y-k^{w}-n)	2
1. ə-epenthesis; lexical-final vowel *a > ə 2. (dissimilation) radical *m > b; *ɗ > r; ə-epenthesis, *y > i; *k^{w} > k; fusion *kn > ŋ					

TERA

Tera	*mmut* mmwɗ	*mfwɗ	*mɗfØ-w	*mɗfa-k^{w}	1
Ga'anda	*muɗ* mwɗ	*mwɗ	*mɗØØ-w		2
1. *k^{w} > w > u; multiple metathesis ɗfw > fwɗ; assimilation mf > mm; *ɗ > [t] 2. *k^{w} > w > u; metathesis ɗw > wɗ					

SUKUR

Sukur	*maɗaf*	*maɗafØ	*maɗafa	

MARGI

Bura	*murfa* mə^{w}rfa	*mrfa-Ø^{w}	*mrfa-k^{w}	*mɗfa-k^{w}	1
Margi-South	*mədəfau* mədəfaw	*mdfa-w	*mdfa-k^{w}		2
1. *ɗ > r; *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u 2. *ɗ > d; *k^{w} > w; ə-epenthesis					

MANDARA

				√ C C Ca	
Matal[135]	*m^{ə}ɗ^{ə}f*	*mɗfØ		*mɗfa(-y)	1
Glavda	*u:ɗyifa* ə^{w}wɗ^{y}ə^{y}fa	*w^{w}dfa-Ø^{y}	*mɗfa-y		2
				√ CaC Ca	
Podoko	*madəfa*	*madfa		*madfa	1
1. ə-epenthesis 2. ə-prothesis; *m > w^{w}; +W: ə > u; *y > Ø^{y}; +Y: ɗ > ɗ^{y}; +Y: ə > ɨ					

LAMANG

Lamang	*lfaŋa*	*lfa-ŋa	*Ølfa-k-na	*mɗfa(-k^{w}-n(a))	1
Hdi	*ndfaŋ*	*ndfa-ŋ	*mdfa-k-n		2
	ndsaŋ[136]	*ndsa-ŋ	*mdsa-k-n		3
1. ɗ > l; *k^{w} > k; fusion *kn > ŋ 2. homorganic assimilation *m > n/_ɗ; *ɗ > d; *k^{w} > k; fusion *kn > ŋ 3. See (2.) and footnote					

[135] The (erroneous?) translation is given as 'nine'.
[136] This suspicious and unique *p > f > s form is contained in Frajzyngier et al. (2015).

HIGI

Kamwe -Nkafa	*ᵐburfuᵑgə* mbəʷrfəʷᵑgə	*m-brfØ-ⁿgʷa	*mⁿØ-brfa-kʷa		1
Kamwe-Futu	*ᵐbrfaᵑgo* mbrfaᵑgaʷ	*m-brfa-ⁿgʷa		*ma-mdfà	2
Kirya	*ᵐbirfəᵑg* mbəʸrfəᵑg	*m-brfa-Øʸ-ⁿg	*mⁿØ-brfa-y-k	(-y, -kʷa)	3
Psikye	*ᵐbərəfaŋ* mbərəfaᵑk	*m-brfa-ⁿk	*mⁿØ-brfa-k		4
Bana	*ᵐbərf(ə)ŋ* mbərfəᵑk				4

1. (dissimilation) radical *m > b/m_; *ɗ > r; *kʷ > gʷ; prefixal *m > mⁿ; +N: gʷ > ᵑgʷ; ə-epenthesis; +W: ə > u; FV *a > ə
2. (dissimilation) radical *m > b/m_; *ɗ > r; prefixal *m > mⁿ; +N: gʷ > ᵑgʷ; +W: *a > o
3. (dissimilation) radical *m > b/m_; *ɗ > r; *kʷ > k > g; prefixal *m > mⁿ; +N: g > ᵑg; ə-epenthesis; *y > Øʸ; +Y: ə > i
4. (dissimilation) radical *m > b/m_; *ɗ > r; *kʷ > k > g; prefixal *m > mⁿ; +N: k > ᵑk > ŋ; ə-epenthesis

seven$_2$

Areal root *(RED-) **t(a)s(a)r(a)ɗa** (-y, -kʷ)

DABA

Daba	*ʧesereɗ* tsʸaʸsaʸraʸɗ	*tsasaraɗ-Øʸ	*tsasaradØ-y	*tasaraɗa-y	1

1. *t > ts; *y > Øʸ; +Y: ts > ʧ; +Y *a > i

MAFA

				√ CaC C Ca	
Cuvok	*tasla*	*tasla	*taslØa	*tasrɗa	1
				√ C CaCaCa	
Mafa	*tsaraɗ*	*tsaradØ		*tsaraɗa	

1. *ɗ > l

MOFU

				√ C C C Ca	
Moloko	*səsəre* səsəraʸ	*s-sra-Øʸ	*RED-ØsrØa-y	*(ma-/RED-) tsrɗa(-y/-kʷ)	1
Ouldeme	*səsəla*	*s-sla	*RED-ØslØa		2
Zulgo	*təsəla*	*tslØa			2
Gemzek	*təsəla*				2
Dugwor	*tsəla*				2
Mofu North	*tsəla*				2
Muyang	*adəskəla*	*Øa-dskla	*ma-dslØa-k		3
				√ CaC C Ca	
Merey	*tasəla*	*tasla	*taslØa	*tasrɗa	2
				√ CaCaCaCa	
Mofu-Gudur	*maasala*	*ma-asala	*ma-ØasalaØØ	*ma-tasaraɗa	4

1. ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e
2. *r > l; ə-epenthesis
3. *r > l; *t > d; metathesis lk > kl; ə-epenthesis
4. *r > l

shame$_1$

PCC ***z(a)r(a)wa** (-y)

SUKUR

Sukur	*səlәy*	*slə-y	*slØa-y	*zrwa-y	1
1. *z > s; *r > l; ə-epenthesis; lexical-final *a > ə					

MARGI

Bura	*sili* səʸly	*sl-yʸ	*slØØ-y	*zrwa-y	1
1. *z > s; *r > l; ə-epenthesis; *y > yʸ > i; +Y: ə > i					

MANDARA

				√ C C Ca	
Malgwa	*ʒirwe* zʸəʸrwaʸ	*zrwa-Øʸ		*zrwa-y	1
Podoko	*ʒirəwa* zʸəʸrəwa				2
Glavda	*ʒirwa* zʸəʸrwa				2
	žir zʸəʸr	*zr-Øʸ	*zrØØ-y		2
Matal	*ʒɪrʉwi* zʸəʸrəʷwy	*zrwʷ**Ø-yʸ**	*zrwØ-y		3
				√ CaCaCa	
Mandara	*ʒerewe* zʸaʸraʸwaʸ	*zarawa-Øʸ		*zarawa-y	4
1. ə-epenthesis; *y > yʸ; +Y: *z > ʒ; +Y: ə > i; +Y: lexical-final *a > e 2. ə-epenthesis; *y > yʸ; +Y: *z > ʒ; +Y: ə > ɨ 3. ə-epenthesis; *y > yʸ > i; +Y: *z > ʒ; +Y: ə > ɪ; *w > wʷ; +W: ə > ʉ 4. *y > Øʸ; +Y: *z > ʒ; +Y: *a > e					

MOFU

Muyang	*zirwi* zəʸrwy	*zrw-yʸ	*zrwØ-y	*zrwa-y	1
1. ə-epenthesis; *y > yʸ > i; +Y: ə > i					
LAMANG					
Lamang	*zrwi* zrwy	*zrw-y	*zrwØ-y	*zrwa-y	1
1. *y > i					

MUSGUM

Vulum	*siyer* səʸyaʸr	*syʸar	*srØa-y	*zrwa-y	1
1. *z > s; metathesis ry > yr; ə-epenthesis; *y > yʸ; +Y: ə > i; +Y: *a > e					

shame$_2$

PCC ***xʷ(a)ra** (-y)

DABA

Daba	*weli* waʸly	*wal-yʸ	*walØ-y	*xʷara-y	1
1. *xʷ > w; *y > yʸ > i; +Y: *a > e					

MAFA

Mafa	*hʷaray*	*xʷar-ay	*xʷarØ-a-y	*xʷara-a-y	
Cuvok	*hʷaray*				

HURZA

Mbuko	*waray*	*war-ay	*warØ-a-y	*x^{w}ara-a-y	1
1. *x^{w} > w					

MOFU

Merey	*h^{w}aray*	*x^{w}ar-ay	*x^{w}arØ-a-y	*x^{w}ara-a-y/-k^{w}a	
Mofu-Gudur	*h^{w}aray*				
Dugwor	*h^{w}oray* x^{w}a^{w}ray				1
Gemzek	*horo* x^{w}a^{w}ra^{w}	*x^{w}ara			1
Zulgo	*h^{w}arwa*	*x^{w}ar-wa	*x^{w}arØ-k^{w}a		2
1. +W: *a > o 2. *k^{w} > w					

LAMANG

				√ C Ca	
Hdi	*hula* x^{w}ə^{w}la	*x^{w}la		*x^{w}ra	1
Lamang	*hula* x^{w}ə^{w}la				1
				√ CaCa	
	hola x^{w}a^{w}la	*x^{w}ala		*x^{w}ara	2
1. *r > l; ə-epenthesis; +W: ə > u 2. *r > l; +W: *a > o					

GIDAR

Gidar	*wili* wə^{y}ly	*wl-y^{y}	*wlØ-y	*x^{w}ra-y	1
1. *x^{w} > w; *r > l; ə-epenthesis; *y > y^{y} > i; +Y: ə > ɨ					

sheep

PCC *(ma-, k^{w}a-) **t(a)ma** (-y, -k^{w}, -n)

DABA

				√ C Ca	
Daba	*tumuk* tə^{w}mə^{w}k	*tm-k^{w}	*tmØ-k^{w}	*(ma-k^{w}a-) tma(-y)-k^{w}	1
Buwal	*ŋtəmek* ŋtəma^{y}k	*ŋ-Ø-tma-Ø^{y}-k	*mØ-kØ-tma-y-k^{w}		2
Gavar	*ŋtʃimek* ŋtʃs^{y}ə^{y}ma^{y}k	*ŋ-Ø-tsma-Ø^{y}-k	*mØ-kØ-tsma-y-k^{w}		3
				√ CaCa	
Mbudum	*ntek* nta^{y}k	*n-ta-Ø^{y}-k	*mØ-taØØ-y-k^{w}	*ma-tama-y-k^{w}	4
1. ə-epenthesis; +W: ə > u 2. *k^{w} > k; fusion *mk > ŋ; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 3. *t > ts; *k^{w} > k; fusion *mk > ŋ; ə-epenthesis; *y > Ø^{y}; +Y ts > tʃ; +Y: ə > i; +Y: *a > e 4. *k^{w} > k; homorganic assimilation *m > n/_t; *y > Ø^{y}; +Y: *a > e					

MAFA

				√ C Ca	
Cuvok	*təmak*	*tma-k		*tma-k^{w}	1
				√ CaCa	
Mafa	*ta^{m}bak*	*Ø-ta^{n}ba-k	*m^{n}Ø-taba-k^{w}	*ma-tama-k^{w}	2
1. *k^{w} > k; ə-epenthesis 2. *k^{w} > k; dissimilation *m > b/m_; *m > Ø^{n}; +N: b > ^{m}b					

TERA

Tera	*ⁿdəɓaŋ* ndəɓaŋ	*n-dɓa-ŋ	*mØ-dɓa-k-n	*ma-tma-k^{w}-n	1
1. *t > d; dissimilation *m > ɓ/m_; homorganic assimilation *m > n/_d; ə-epenthesis; *k^{w} > k; fusion *kn > ŋ					

HURZA

Mbuko	*təman*	*tma-n		*(ma-)tma-k^{w}/-n	1
Vame	*tə^{m}bak*	*Ø-t^{n}ba-k	*m^{n}Ø-tba-k^{w}		2
1. ə-epenthesis 2. dissimilation *m > b/m_; *m > Ø^{n}: +N: b > ^{m}b; ə-epenthesis					

MANDARA

				√ C Ca	
Matal	*t^{n}waŋ* tə^{w}waŋ	*tw^{w}a-ŋ	*twa-k-n	*tma(-y)-k^{w}(-n)(a)	1
Glavda	*tuu* tww	*tw-w	*twØ-k^{w}		2
	tuʁ^{w}a twɣ^{w}a	*tw-ɣ^{w}a	*twa-k^{w}a		3
Dghwede	*tuwige* tə^{w}wə^{y}ga^{y}	*tw-Ø^{y}-ga	*tw-y-k^{w}a		4
				√ CaCa	
Podoko	*tag^{w}a*	*ta-g^{w}a	*taØØ-k^{w}a	*tama-y/-k^{w}a	5
Mandara	*kyawe* t^{y}awa^{y}	tawa-Ø^{y}	*tawa-y		6
Malgwa	*kyewe* t^{y}a^{y}wa^{y}				6
1. *m > w^{w}; ə-epenthesis; +W: ə > u; *k^{w} > k; fusion *kn > ŋ 2. *m > w > u; *k^{w} > w > u 3. *m > w > u; *k^{w} (> g^{w}) > ɣ^{w} 4. *m > w^{w}; ə-epenthesis; +W: ə > u; *k^{w} (> k) > g; *y > Ø^{y}; +Y: ə > i; +Y: FV *a > e 5. *k^{w} > g^{w} 6. *m > w; *y > Ø^{y}; +Y: t > t^{y} > k^{y}; +Y: lexical-final *a > e					

MOFU

Moloko	*təmak*	*tma-k	*tma-k^{w}	*(ma-)tma-k^{w}(-n)	1
Dugwor	*təmak*				1
Gemzek	*təmaŋ*	*tma-ŋ	*tma-k-n		2
Ouldeme	*tə^{m}bak*	*Ø-t^{n}ba-k	*m^{n}Ø-tba-k^{w}		3
Merey	*təɓaŋ*	*Ø-tɓa-ŋ	*mØ-tɓa-k-n		4
Mofu North	*təɓaŋ*				4
Mofu-Gudur	*təɓaŋ*				4
1. *k^{w} > k; ə-epenthesis 2. ə-epenthesis; *k^{w} > k; fusion *kn > ŋ 3. *k^{w} > k; ə-epenthesis; dissimilation *m > b/m_; *m > Ø^{n}; +N: b > ^{m}b 4. dissimilation *m > ɓ/m_ (> Ø); ə-epenthesis; *k^{w} > k; fusion *kn > ŋ					

MAROUA

Giziga-Marva	*tumon* tə^{w}ma^{w}n	*tma-Ø^{w}-n	*tma-k^{w}-n	*tma-k^{w}(-n)	1
Mbazla	*təmak*	*tma-k	*tma-k^{w}		2
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; +W: lexical-final *a > o 2. ə-epenthesis; *k^{w} > k					

LAMANG

Lamang	*tuwaka* tə^{w}waka	*tw^{w}a-ka	*twa-ka	*tma-k^{w}(a)	1
Hdi	*tuwak* tə^{w}wak	*tw^{w}a-k	*twa-k		1
1. *k^{w} > k; ə-epenthesis; *m > w^{w}; +W: ə > u					

HIGI

Kirya	*tə^{m}bəkə*	*Ø-t^{n}b-kə	*m^{n}Ø-tbØ-k^{w}a	*(ma-)tma-k^{w}(a)	1
Bana	*tə^{m}bək(ə)*				1
Psikye	*təmu* təmw	*tm-w	*tmØ-k^{w}		2
1. *k^{w} > k; ə-epenthesis; dissimilation *m > b/m_; *m > Ø^{n}; +N: b > ^{m}b; FV: *a > ə 2. *k^{w} > w > u; ə-epenthesis					

MUSGUM

Vulum	*adme* adma^{y}	*Øa-dma-Ø^{y}	*ma-dma-y	*(ma-)tma-y	1
Mbara	*dima* də^{y}ma	*dma-Ø^{y}	*dma-y		2
Muskum	*tima* tə^{y}ma	*tma-Ø^{y}	*tma-y		3
1. *t > d; *y > Ø^{y}; +Y: lexical-final *a > e 2. *t > d; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

GIDAR

Gidar	*time* tə^{y}ma^{y}	*tma-Ø^{y}	*tma-y	*tma-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

shoulder/(upper) arm[137]

PCC *(ma-, na-, ra-, ta-, tsa-, xa-, RED-) **p(a)ɮa** (-RED, -y, -n, -x, -k^{w}; FV)

DABA

Gavar	*mapeleleŋ* mapa^{y}la^{y}la^{y}ŋ	*ma-pala-la-Ø^{y}-ŋ	*ma-pala-RED-y-k-n	*ma-paɮa -RED-y-k^{w}-n	1
1. *ɮ > l; *y > Ø^{y}; +Y: a > e; *k^{w} > k; fusion *kn > ŋ					

MAFA

Mafa	*pełpeł* pa^{y}łpa^{y}ł	*pał-pał-Ø^{y}	*RED-pałØ-**y**	*RED-paɮa-y	1
1. *ɮ > ł; *y > Ø^{y}; +Y: a > e					

SUKUR

Sukur	*tapał*	*ta-pał	*ta-pałØ	*ta-paɮa	1
1. *ɮ > ł					

HURZA

Mbuko	*baɮa*	*baɮa		*(RED-)paɮa(-y)	1
Vame	*pełpeł* pa^{y}łpa^{y}ł	*pał-pał-Ø^{y}	*RED-pałØ-**y**		2
1. *p > b 2. *ɮ > ł; *y > Ø^{y}; +Y: a > e					

[137] As pointed out by Gravina (2015), we are likely dealing with at least two cognate forms representing derivations from one historically underlying common PCC root ***p(a)ɮa**, which undergoes different strategies of reduplication, compounding, or prefixing. (Gravina, therefore, reconstructs two related roots: ***hipał*** ^{y} 'shoulder' and ***paɮa*** 'upper arm'.) Note that Kilba (HIGI) has two reflexes of this common root, one meaning 'hand' and the other meaning 'shoulder'. In order to capture the assumed common origin, we here reconstruct all available forms as stemming from the same origin.

MARGI

Bura	*pałaha*	*pała-xa		*(RED-)paɮa(-x, -k^{w}, (a))	1
	patlahu pałaxw	*pała-x-w	*pała-x-k^{w}		2
Margi-South	*papaɮa*	*pa-paɮa	*RED-paɮa		3
Kilba	*pałəka*	*pał-ka	*pałØ-k^{w}a		
1. *ɮ > ł 2. *ɮ > ł; *k^{w} > w > u 3. *ɮ > ł; *k^{w} > k; ə-epenthesis					

MANDARA[138]

				√ C Ca	
Glavda	*aça*	*Øa-ça	*na-Øça	*na-pɮa	1
				√ CaCa	
Matal	*dzabała*	*dza-bała		*(tsa-, na-, ra-, RED) paɮa	2
Mandara	*nahyapehyape* nax^{y}apa^{y}x^{y}apa^{y}	*na-x^{y}apa-x^{y}apa	*na-RED-pax^{y}a		3
Malgwa	*nahyepe* nax^{y}a^{y}pa^{y}	*na-x^{y}ap	*na-pax^{y}a		3
	lahyepe lax^{y}a^{y}pa^{y}	*la-x^{y}apa	*ra-pax^{y}a		4
Glavda	*açapa*	*a-çapa	*Øa-paça		5
1. *ɮ > ç 2. *p > b; *ɮ > ł 3. *ɮ (> ł) > x^{y}; metathesis px^{y} > x^{y}p; +Y ; lexical-final *a > e 4. *ɮ (> ł) > x^{y}; *r > l; metathesis px^{y} > x^{y}p; +Y ; lexical-final *a > e 5. *ɮ > ç; metathesis pç > çp					

MOFU

Mofu-Gudur	*pepeł* pa^{y}pa^{y}ł	*pa-pał-Ø^{y}	*RED-pałØ-**y**	*(ma-, xa-, RED-) paɮa(-y)	1
Ouldeme	*məpepeł* məpa^{y}pa^{y}ł	*mØ-pa-pał-Ø^{y}	*ma-RED-pałØ-**y**		2
Mada	*ahpał*	*Øa-xØ-pał	*ma-xa-pałØ		3
Muyang	*həpał*	*xØ-pał	*xa-pałØ		4
1. *ɮ > ł; *y > Ø^{y}; +Y: a > e 2. *ɮ > ł; ə-epenthesis; *y > Ø^{y}; +Y: a > e 3. *ɮ > ł 4. *ɮ > ł; ə-epenthesis					

MAROUA

Giziga-Muturwa	*pepeɮ* pa^{y}pa^{y}ɮ	*pa-paɮ-Ø^{y}	*RED-paɮØ-**y**	*(RED-) paɮa(-y)	1
Giziga-Marva	*baɮa*	*baɮa			
1. *y > Ø^{y}; +Y: a > e 2. *p > b					

[138] Examples from this group suggest a glimpse at the relative chronology of sound changes. Possibly, the change *ɮ → ł → x^{y} predating the prosodification of x^{y} licenses palatalisation effects on following vowels in Mandara and Malgwa – unless, of course, Y-prosody stems from *{-y} (which we have not postulated in this case because we give priority to phonological over morphological prosodies where there is doubt or structural ambivalence).

Lamang

Lamang	*ɣbadzaka*	*ɣØ-badza-ka	*xa-badza-k^{w}a	*(xa-)paɮa-k^{w}a	1
Hdi	*badzaga*	*badza-ga	*badza-k^{w}a		2
1. *p > b; *ɮ > dz; *k^{w} > k; *x > ɣ 2. *p > b; *ɮ > dz; *k^{w} > k > g					

Higi

				√ C Ca	
Kirya	*pəla* ‘hand’	*pla		*pɮa	1
				√ CaCa	
Kirya	*babaɮa*	*ba-baɮa	*RED-baɮa	*(ma-/RED-)paɮa(-y)	2
Kamwe-Nkafa	*baɮa*	*baɮa			2
Bana	*baɮi* baɮy	*baɮ-y	*baɮØ-y		3
Kamwe-Futu	*^{m}baɮa* mbaɮa	*mØ-baɮa	*ma-baɮa		4
1. *ɮ > l; ə-epenthesis 2. *p > b 3. *p > b; *y > i 4. *p > b					

Kotoko-North

				√ C Ca	
Afade	*^{m}bila* mbə^{y}la	*m-bla-Ø^{y}	*mØ-bla-y	*ma-pɮa-y	1
				√ CaCa	
Mpade	*^{m}bala*	*m-bala	*mØ-bala	*ma-paɮa	2
Malgbe	*^{m}bala*				2
Maltam	*^{m}bala*				2
1. *p > b; *ɮ > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. *p > b; *ɮ > l					

Kotoko-Central

Lagwan	*mpala*	*m-pala	*mØ-pala	*ma-paɮa	1
Mser	*mpala*				1
1. *ɮ > l					

sit/stay, to

PCC *(ma-, RED-) **dz(a)ka** (-a, -y, -k^{w}, -n: FV)

Bata

Gude	*^{n}dzaa* ndzaa	*n-dzaa	*mØ-dzaØa	*ma-dzaka(-n)	1
Jimi	*^{n}dzan* ndzan	*n-dza-n	*mØ-dzaØØ-n		1
Tsuvan	*nzakən*	*n-zaka-n	*mØ-zaka-n		2
1. homorganic assimilation *m > n/_dz; (vowel length accounted for by loss of intervocalic /k/) 2. homorganic assimilation *m > n/_z; lexical-final *a > ə					

Daba

Mbudum	*ʤa* dz^{y}a	*dza-Ø^{y}	*dzaØØ-y	*(ma-)dzaka-y	1
Buwal	*^{n}ʤa* ndz^{y}a				2

Gavar	*ⁿdʒa* ndzʸa	*n-dza-Øʸ	*mØ-dzaØØ-y		2
Daba	*ⁿdʒa* ndzʸa				2
1. *y > Øʸ; +Y: *dz > ʤ 2. homorganic assimilation *m > n/_dz; *y > Øʸ; +Y: *dz > ʤ					

MAFA

Mafa	*ⁿdza*	*n-dza	*mØ-dzaØØ	*ma-dzaka((-a)-y)	1
Cuvok	*ⁿdʒaha* ndzʸaxa	*n-dzaxa-Øʸ	*mØ-dzaxa-y		2
	ⁿdʒahay ndzʸaxay	*n-dzax-ayʸ	*mØ-dzaxØ-a-y		3
1. homorganic assimilation *m > n/_dz 2. homorganic assimilation *m > n/_dz; *y > Øʸ; +Y: *dz > ʤ; *k > x 3. homorganic assimilation *m > n/_dz; *y > yʸ; +Y: *dz > ʤ; *k > x					

SUKUR

Sukur	*nza*	*n-za	*mØ-zaØØ	*ma-dzaka(-y)	1
	inza əʸnza	*n-za-Øʸ	*mØ-zaØØ-y		2
1. *dz > z; homorganic assimilation *m > n/_z 2. *dz > z; homorganic assimilation *m > n/_z; ə-prothesis; *y > Øʸ; +Y: ə > i					

HURZA

Mbuko	*nzahay*	*n-zax-ay	*mØ-zaxØ-a-y	*ma-dzaka-a-y	1
1. *dz > z; *k > x; homorganic assimilation *m > n/_z					

MARGI

Bura	*nzi* nzy	*n-z-y	*mØ-zØØØ-y	*ma-dzaka-y	1
1. *dz > z; homorganic assimilation *m > n/_z; *y > i					

MANDARA

Matal	*madzᵊmadzay*	*ma-dz+ma-dz-ay < *RED+ma-dzØØØ-a-y		*RED-ma-dzka((-a)-y(-kʷa))	
Podoko	*ⁿdza* ndza	*n-dza	*mØ-dzØa		1
Mandara	*ⁿdʒa* ndzʸa	*n-dza-Øʸ	*mØ-dzØa-y		2
Malgwa	*ⁿdʒa* ndzʸa				2
Glavda	*ⁿd͡ʒiga* ndzəʸga	*n-dz-Øʸ-ga	*mØ-dzØØ-y-kʷa		3
Dghwede	*ⁿdzəgiⁿdzəge* ndzəgəʸndzəgaʸ	*n-dzga+n-dzga-Øʸ < *RED+mØ-dzka-y			4
1. homorganic assimilation *m > n/_dz 2. homorganic assimilation *m > n/_dz; *y > Øʸ; +Y: *dz > ʤ 3. homorganic assimilation *m > n/_dz; *kʷ (> k) > g; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 4. homorganic assimilation *m > n/_dz; *k > g; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: FV *a > e					

MOFU

Ouldeme	*nzakaŋ*	*n-zaka-ŋ	*mØ-zaka-kʷ-n	*ma-dzaka-y/-kʷ-n	1
Zulgo	*ⁿdza* ndza	*n-dza	*mØ-dzaØØ		2
Gemzek	*ⁿdza* ndza				2
Merey	*ⁿdzay* ndzay	*n-dza-y	*mØ-dzaØØ-y		2
Mofu-Gudur	*ⁿdʒ* ndzʸ	*n-dz-Øʸ	*mØ-dzØØØ-y		3
Moloko	*ⁿdʒe* ndzʸaʸ	*n-dza-Øʸ	*mØ-dzaØØ-y		4
Dugwor	*maⁿdʒay* maⁿdzʸay				5

Mofu North	*me^{n}dzey* ma^{yn}dza^{y}y	*m^{n}a-dzaØØ-y^{y}	*m^{n}a-dzaØØ-y		6
1. *dz > z; homorganic assimilation *m > n/_z; *k^{w} > k; fusion kn > ŋ 2. homorganic assimilation *m > n/_dz 3. homorganic assimilation *m > n/_dz; *y > Ø^{y}; +Y: *dz > ʤ 4. homorganic assimilation *m > n/_dz; *y > Ø^{y}; +Y: *dz > ʤ; +Y: *a > e 5. *m > m^{n}; +N: *dz > ^{n}dz; *y > y^{y}; +Y: *dz > ʤ 6. *m > m^{n}; +N: *dz > ^{n}dz; *y > y^{y}; +Y: *dz > ʤ; +Y: *a > e					

LAMANG

Lamang	*ndza*	*n-dza	*mØ-dzaØØ		1
	nza	*n-za	*mØ-zaØØ	*ma-dzaka(-k^{w}a)	2
Hdi	*nzaku* nzak^{w}ə^{w}	*n-za-k^{w}a	*mØ-zaØØ-k^{w}a		3
1. homorganic assimilation *m > n/_dz 2. *dz > z; homorganic assimilation *m > n/_z 3. *dz > z; homorganic assimilation *m > n/_z; FV *a > ə; +W: ə > u					

HIGI

Psikye	*nza*	*n-za	*mØ-zaØØ	*ma-dzaka(-y)	1
Kamwe-Futu	*^{n}dza* ndza	*n-dza	*mØ-dzaØØ		2
Kirya	*^{n}dza* ndza				2
Bana	*ndzi* ndzy	*n-dz-y	*mØ-dzØØØ-y		3
1. *dz > z; homorganic assimilation *m > n/_z 2. homorganic assimilation *m > n/_dz 3. homorganic assimilation *m > n/_dz; *y > i					

six$_{1}$

PCC *(ma-) **k(a)w(a)xa** (-y)

BATA

Gude	*kuwa* kə^{w}wa	*kw^{w}a	*kwØa	*(ma-)kwxa	1
Jimi	*ənko* ənka^{w}	*n-kØ^{w}a	*mØ-kwØa		2
1. ə-epenthesis; +W: ə > u 2. ə-prothesis; partial assimilation *m > n; *w > Ø^{w}; +W: lexical-final *a > o					

DABA

				√ C C Ca	
Mbudum	*ŋkuh* ŋkwx	*ŋ-kwx	*mØ-kwxØ	*ma-kwxa	1
				√ C CaCa	
Buwal	*ŋk^{w}ah* ŋkwax	*ŋ-kwax	*mØ-kwaxØ	*(ma-)kwaxa	2
Gavar	*ŋk^{w}ah* ŋkwax				2
Daba	*koh* ka^{w}x	*kØ^{w}ax	*kwaxØ		3
1. homorganic assimilation *m > ŋ/_k; *w > u 2. homorganic assimilation *m > ŋ/_k 3. *w > Ø^{w}; +W: *a > o					

MAFA

Mafa	*mokʷa* maʷkwa	*ma-kwʷa	*ma-kwØa	*ma-kwxa	1
Cuvok	*makʷa* makwa	*ma-kwa	*ma-kwØa		
1. * > wʷ; +W: *a > o					

SUKUR

Sukur	*mukʷa* məʷkwa	*m-kwʷa	*mØ-kwØa	*ma-kwxa	1
	məkʷa məkwa	*m-kwa			2
1. ə-epenthesis; *w > wʷ; +W: ə > u 2. ə-epenthesis					

MARGI

Bura	*nkʷa* nkwa	*n-kwa	*mØ-kwØa	*(ma-)kwxa	1
Margi-South	*kʷa* kwa	*kwa	*kwØa		
1. partial assimilation *m > n/_k					

MANDARA

				√ C C Ca	
Matal	*mᵘkwa* məʷkwa	*m-kwʷa	*mØ-kwØa	*ma-kwxa(-y)	1
Podoko	*məkuwa* məkəʷwa				1
Malgwa	*unkʷe* əʷnkwaʸ	*n-kwʷa-Øʸ	*mØ-kwØa-y		2
				√ C CaCa	
Glavda	*uŋkʷaxa* əʷŋkwaxa	*ŋ-kwʷaxa	*mØ-kwaxa	*ma-kwaxa	3
1. ə-epenthesis; *w > wʷ; +W: ə > u 2. ə-prothesis; *w > wʷ; +W: ə > u; partial assimilation *m > n/_k; *y > Øʸ; +Y: lexical-final *a > e 3. ə-prothesis; *w > wʷ; +W: ə > u; homorganic assimilation *m > ŋ/_k					

MOFU

				√ C C Ca	
Moloko	*məko* məkaʷ	*m-kØʷa	*mØ-kwØa	*ma-kwxa	1
Merey	*məkʷa* məkwa	*m-kwa			2
Mofu North	*mukʷa* məʷkwa	*m-kwʷa			3
Ouldeme	*muku* məʷkw	*m-kwʷ	*mØ-kwØØ		4
Muyang	*muku* məʷkw				4
				√ CaC Ca	
Dugwor	*mukow* məʷkaʷw	*m-kawʷ	*mØ-kawØ	*ma-kawxa	5
Mofu-Gudur	*maakʷaw* maakʷaw	*ma-kawʷ	*ma-kawØ		6
1. ə-epenthesis; *w > Øʷ; +W: lexical-final *a > o 2. ə-epenthesis 3. ə-epenthesis; *w > wʷ; +W: ə > u 4. ə-epenthesis; *w > wʷ; +W: ə > u; *w > u 5. ə-epenthesis; *w > wʷ; +W: ə > u; +W: *a > o 6. *w > wʷ; +W: *k > kʷ; vowel length unaccounted for					

LAMANG

Lamang	*mkʷa* mkwa	*m-kwa	*mØ-kwØa	*ma-kwxa	
	mkuwa mkəʷwa	*m-kwʷa			1
Hdi	*muku'* məʷkwʔ	*m-kwʷʔ	*mØ-kwʔØ		2
	mə'ku mʔkw	*m-ʔkw			3

1. ə-epenthesis; *w > w^w; +W; ə > u 2. *x (> k) > ʔ; ə-epenthesis; *w > w^w; +W: ə > u; *w > u 3. *x (> k) > ʔ; multiple metathesis kwʔ > ʔkw; ə-epenthesis; *w > u					
Higi					
Kamwe-Futu	*nk^{w}a^{n}go* nkwa^{n}ga^w	*n^n-kw^{w}aga	*m^nØ-kwaga	*(ma-)kwaxa	1
Kamwe-Nkafa	*nk^{w}a^{n}gə* nkwa^{n}gə	*n^n-kwaga			2
Psikye	*ŋk^{w}aŋə* nkwaŋə				3
Kirya	*k^{w}a^{n}g* kwa^{n}g	*Ø^n-kwagØ			4
Bana	*k^{w}aŋ* kwaŋ				5
1. *x (> k) > g; partial assimilation *m > n^n/_k; +N: *g > ^{n}g; +W: lexical-final *a > o 2. *x (> k) > g; partial assimilation *m > n^n/_k; +N: *g > ^{n}g; lexical-final *a > ə 3. *x (> k) > g; partial assimilation *m > n^n/_k; +N: *g (> ^{n}g) > ŋ; lexical-final *a > ə 4. *x (> k) > g; *m > Ø^n; +N: *g > ^{n}g 5. *x (> k) > g; *m > Ø^n; +N: *g (> ^{n}g) > ŋ					

six_2

Areal root ***ɬ(a)ra** (-y)

Musgum

			√ C Ca	
Mbara	*ɬira* ɬə^{y}ra	*ɬra-Ø^y	*ɬra-y	1
			√ CaCa	
Vulum	*ɬaara*	*ɬara	*ɬara	2
1. ə-epenthesis; *y > Ø^y; +Y: ə > i 2. vowel length unaccounted for				

Gidar

Gidar	*ɬəre* ɬəra^y	*ɬra-Ø^y	*ɬra-y	1
	ɬre ɬra^y			2
1. ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e 2. *y > Ø^y; +Y: lexical-final *a > e				

six_3

Areal root *(ma-) **m(a)rk(a)ɗa** (-y)

Hurza

				√ C C C Ca	
Mbuko[139]	*^{m}bərka* mbərka	*mØ-brka	*ma-brkØa	*ma-mrkɗa	1
				√ CaC C Ca	
Vame	*marka*	*marka	*markØa	*markɗa	
1. (dissimilation) *m > b/m_; ə-epenthesis					

[139] There is no robust comparative evidence to reconstruct prefixal *{ma-}, which would explain C_1*m > b dissimilation prior to N-prosody *b > ^{m}b stemming from the prefix *{ma-}. Alternatively, we would be stuck with having to assume spontaneous *m > ^{m}b fortition.

MAROUA

				√ CaC C Ca	
Giziga-Marva	*merkiɗ* ma^{y}rkə^{y}ɗ	*markɗ-Ø^{y}	*markɗØ-y	*markɗa-y	1
Mbazla	*merki* ma^{y}rky	*mark-y^{y}	*markØØ-y		2
				√ CaC CaCa	
	mɛrkɛ' ma^{y}rka^{y}ʔ	*marka?-Ø^{y}	*marka?Ø-y	*markaɗa-y	3
Giziga-Muturwa	*merkeɗ(e)* ma^{y}rka^{y}ɗa^{y}	*markaɗa-Ø^{y}	*markaɗa-y		4

1. ə-epenthesis; *y > Ø^{y}; +Y: *a > e; +Y: ə > i
2. *y > y^{y} > i; +Y: *a > e
3. *ɗ > ʔ; *y > Ø^{y}; +Y: *a > E
4. *y > Ø^{y}; +Y: *a > e

skin

PCC *(ma-) **x(a)b(a)ra** (-y)

MAFA

Cuvok	*^{m}bal* mbal	*m-bal	*mØ-ØbalØ	*ma-xbara	1

1. *r > l

HURZA

Mbuko	*a^{m}bar*	*Ø^{n}-abar	*m^{n}Ø-ØabarØ	*ma-xabara	1

1. *m > m^{n}; +N: b > ^{m}b

MOFU

				√ C CaCa	
Merey	*^{m}bal* mbal	*mØ-bal	*ma-ØbalØ	*ma-xbara	1
				√ CaC Ca	
Ouldeme	*a^{m}bəl*	*Ø-a^{n}bl	*m^{n}Ø-ØablØ	*ma-xabra	2
Muyang	*a^{m}bəl*				2
Gemzek	*a^{m}bəl*				2
				√ CaCaCa	
Moloko	*ha^{m}bar*	*Ø-xa^{n}bar	*m^{n}Ø-xabarØ	*ma-xabara	2
Dugwor	*a^{m}bal*	*Ø-a^{n}bal	*m^{n}Ø-ØabalØ		2
Mofu-Gudur	*a^{m}bal*				2
Mada	*a^{m}bal*				2

1. *r > l
2. *m > Ø^{n}; +N: b > ^{m}b

LAMANG

Lamang	*x^{w}ta* x^{w}ta	*xØ^{w}ta	*xw^{w}ta	* xbra	1
Hdi	*xuta* xwta	*xwta	*xwta		2

1. *r (> d) > t; *b > w^{w} > Ø^{w}; +W: *x > x^{w}
2. *r (> d) > t; *b > w > u

HIGI

Bana	*^{m}bəl* mbəl	*mØ-bl	*ma-ØblØ	*ma-xbra	1

1. *r > l; ə-epenthesis

MUSGUM

Vulum	*amir* amə^{y}r	*ØamØr-Ø^{y}	*xambrØ-y	*ma-xbra-y	1
1. metathesis xm > mx; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ					

smell bad/stink, to

PCC *(ma-, RED-) **z(a)ya** (-y, -k^{w}, -n; FV)

DABA

Gavar	^{n}*dʒi* ndz^{y}y	*n-dzy^{y}	*mØ-dzyØ	*ma-zya	1
Daba	^{n}*dʒi* ndz^{y}y				1
1. *z > dz; homorganic assimilation *m > n/_dz; *y > y^{y} > i; +Y: dz > ʤ					

TERA

Tera	*ʒi* z^{y}y	*zy^{y}	*zyØ	*zya	1
1. *y > y^{y} > i; +Y: *z > ʒ					

MANDARA

Matal[140]	*maʒ^{i}nay* maz^{y}ənay	*ma-znay^{y}	*ma-zyØ-na	*ma-zya-na	1
	maʒ^{i}nay maz^{y}ə^{y}nay	*ma-zØ^{y}n-ay	*ma-zynØ-a-y	*ma-zyna-a-y	2
1. 'irregular' metathesis -y-na > -na-y; ə-epenthesis: *y > y^{y}; +Y: *z > ʒ; +Y: ə > ɪ Alternative analysis: 2. 'pseudo-root' *zyna; *y > Ø^{y}; +Y: *z > ʒ ; +Y: ə > ɪ					

MOFU

				√ C Ca	
Mofu-Gudur	*z*	*z	*zØØ	*(ma-)zya(-k^{w})	
Muyang	*zʉ* zə^{w}	*zə-Ø^{w}	*zØa-k^{w}		1
	zi zy	*zy	*zyØ		2
Ouldeme	*zi* zy				2
Moloko	*ze* za^{y}	*zØ^{y}a	*zya		3
Zulgo	*ze* za^{y}				3
Merey	*ze* za^{y}				3
Gemzek	*meze* ma^{y}za^{y}	*ma-zØ^{y}a	*ma-zya		
				√ CaCa	
Dugwor	*mazay*	*ma-zay	*ma-zayØ	*ma-(RED-)zaya(-k^{w}-na)	
Mofu North	*mezey* ma^{y}za^{y}y	*ma-zay^{y}	*ma-zayØ		4
Mada	*mezʒeŋa* ma^{y}zz^{y}a^{y}ŋa	*ma-z-zay^{y}-ŋa	*ma-RED-zayØ-k-na		5
1. *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > ʉ 2. *y > i 3. *y > Ø^{y}; +Y: lexical-final *a > e					

[140] The example is apparently 'irregular' in posing a unique problem of 'unacceptable' order of root-augmental elements; the expected order would be *-y-na, not ^{x}-na-y. So, we offer two options of analysis. Analysis (1) would accept a violation of the metathesis rule, which states that the root type must stay stable, i.e. the vowel /a/ should not take part in metathesis; in analysis (1) *{-na} *in toto* shifts position with {-y}, which should not be allowed, i.e. the expected result should be *{-y-na} > {-n-ya}, not ^{x}{-na-y}. Analysis (2) rests on the ad hoc assumption that we are dealing with a 'pseudo-root', in which the augmentative *-n has fused with the simple root prior to entering a combination with the root-augments *-a-y.

4. *y > y^y; +Y: *a > e 5. *y > y^y; +Y: *z > ʒ; +Y: *a > e; *k^w > k; fusion *kn > ŋ

Lamang

Lamang	*ziya* zə^{y}ya	*zy^{y}a	*zya	*zya(-k^w)	1
Hdi	*zii* zə^{y}y	*zy^y	*zyØ		2
	zi'ya zə^{y}ʔya	*zy^{y}a-ʔ	*zya-k^w		3
1. *y > y^y; ə-epenthesis; +Y: ə > i 2. *y > y^y > i; ə-epenthesis; +Y: ə > i 3. *k^w (> k) > ʔ; metathesis yʔ > ʔy; ə-epenthesis; *y > y^y; +Y: ə > i					

spit, to[141]

PCC *(ma-, k^wa-) **t(a)fa** (-a, -y, -k^w, -n, -r ; FV)

Bata

				√ C Ca	
Bata	*təf*	*tfØ		*tfa(-y)	1
Gude	*tifi* tə^{y}fy	*tfØ-y^y			2
				√ CaCa	
Jimi	*tef^{w}ən* ta^{y}f^{w}ən	*tafa-Ø^y-Ø^w-n		*tafa-y-k^w-n	3
1. ə-epenthesis 2. ə-epenthesis; +Y: ə > i; *y >i 3. ə-epenthesis; *y > Ø^y; +Y: *a > e; *k^w > Ø^w; +W: *f > f^w					

Daba

				√ C Ca	
Daba	*tif* tə^{y}f	*tfØ-Ø^y		*(ma-k^wa-)tfa-y	1
Gavar	*ŋtif* ŋtə^{y}f	*ŋ-tf-Ø^y	*mØ-kØ-tfØ-y		2
				√ CaCa	
Buwal	*ŋtef* ŋta^{y}f	*ŋ-taf-Ø^y	*mØ-kØ-tafØ-y	*ma-k^wa-tafa-y	3
1. ə-epenthesis; *y > Ø^y; +Y: ə > i 2. *k^w > k; fusion mk > ŋ; ə-epenthesis; *y > Ø^y; +Y: ə > i 3. *k^w > k; fusion mk > ŋ; *y > Ø^y; +Y: *a > e					

Mafa

Mafa	*^{n}dʒif* ndz^{y}ə^{y}f	*n-dzf-Ø^y	*mØ-dzfØ-y	*ma-tfa-y	1
1. *t > dz; ə-epenthesis; homorganic assimilation *m > n/__dz; *y > Ø^y; +Y: ə > i; +Y: dz > dʒ					

Sukur

Sukur	*tifa* tə^{y}fa	*tfa-Ø^y	*tfa-y	1
1. ə-epenthesis; *y > Ø^y; +Y: ə > i				

Hurza

Mbuko	*təfe* təfa^y	*tfa-Ø^y	*tfa-y	1
Vame	*tifa* tə^{y}fa			2
1. ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e 2. ə-epenthesis; *y > Ø^y; +Y: ə > i				

[141] Onomatopoeic origin highly likely.

MARGI

Kilba	*təfa*	*tfa		*tfa(-y(-k^{w}))	1
Bura	*tifa* tə^{y}fa	*tfa-Ø^{y}			2
	tifu tə^{y}fw	*tfa-Ø^{y}-w	*tfa-y-k^{w}		3
1. ə-epenthesis 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > w > u					

MANDARA

Podoko	*təfa*	*tfa	*(ma-)tfa-y-ra	1
Matal	*mƟt^{y}fla* ma^{y}t^{y}fla	*ma-tf-Ø^{y}-la		2
1. ə-epenthesis 2. *r > l ; *y > Ø^{y}; +Y: *t > t^{y}; +Y: *a > Q				

MOFU

			√ C Ca	
Mofu-Gudur	*təf*	*tfØ	(ma-)tfa(-a-y)	1
Merey	*təf*			1
Dugwor	*mətəfey* mətəfa^{y}y	*mØ-tfØ-a-y^{y}		2
Mofu North	*metəfey* ma^{y}təfa^{y}y	*ma-tfØ-a-y^{y}		2
			√ CaCa	
Moloko	*taf*	*tafØ	*(ma-)tafa(-y)	
Gemzek	*metefe* ma^{y}ta^{y}fa^{y}	*ma-tafa-Ø^{y}		3
1. ə-epenthesis 2. ə-epenthesis; *y > y^{y}; +Y: *a > e 3. *y > Ø^{y}; +Y: *a > e				

MAROUA

Mbazla	*tufu* tə^{w}fw	*tfØ-w^{w}	*tfa-k^{w}	1
1. ə-epenthesis; *k^{w} > w^{w} > u; +W: *ə > u				

LAMANG

Lamang	*təf*	*tfØ	*tfa(-a-y)	1
Hdi	*təfay*	*tfØ-ay		1
1. ə-epenthesis				

HIGI

Bana	*tfə*	*tfa		*(ma-)tfa(-y)	1
Kirya	*ntəfə*	*n-tfa	*mØ-tfa		2
Kamwe-Nkafa	*ntivi* ntə^{y}vy	*n-tv-y^{y}	*mØ-tvØ-y		3
Kamwe-Futu	*ntivi* ntə^{y}vy				3
1. lexical-final *a > ə 2. ə-epenthesis; homorganic assimiliation *m > n/_t; lexical-final *a > ə 3. *f > v; ə-epenthesis; homorganic assimiliation *m > n/_t; *y > y^{y} > i; +Y: ə > i					

KOTOKO-NORTH

Mpade	*tafɨ* tafə^{y}	*tafa-Ø^{y}	*tafa-y	1
1. lexical-final *a > ə; *y > Ø^{y}; +Y: ə > ɨ				

KOTOKO-CENTRAL

				√ C Ca	
Lagwan	*tifel* tə^{y}fa^{y}l	*tfa-Ø^{y}-l	*tfa-y-l		1
	tifu tə^{y}fw	*tf-Ø^{y}-w	*tfØ-y-k^{w}	*tfa-y-r/-k^{w}(-n)	2
	tifɨwun tə^{y}fə^{y}w^{w}ə^{w}n	*tfa-Ø^{y}-w^{w}-n	*tfa-y-k^{w}-n		3
				√ CaCa	
Mser	*tafɨ* tafə^{y}	*tafa-Ø^{y}		*tafa-y	4
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; +Y: *a > e 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > w > u 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > w^{w}; +W: ə > u 4. lexical-final *a > ə ; *y > Ø^{y}; +Y: ə > ɨ					

MUSGUM

Mbara	*tuf* tə^{w}f	*tf-Ø^{w}	*tfØ-k^{w}	*tfa-k^{w}	1
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					

spitting cobra

Areal /'Pseudo'-PCC[142] *(k^{w}a-, ra-) **g^{w}(a)van** (-k^{w})

DABA

Mbudum	*govoŋ* g^{w}a^{w}va^{w}ŋ	*g^{w}avaŋ^{w}-Ø	*g^{w}avan-k^{w}	1
Daba	*govom* g^{w}a^{w}va^{w}m	*g^{w}avam	*g^{w}avan	2
1. fusion nk^{w} > ŋ^{w} 2. *n > m (see 3.4.5); +W: *a > o				

MAFA

Cuvok	*guvaŋ* g^{w}ə^{w}vaŋ	*g^{w}vaŋ	*g^{w}van-k	*g^{w}van-k^{w}	1
1. ə-epenthesis; *k^{w} > k; fusion nk > ŋ; +W: ə > u					

HURZA

				√ C CaC	
Mbuko	*gulguvon* g^{w}ə^{w}lg^{w}ə^{w}va^{w}n		*g^{w}Ø-lØ-g^{w}van	*k^{w}a-ra-g^{w}van	1
				√ CaCaC	
Vame	*gavaŋ*	*gavaŋ	*gavan-k	*g^{w}avan-k^{w}	2
1. ə-epenthesis; *k^{w} > g^{w}; +W: ə > u; +W: *a > o 2. *g^{w} > g; *k^{w} > k; fusion nk > ŋ					

[142] This root is restricted to the area of the Mandara Mountains (Gravina 2015). It raises the suspicion that it is a loan (from a still unidentified source) mainly by showing no reflex of – PCC default? – lexical-final *a. The original articulation of the final nasal remains unclear. In most languages it is realised as a velar nasal, which is a frequent observation throughout CC languages and usually goes back to */n/ (presumably assimilated to or fused with a deleted but originally following root augment *-k^{w}. This, however, leaves Daba final */m/ unaccounted for, as with a few other roots (e.g. 'horn$_3$', 'tamarind'), an observation that we relate to a sporadic shound shift *n > m affecting final nasals (see 3.4.5). We, therefore and tentatively, 'reconstruct' */n/ for this root.

Mofu

Ouldeme	*gavaŋ*	*gavaŋ	*gavan-k	*g^wavan-k^w	1
Muyang	*gavaŋ*				1
Zulgo	*gavaŋ*				1
Gemzek	*gavaŋ*				1
Mofu North	*g^wavaŋ*	*g^wavaŋ	*g^wavan-k		
Mofu-Gudur	*g^wavaŋ^w*	*g^wavaŋ^w	*g^wavan-k^w		2
Dugwor	*golgavan* g^wa^wlgavan	*g^wa^{w}lgavan	*k^wa-lØ-g^wavan	*k^wa-ra-g^wavan	3
1. *g^w > g; *k^w > k; fusion nk > ŋ 2. fusion *nk^w > $ŋ^w$; +W: ŋ > $ŋ^w$ 3. prefixal *k^w > g^w; root-initial *g^w > g; +W: *a > o					

Maroua

Giziga-Marva	*govon* $g^wa^wva^wn$	*g^wavan	*g^wavan	1
1. +W: *a > o				

Lamang

Lamang[143]	*lkaf-* lkaf-	*lØ-kaf(a)Ø	*ra-g^wavan	1
1. *r > l; *g^w > k; *v > f				

Higi

Bana	*g^wavaŋ* g^wavaŋ	*g^wavaŋ	*gavan-k	*g^wavan-k^w	1
1. *k^w > k; fusion nk > ŋ					

steal, to/theft/thief

PCC *(na-, ma-, sa-, RED-) **k^w(a)r(a)ya**[144] (-k^w, -n; FV)

Bata

				√ C C Ca	
Tsuvan[145]	*ahəlle* axəlla^y	*Øa-xll^{y}a	*ma-xly^{y}a	*(ma-)k^wrya(-n)	1
Bata	*hir* xə^{y}r	*xrØ^y	*xryØ		2
Jimi	*hərən*	*xr-n	*xrØØ-n		3
				√ CaC Ca	
Gude	*harə*	*xara	*xarØa	*(ma-)k^warya(-k^wa)	4
Sharwa	*har*	*xar	*xarØØ		5

[143] Wolff (2015 Vol.2), not in Gravina (2015).

[144] According to Gravina (2015), "[s]ome of the entries are for the verb 'to steal', and some are for the nouns 'theft' and 'thief'. It is not clear which form is the basic root." At variance with Gravina, who reconstructs ***kir***, we are here reconstructing a labialised initial root consonant */k^w/ in order to account for the labialisation occurring in some Kotoko and Maroua group languages. Further, the almost consistent presence of i and Y-prosody is here accounted for by phonological palatalisation, i.e. we reconstruct */y/ as a radical consonant rather than as a petrified root augment. This decision, however, rests mainly on our principle of – in case of doubt – giving phonological prosodies preference over morphological prosodies; in this case there is no robust comparative evidence.

[145] In an ad hoc fashion, we assume that the double consonant results from the assimilation ly > ll. This, however, presupposes that the prosodification of *y to y^y preceded the assimilation and was retained afterwards. This example is the only one of this type in the database.

	maharə	*ma-xara	*ma-xarØa		4
	maharə'əkə	*ma-xarʔ-ka	*ma-xaryØ-k^{w}a		6
1. *k^{w} (> k) > x; *r > l; assimilation ly > ll; ə-epenthesis; *y > y^{y} > l^{y}; +Y: lexical-final *a > e 2. *k^{w} (> k) > x; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 3. *k^{w} (> k) > x; ə-epenthesis 4. *k^{w} (> k) > x; lexical-final *a > ə 5. *k^{w} (> k) > x 6. radical *k^{w} (> k) > x; *y > ʔ; suffixal *k^{w} > k; ə-epenthesis; FV *a > ə					

DABA

				√ C C Ca	
Gavar	*ŋhəl* ŋxəl	*ŋ-xl	*mØ-xlØØ	*(ma-)k^{w}rya	1
Mbudum	*mihil* mə^{y}xə^{y}l	*m-xlØ^{y}	*mØ-xlyØ		2
	mihəl mə^{y}xəl				2
	hil xyl	*xyl	*xlyØ		3
Daba	*həl*		*xlØØ		4
Mazagwa Hidi	*həl*				4
				√ CaC Ca	
Buwal	*ŋhel* ŋxa^{y}l	*ŋ-xalØ^{y}	*mØ-xalyØ	*ma-k^{w}arya	5
1. *k^{w} > x; *r > l; homorganic assimilation *m > ŋ/_x 2. *k^{w} > x; *r > l; ə-epenthesis; *y > Øy; +Y: ə > i 3. *k^{w} > x; *r > l; metathesis ly > yl; *y > i 4. *k^{w} > x; *r > l; ə-epenthesis 5. *k^{w} > x; *r > l; *y > Øy; +Y: *a > e; homorganic assimilation *m >ŋ/_x					

MAFA

Cuvok	*kəraw*	*kra-w	*kraØØ-k^{w}	*k^{w}raya(-k^{w})	1
	kərey kəra^{y}y	*kray^{y}	*krayØ		2
1. radical *k^{w} > k; suffixal *k^{w} > w; ə-epenthesis 2. *k^{w} > k; ə-epenthesis; *y > y^{y}; +Y: *a > e					

TERA

Tera[146]	*muura* mə^{w}w^{w}ra	*mØ-w^{w}ra	*ma-w^{w}rØa	*ma-k^{w}rya	1
1. ə-epenthesis; *k^{w} > w^{w}; +W: ə > u; w > u					

SUKUR

Sukur	*kər*	*kr	*krØØ	*k^{w}rya	1
1. *k^{w} > k; ə-epenthesis					

HURZA

				√ C C Ca	
Mbuko	*kəra*	*kra	*krØa	*k^{w}rya	1
				√ CaC Ca	
	akar	*Øa-kar	*ma-karØØ	*ma-k^{w}arya	2
Vame	*akar*				2
1. *k^{w} > k; ə-epenthesis 2. *k^{w} > k					

[146] Information provided by Paul Newman (p.c. 2022).

MARGI

Bura	*hila* xyla	*xyla	*xlya	*k^{w}rya	1
Margi-South	*həl*	*xl	*xlØØ		2
Kilba	*həla*	*xla	*xlØa		2
1. *r > l; *k^{w} (> k) > x; metathesis ly > yl; *y > i 2. *r > l; *k^{w} (> k) > x; ə-epenthesis					

MANDARA

Matal	*gəl*	*gl	*glØØ	*(na-)(ma-) k^{w}rya(-k^{w}a)	1
Mandara	*ila* yla	*yla	*Ølya		2
Malgwa	*naŋəle* naŋəla^{y}	*na-ŋ-ØlØ^{y}a	*na-mØ-klya		3
	ŋəla	*ŋla	*mØ-klØa		4
Glavda	*gla*	*gla	*glØa		5
	g	*g	*gØØØ		5
	ʁil^{ə}ga ɣə^{y}lga	*ɣlØ^{y}-ga	*ɣlyØ-k^{w}a		6
Dghwede	*gəle* gəla^{y}	*glØ^{y}a	*glya		7
1. *r > l; *k^{w} (> k) > g; ə-epenthesis 2. *r > l; metathesis ly > yl; *y > i 3. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e; *k^{w} > k; fusion mk > ŋ 4. *r > l; *k^{w} > k; fusion mk > ŋ; ə-epenthesis 5. *r > l; *k^{w} (> k) > g 6. *r > l; *k^{w} (> k > g) > ɣ; *y > Ø^{y}; ə-epenthesis; +Y: ə > ɨ 7. *r > l; *k^{w} (> k) > g; *y > Ø^{y}; +Y: lexical-final *a > e					

MOFU

				√ C C Ca	
Merey	*kəla*	*kla	*klØa	*(ma-)k^{w}rya	1
Zulgo	*akəl*	*Øa-kl	*ma-klØØ		1
Gemzek	*akəl*				1
				√ C CaCa	
	mekəle ma^{y}kəla^{y}	*ma-klaØ^{y}	*ma-klayØ	*(RED-/ma-(na-)) k^{w}raya	2
Dugwor	*mənəkəley* mənəkəla^{y}y	*m-n-klay^{y}	*mØ-nØ-klayØ		3
Mofu North	*mehuley* ma^{y}x^{w}ə^{w}la^{y}y	*ma-x^{w}lay^{y}	*ma-x^{w}layØ		4
Mofu-Gudur	*lal*	*la-lØ	*RED-ØlaØØ		
				√ CaC Ca	
Moloko	*akar*	*a-kar	*Øa-karØØ	*(ma-/na-) k^{w}arya	5
Ouldeme	*akal*	*a-kal	*Øa-kalØØ		6
	məkal	*m-kal	*mØ-kalØØ		1
	nəkal	*n-kal	*nØ-kalØØ		1
	mahal	*ma-xal	*ma-xalØØ		7
Mada	*akkal*	*a-k-kal	*Øa-nØ-kalØØ		8
				√ C CaCa	
	malay	*ma-lay	*ma-ØlayØ	*ma-k^{w}raya	9

				√ CaCaCa	
Moloko	*karay*	*karayØ		*k^{w}araya	5
1. *k^{w} > k; *r > l; ə-epenthesis 2. *k^{w} > k; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 3. *k^{w} > k; *r > l; ə-epenthesis; *y > y^{y}; +Y: *a > e 4. *k^{w} > x^{w}; *r > l; ə-epenthesis; *y > y^{y}; +Y: *a > e; +W: ə > u 5. *k^{w} > k 6. *k^{w} > k; *r > l 7. *k^{w} (> k) > x; *r > l 8. *k^{w} > k; *r > l; assimilation nk > kk 9. *r > l					

MAROUA

				√ C C Ca	
Giziga-Muturwa	*hul* x^{w}ə^{w}l	*x^{w}l	*x^{w}lØØ	*k^{w}rya	1
Giziga-Marva	*hul* x^{w}ə^{w}l				1
				√ C CaCa	
Mbazla	*lay*	*lay	*ØlayØ	*(ma-)k^{w}raya	2
	alai’	*Øa-lay?	*ma-?layØ		3
1. *r > l *k^{w} > x^{w}; ə-epenthesis; +W: ə > u 2. *r > l 3. *r > l; *k^{w} (> k) > ʔ; multiple metathesis ʔly > lyʔ; *y > i					

LAMANG

				√ C C Ca	
Lamang	(verb) *ɣila* ɣyla	*ɣyla	*ɣlya	*k^{w}rya	1
	(noun) *ɣili* ɣə^{y}ly	*ɣly^{y}	*ɣlyØ		2
				√ CaC Ca	
Hdi	*ɣali* ɣaly	*ɣalyØ		*k^{w}arya	3
1. *k^{w} (> g^{w} > g) > ɣ; *r > l; metathesis ly > yl; *y > i 2. *k^{w} (> g^{w} > g) > ɣ; *r > l; ə-epenthesis; *y > y^{y} > i; +Y: ə > i 3. *k^{w} (> g^{w} > g) > ɣ; *r > l; *y > i					

HIGI

Kamwe-Nkafa	*ɣəli* ɣəly	*ɣlyØ			1
Bana	*ɣ(ə)li* ɣəly				1
Kirya	*ɣələ*	*ɣla	*ɣlØa	*k^{w}rya	2
Kamwe-Futu	*ɣirə* ɣə^{y}rə	*ɣrØ^{y}a	*ɣrya		3
	ɣire ɣə^{y}ra^{y}				4
1. *k^{w} (> g^{w} > g) > ɣ; *r > l; ə-epenthesis; *y > i 2. *k^{w} (> g^{w} > g) > ɣ; *r > l; ə-epenthesis; lexical-final *a > ə 3. *k^{w} (> g^{w} > g) > ɣ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə 4. *k^{w} (> g^{w} > g) > ɣ; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

KOTOKO-NORTH

				√ C C Ca	
Afade	*hiʔi* xəʸʔy	*xʔyʸ	*xɗyØ	*kʷrya	1
Malgbe	*hiru* xyrəʷ	*xØʷyra	*xʷrya		2
				√ CaC Ca	
Mpade	*hadî* xaɗy	*xaɗyØ		*kʷarya	3
1. *kʷ (> k) > x; *r (> ɗ) > ʔ; ə-epenthesis; +Y: ə > i; *y > i 2. *kʷ > xʷ > x+Øʷ; metathesis ry > yr; *y > i; lexical-final *a > ə; +W: ə > u 3. *kʷ (> k) > x; *r > ɗ; *y > i					

KOTOKO-CENTRAL

				√ C C Ca	
Lagwan	*musxui*[147] məʷsxʷəʷy	*mØ-sØ-xʷy	*ma-sa-xʷØyØ	*ma-sa-kʷrya	1
				√ CaC Ca	
Mser	*nɣey* nɣaʸy	*n-ɣayʸ	*mØ-ɣaØyØ	*ma-kʷarya	2
1. ə-epenthesis; *kʷ > xʷ; +W: ə > u; *y > i 2. *kʷ (> gʷ > g) > ɣ; *y > yʸ; +Y: *a > e; partial assimilation *m > n/_ɣ					

KOTOKO-SOUTH

				√ C C Ca	
Zina	*ahəl*	*Øa-xl	*ma-xlØØ	*ma-kʷrya	1
				√ C CaCa	
Mazera	*yale* yalaʸ	*Øyʸala	*Ølaya	*kʷraya	2
1. *r > l; *kʷ (> k) > x; ə-epenthesis 2. *r > l; metathesis ly > yl; *y > yʸ; +Y: lexical-final *a > e					

MUSGUM

Vulum	*mihil* məʸxyl	*m-xyʸl	*mØ-xlyØ	*ma-kʷrya	1
1. *r > l; *kʷ (> k) > x; ə-epenthesis; metathesis ly > yl; *y > yʸ > i; +Y: ə > i					

GIDAR

Gidar	*əhala*	*Øa-xala	*ma-xalØa	*ma-kʷarya	1
	ɨhala əʸxala	*Øa-xalØʸa	*ma-xalya		2
	ɨɨhala əʸyxala	*Øa-yʸxala			3
1. *kʷ > x; *r > l; raising of prefixal *a > ə 2. *kʷ > x; *r > l; raising of prefixal *a > ə; *y > Øʸ; +Y: ə > ɨ 3. *kʷ > x; *r > l; raising of prefixal *a > ə; multiple metathesis xly > yxl; *y > yʸ; +Y: ə > ɨ; assimilation ɨy > ɨɨ					

[147] Whether we are dealing with a compound or with the use of a rare/unique prefixal root augment *{s-} remains unclear. Here we treat the form as carrying a multiple root augment.

suck, to

PCC *(ma-, RED-) **s(a)wɓa** (-a, -y, n)

BATA

Gude	*ʃiɓə* sʸəʸɓə	*sɓa-Øʸ	*sØɓa-y	*swɓa-y	1
Sharwa	*ʃəɓ* sʸəɓ	*sɓ-Øʸ	*sØɓØ-y		2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *s > ʃ; lexical-final *a > ə 2. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ					

DABA

Daba	*seɓ* saʸɓ	*saɓ-Øʸ	*saØɓØ-y	*(RED-) sawɓa-y	1
Gavar	*ʃeɓ* sʸaʸɓ				2
Mbudum	*səseɓ* səsaʸɓ	*sa-saɓ-Øʸ	*RED-saØɓØ-y		3
Buwal	*seseɓ* saʸsaʸɓ				1
1. *y > Øʸ; +Y: *a > e 2. *y > Øʸ; +Y: s > ʃ; +Y: *a > e 3. ə-epenthesis; *y > Øʸ; +Y: *a > e					

MAFA [148]

Mafa	*sosuɓ* saʷswɓ	*sa-sØwʷɓ	*RED-sawɓØ	*RED-sawɓa	1
Cuvok	*sasɓa*	*sa-sØɓa	*RED-sawɓa		
1. *w > u; +W: *a > o					

HURZA

Mbuko	*susœɓ* səʷsaʷʸɓ	*sa-saØʷɓ-Øʸ	*RED-sawɓØ-y	*RED-sawɓa-y	1
1. prefixal *a > ə; *w > Øʷ; +W: ə > u ; *y > Øʸ; +W+Y: *a > œ					

MARGI

Kilba	*ʃiɓa* sʸəʸɓa	*sɓa-Øʸ	*sØɓa-y	*swɓa-y	1
1. ə-epenthesis; *y > Øʸ; +Y: *ə > i; +Y: *s > ʃ					

MANDARA

Podoko	*ɓiʃe* ɓəʸsʸaʸ	*ɓsa-Øʸ	*sØɓa-y	*swɓa(-y)	1
Dghwede	*p'utsa* ɓwtsa	*ɓwtsa	*tswɓa		2
1. ə-epenthesis; *y > Øʸ; +Y: *ə > i; +Y: *s > ʃ; +Y: lexical-final *a > e 2. *s > ts; multiple metathesis tsɓw > ɓtsw; *w > u					

MOFU

				√ C C Ca	
Gemzek	*suɓ* swɓ	*swɓØ		*(RED-) swɓa(-a-y)	1
Merey	*susuɓ* swswɓ	*sw-swɓ	*RED-swɓØ		1
Ouldeme	*səɓay* səɓay	*sɓ-ay	*sØɓØ-a-y		2
				√ CaC Ca	
Moloko	*soɓ* saʷɓ	*saØʷɓ	*sawɓØ	*(ma-)(RED-) sawɓa(-a-y)	3
Mofu-Gudur	*sasə*	*sa-sa	*RED-saØØØ		4

[148] Note that in MAFA but also some MOFU group languages, the shape of the reduplicative prefix containing /a/ indicates an originally underlying root-pattern shape *CaCCa. While the /a/ in the prefix may be retained, the medial /a/ in the root may be deleted and replaced by epenthetic schwa.

Zulgo	*sasuɓa* saswɓa	*sa-sØwɓa	*RED-sawɓa		1
Dugwor	*məsoɓey* məsa^{w}ɓa^{y}y	*mØ-saØ^{w}ɓ-ay^{y}	*ma-sawɓØ-a-y		5
Mofu North	*meseseəbey* ma^{y}sa^{y}səɓa^{y}y	*ma-sa-sØɓ-ay^{y}	*ma-RED-saØɓØ-a-y		6
1. *w > u 2, ə-epenthesis 3. *w > Ø^{w}; +W: *a > o 4. lexica-final *a > ə 5. ə-epenthesis; *w > Ø^{w}; +W : *a > o; *y > y^{y}; +Y: *a > e 6. ə-epenthesis; *y > y^{y}; +Y: *a > e					

MAROUA

Giziga-Marva	*suɓa* swɓa	*swɓa		*(RED-)swɓa(-y)	1
Mbazla	*susuɓi* swswɓy	*sw-swɓ-y	*RED-swɓØ-y		2
1. *w > u 2. *w > u ; *y > i					

LAMANG

Hdi	*ɓisay* ɓə^{y}say	*ɓs-ay^{y}	*sØɓØ-a-y	*sawɓa(-a-y)	1
1. metathesis sɓ > ɓs; ə-epenthesis; *y > y^{y}; +Y: *ə > i					

HIGI

Kamwe-Nkafa	*ɓisi* ɓə^{y}sy	*ɓs-y^{y}	*sØɓØ-y	*(ma-/RED-)swɓa-y	1
Kamwe-Futu	*ɓisi* ɓə^{y}sy				1
Psikye	*mɓisə* mɓə^{y}sə	*mØ-ɓsa-Ø^{y}	*ma-sØɓa-y		2
Bana	*ɓ(ə)sə*	*ɓsa	*sØɓa		3
	ʃiɓə s^{y}ə^{y}ɓə	*sɓa-Ø^{y}	*sØɓa-y		4
	ʃiʃəɓə s^{y}ə^{y}s^{y}əɓə	*s-sɓa-Ø^{y}	*RED-sØɓa-y		4
1. metathesis sɓ > ɓs; ə-epenthesis; *y > y^{y}; +Y: *ə > i; *y >i 2. metathesis sɓ > ɓs; ə-epenthesis; *y > Ø^{y}; +Y: *ə > i; lexical-final *a > ə 3. metathesis sɓ > ɓs; ə-epenthesis; lexical-final *a > ə 4. ə-epenthesis; *y > Ø^{y}; +Y: *ə > i; +Y: *s > ʃ; lexical-final *a > ə					

KOTOKO-ISLAND

Buduma	*ʧefʧaɓu* ts^{y}a^{y}ts^{y}aɓw	*tsa-tsaɓw-Ø^{y}	*RED-tsawɓ-y	*(RED-)sawɓa-y	1
1. *s > ts; metathesis wɓ > ɓw; *y > Ø^{y}; +Y: *a > e; +Y: ts > tʃ; *w > u					

KOTOKO-NORTH

					√ C C Ca	
Afade	*s'ufu* sʔə^{w}fw	*sʔfw^{w}	*sʔfw	*sɓwØ	*swɓa	1
					√ CaC Ca	
Mpade	*s'afu* s^{ʔ}afw	*saØ^{ʔ}fw	*saʔfw	*saɓwØ	*sawɓa(-y)	2
	s'afi s^{ʔ}afə^{y}	*saØ^{ʔ}fə-Ø^{y}	*saʔfa-y	*saØɓa-y		3
Malgbe	*s'afi* s^{ʔ}afə^{y}					3

1. metathesis wɓ > ɓw; re-segmentalisation *ɓ > ʔ+f; fusion sʔ > sˀ; ə-epenthesis; *w > wʷ; +W: ə > u; *w > u
2. metathesis wɓ > ɓw; re-segmentalisation *ɓ > ʔ+f; ʔ > Øˀ; ʔ: *s > sˀ; *w > u
3. re-segmentalisation *ɓ > ʔ+f; ʔ > Øˀ; ʔ: *s > sˀ; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ

KOTOKO-CENTRAL

				√ C C Ca	
Lagwan	*s'ifɯwun* sˀəʸfəʷwəʷn	*sʔfw-Øʸ-n	*swʔfØ-y-n	*swɓa-y-n	1
				√ CaC Ca	
Mser	*s'afɨ* sˀafəʸ	*saØˀfə-Øʸ	*saØʔfa-y	*(ma-)	2
	ns'afɨ nsˀafəʸ	*n-saØˀfə-Øʸ	*mØ-saØʔfa-y	sawɓa-y	2

1. metathesis wɓ > ɓw; re-segmentalisation *ɓ > ʔ+f; fusion sʔ > sˀ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +W: ə > u
2. re-segmentalisation *ɓ > ʔ+f; ʔ > Øˀ; +ʔ: *s > sˀ; homorganic assimilation *m > n/_s; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ

MUSGUM

Vulum	*sɯsɯɓi* səʷsəʷɓy	*s-sØʷɓ-y	*RED-swɓØ-y	*RED-swɓa-y	1
1. ə-epenthesis; *w > Øʷ; +W: ə > ɯ; *y > i					

GIDAR

Gidar	*əssubo* əsswɓaʷ	* s-swʷɓa	* RED-swɓa	1
1. ə-prothesis; *w > wʷ > u; +W: lexical-final *a > o				

sun

PCC *(Ca-, da-, xa-, RED-) **p(a)ta** (-a, -y, -kʷ, -n; FV)

BATA

				√ C Ca	
Sharwa	*fətə*	*fta		*pta(-y-n)	1
Jimi	*fitən* fəʸtən	*ft-Øʸ-n	*ftØ-y-n		2
				√ CaCa	
Tsuvan	*fete* faʸtaʸ	*fata-Øʸ		*pata-y	3

1. *p > f; ə-epenthesis; lexical-final *a > ə
2. *p > f; ə-epenthesis; *y > Øʸ; +Y: ə > i; lexical-final *a > ə
3. *p > f; *y > Øʸ; +Y: *a > e

DABA

				√ C Ca	
Mbudum	*pis* pəʸs	*ps-Øʸ	*psØ-y	*pta-y	1
Gavar	*piʃ* pəʸsʸ				2
Daba	*pitʃ* pəʸtsʸ	*pts-Øʸ	*ptsØ-y		3
				√ CaCa	
Buwal	*pes* paʸs	*pasØ-Øʸ		*pata-y	4

1. *t (> ts) > s; ə-epenthesis; *y > Øʸ; +Y: ə > i
2. *t (> ts) > s; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: s > ʃ
3. *t > ts; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: ts > tʃ
4. *t (> ts) > s; *y > Øʸ; +Y: *a > e

MAFA

Mafa	*pats* pats	*patsØ	*pata	1
Cuvok	*pas* pas	*pasØ		2
1. *t > ts 2. *t (> ts)> s				

TERA

Tera	*fəɗa* fəɗa	*fɗa	*pta	1
1. *p > f; *t > ɗ; ə-epenthesis				

SUKUR

Sukur	*pis* pəʸs	*ps-Øʸ	*psØ-y	*pta-y	1
1. *t (> ts) > s; ə-epenthesis; *y > Øʸ; +Y: ə > i					

HURZA

Mbuko	*pats*	*patsØ		*(xa-)pata	1
Vame	*apas*	*Øa-pasØ	*xa-pata		2
1. *t > ts 2. *t (> ts) > s					

MARGI

Bura	*ptʃi* ptsʸy	*pts-yʸ	*ptsØ-y	*pta-y	1
Margi-South	*pətʃi* ptsʸy				2
Kilba	*pətʃi* ptsʸy				2
1. *t > ts; *y > yʸ > i; +Y: ts > tʃ 2. *t > ts; *y > yʸ > i; +Y: ts > tʃ; ə-epenthesis					

MANDARA

				√ C Ca	
Dghwede	*fitʃe* fəʸtsaʸ	*ftsa-Øʸ	*ftsa-y	*pta-y	1
				√ CaCa	
Podoko	*patsa*	*patsa		*(da-)pata	2
Matal	*afats*	*Øa-fatsØ			3
Glavda	*fatʃiya* fatsʸəʸya	*fats-yʸa	*fatsØ-ya	*(da-)pata-ya	4
	dvatʃiya dvatsʸəʸya	*d-vats-yʸa	*dØ-vatsØ-ya		5
Malgwa	*vatʃiya* vatsʸəʸya	*vats-yʸa	*vatsØ-yʸa		5
1. *p > f; *t > ts; ə-epenthesis; *y > Øʸ; +Y: ts > tʃ; +Y: ə > i; +Y: lexical-final *a > e 2. *t > ts 3. *p > f : *t > ts 4. *p > f; *t > ts; ə-epenthesis; *y > yʸ; +Y: ts > tʃ; +Y: ə > i 5. *p (> f) > v; *t > ts; ə-epenthesis; *y > yʸ; +Y: ts > tʃ; +Y: ə > i					

MOFU

Ouldeme	*fat*	*fatØ		*(xa-/RED-)pata	1
Muyang	*fat*				1
Moloko	*fat*				1
Zulgo	*fat*				1
Gemzek	*fat*				1
Dugwor	*pat*	*patØ			
Merey	*həpat* xəpat	*xØ-patØ	*xa-pata		2
Mofu North	*pas*	*pasØ			3

Mofu-Gudur	*pas*				3
	papas	*pa-pasØ	*RED-pasa		3
1. *p > f 2. ə-epenthesis 3. *t (> ts) > s					

MAROUA

Giziga-Marva	*pas*	*pasØ	*pata	1
Mbazla	*pas*			1
1. *t (> ts) > s				

LAMANG

Lamang	*fiti* fəʸty	*ftØ-yʸ	*pta-y(-kʷ)	1
Hdi	*fitik* fəʸtyk	*ftØ-yʸ-k		1
1. *p > f; ə-epenthesis; *y > yʸ > i; +Y: ə > i				

HIGI

				√ C Ca	
Bana	*ftʃa* ftsʸa	*ftsa-Øʸ	*ftsa-y		1
	vtʃi vtsʸy	*vtsØ-y			2
Kirya	*vətʃi* vətsʸy	*vtsØ-yʸ		*pta-y	3
Psikye	*vətʃi* vətsʸy				3
Kamwe-Futu	*vitʃi* vəʸtsʸy				4
				√ CaCa	
Kamwe-Nkafa	*vetʃi* vaʸtsʸy	*vatsØ-yʸ		*pata-y	5
1. *p > f; *t > ts; *y > Øʸ; +Y: ts > tʃ 2. *p (> f) > v; *t > ts; *y > yʸ > i; +Y: ts > tʃ 3. *p (> f) > v; *t > ts; ə-epenthesis; *y > yʸ > i; +Y: ts > tʃ 4. *p (> f) > v; *t > ts; ə-epenthesis; *y > yʸ > i; +Y: ə > i; +Y: ts > tʃ 5. *p (> f) > v; *t > ts; *y > yʸ > i; +Y a > e; +Y: ts > tʃ					

KOTOKO-SOUTH

Mazera	*fatʃa* fatsʸa	*fatsa-Øʸ		*(Ca-)pata-y	1
Zina	*avatʃa* avatsʸa	*Øa-vatsa-Øʸ	*Ca-fatsa-y		
1. *p > f; *t > ts; *y > Øʸ; +Y: ts > tʃ 2. *p (> f) > v ; *t > ts; *y > Øʸ; +Y: ts > tʃ					

MUSGUM

				√ C Ca	
Vulum	*futii* fəʷtəʸy	*ft-yʸ-Øʷ	*ftØ-y-kʷ		1
Mulwi	*futii* fəʷtəʸy			*pta(-a)-y-kʷ	1
Mbara	*futay* fəʷtay	*ft-ay-Øʷ	*ftØ-a-y-kʷ		2
				√ CaCa	
Muskum	*fasa*	*fasa		*pata	3
1. *p > f; ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: ə > i 2. *p > f; ə-epenthesis; *kʷ > Øʷ; +W: ə > u 3. *p > f; *t (> ts) > s					

swallow$_1$, to

PCC *(ma-) **da** (-y, -k^w, -n; FV)

BATA

Gude	*^{n}da* nda	*n-da	*mØ-da	*ma-da(-n)	1
Jimi	*^{n}dan* ndan	*n-da-n	*mØ-da-n		1
1. homorganic assimilation *m > n/_d					

SUKUR

Sukur	*^{n}dam* ndam	*n-da-n	*mØ-da-n	*ma-da-n	1
1. homorganic assimilation prefixal *m > n/_d; *n > m (see 3.4.5)					

MANDARA

Mandara	*^{n}de* nda^y	*n-da-Ø^y	*mØ-da-y	*ma-da-y/-k^{w}a	1
Malgwa	*^{n}de* nda^y				1
Glavda	*^{n}d^{ə}ga* ndga	*n-d-ga	*mØ-dØ-ka		2
1. homorganic assimilation *m > n/_d; *y > Ø^y; +Y: *a > e 2. *k^w > (k >) g; ə-epenthesis; homorganic assimilation *m > n/_d					

MOFU

Mofu-Gudur	*^{n}d* nd	*n-d	*mØ-dØ	*ma-da(-y(-k^{w}a))	1
Zulgo	*^{n}de* nda^y	*n-da-Ø^y	*mØ-da-y		2
Mofu North	*me^{n}dey* ma^{yn}da^{y}y	*m^{n}a-da-y^y	*m^{n}a-da-y		3
Moloko	*^{n}daway* ndaway	*n-da-way	*mØ-da-y-k^{w}a		4
1. homorganic assimilation *m > n/_d 2. homorganic assimilation *m > n/_d; *y > Ø^y; +Y: *a > e 3. *m > Ø^n; +N: *d > ^{n}d; *y > Ø^y; +Y: *a > e 4. homorganic assimilation *m > n/_d; metathesis yk^w > k^{w}y; *k^w > w					

MAROUA

Giziga-Muturwa	*^{n}di* ndy	*n-d-y	*mØ-dØ-y	*ma-da-y	1
Giziga-Marva	*^{n}di* ndy				1
1. homorganic assimilation *m > n/_d; *y > i					

LAMANG

Lamang	*^{n}da* nda	*n-da	*mØ-da	*ma-da(-a-y)	1
Hdi	*^{n}day* nday	*n-d-ay	*mØ-dØ-a-y		1
1. homorganic assimilation *m > n/_d					

HIGI

Kamwe-Nkafa	*^{n}da* nda	*n-da	*mØ-da	*ma-da	1
Kirya	*^{n}da* nda				1
1. homorganic assimilation *m > n/_d					

swallow$_2$, to

Areal root *(ma-) **s(a)ɗ(a)ka** (-y, -k^w)

MAFA

				√ C C Ca	
Mafa	*səɗək*	*sɗk	*sɗkØ	*sɗka	1
				√ C CaCa	
Cuvok	*səɗaka*	*sɗaka		*sɗaka	1
1. ə-epenthesis					

HURZA

Mbuko	*səɗak*	*sɗak	*sɗakØ	*sɗaka	1
1. ə-epenthesis					

MANDARA

Podoko	*tsəɗəhə*	*tsɗxa		*sɗka	1
1. *s > ts; *k > x; ə-epenthesis; lexical-final *a > ə					

MOFU

				√ C C Ca	
Mofu-Gudur	*səɗkw*	*sɗk-Ø^{w}	*sɗkØ-k^{w}	*(ma-)sɗka(-y/-k^{w})	1
Gemzek	*mesəɗke* ma^{y}səɗka^{y}	*ma-sɗka-Ø^{y}	*ma-sɗka-y		2
				√ C CaCa	
	asəɗak	*a-sɗak	*Øa-sɗakØ	*(ma-)sɗaka(-y)	3
	səɗak	*sɗak	*sɗakØ		3
Mofu North	*səɗak*				3
Merey	*səɗaka*	*sɗaka	*sɗaka		3
Moloko	*səɗek* səɗa^{y}k	*sɗak-Ø^{y}	*sɗakØ-y		2
Dugwor	*məsəɗekey* məsəɗa^{y}ka^{y}y	*m-sɗaka-Ø^{y}	*mØ-sɗaka-y		2
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: *k > k^{w} 2. ə-epenthesis; *y > Ø^{y}; +Y: *a > e 3. ə-epenthesis					

GIDAR

Gidar	*əsɗəka*	*sɗka		*sɗka	1
1. ə-prothesis; ə-epenthesis					

tail

PCC ***k^{w}(a)t(a)ra*** (-y; FV)

BATA

Sharwa	*hutirə* x^{w}ə^{w}tə^{y}rə	*x^{w}tra-Ø^{y}	*x^{w}tra-y	*k^{w}tra-y	1
1. *k^{w} > x^{w}; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə					

DABA

				√ C CaCa	
Buwal	*kutel* k^{w}ə^{w}ta^{y}l	*k^{w}tal-Ø^{y}	*k^{w}talØ-y	*k^{w}tara-y	1
				√ CaC Ca	
Mazagwa Hidi	*kwetir* k^{w}a^{y}tə^{y}r	*k^{w}atr-Ø^{y}	*k^{w}atrØ-y	*k^{w}atra-y	2
1. *r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e					

MAFA

				√ C CaCa	
Mafa	*futor* f^{w}ə^{w}ta^{w}r	*f^{w}tar	*f^{w}tarØ	*k^{w}tara	1
				√ CaCaCa	
Cuvok	*h^{w}adar*	*x^{w}adar	*x^{w}adarØ	*k^{w}atara	2
1. *k^{w} (> x^{w}) > f^{w}; ə-epenthesis; +W: ə > u; +W: *a > o 2. *k^{w} > x^{w}; *t > d					

Sukur

Sukur	*tur* tə^{w}r	*^{w}tr	*Ø^{w}trØ	*k^{w}tra	1
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					

Hurza

Mbuko	*guter* g^{w}ə^{w}ta^{y}r	*g^{w}tar-Ø^{y}	*g^{w}tarØ-y	*k^{w}tara-y	1
Vame	*kuter* k^{w}ə^{w}ta^{y}r	*k^{w}tar-Ø^{y}	*k^{w}tarØ-y		2
	k^{w}iter k^{w}ə^{y}ta^{y}r				3
1. *k^{w} > g^{w}; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 2. ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e					

Mandara

				√ C C Ca	
Podoko	*fətəla*	*ftla		*k^{w}tra(-y)	1
Dghwede	*x^{w}təle* x^{w}təla^{y}	*x^{w}tla-Ø^{y}	*x^{w}tla-y		2
Glavda	*xukyla* x^{w}ə^{w}k^{y}la	*x^{w}t^{y}la	*x^{w}tla-Ø^{y}		3
	x^{w}çə	*x^{w}t^{y}a	*x^{w}tØa		4
				√ C CaCa	
Mandara	*uktere* ə^{w}kta^{y}ra^{y}	*k^{w}tara-Ø^{y}		*k^{w}tara-y	5
	ugdere ə^{w}gda^{y}ra^{y}	*g^{w}dara-Ø^{y}	*g^{w}dara-y		6
				√ CaCaCa	
	katalia katalə^{y}a	*katala-y^{y}a		*k^{w}atara-ya	7
Malgwa	*gataliya* gatalə^{y}ya	*gatala-y^{y}a			8
1. *k^{w} (x^{w} > f^{w}) > f; *r > l; ə-epenthesis 2. *k^{w} > x^{w}; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: lexical-final *a > e 3. *k^{w} > x^{w}; *r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *t (> t^{y}) > k^{y} 4. *k^{w} > x^{w}; lexical-final *a > ə; *y > Ø^{y}; +Y: *t (> t^{y}) > ç 5. ə-prothesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 6. *k^{w} > g^{w}; *t > d; ə-prothesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 7. *k^{w} > k; *r > l; lexical-final *a > ə; +Y: ə > i 8. *k^{w} > g; *r > l; lexical-final *a > ə; +Y: ə > i					

Mofu

				√ C C Ca	
Ouldeme	*aftəl*	*Øa-ftl	*ma-ftlØ	*(ma-)k^{w}tra	1
Muyang	*hutul* x^{w}ə^{w}tə^{w}l	*x^{w}tl	*x^{w}tlØ		2
				√ C CaCa	
Moloko	*h^{w}ətər* x^{w}ətə^{y}r	*x^{w}tar-Ø^{y}	*x^{w}tarØ-y	*(ma-)k^{w}tara-y	3
Merey	*hutel* x^{w}ə^{w}ta^{y}l	*x^{w}tal-Ø^{y}	*x^{w}talØ-y		4
Gemzek	*gutel* g^{w}ə^{w}ta^{y}l	*g^{w}tal-Ø^{y}	*g^{w}talØ-y		5
Dugwor	*mətel* mətə^{y}l	*mØ-tal-Ø^{y}	*ma-ØtalØ-y		6
				√ CaCaCa	
M.-Gudur	*deŋg^{w}el* da^{yŋ}g^{w}a^{y}l	*Ø^{n}-dag^{w}al-Ø^{y}	*m^{n}Ø-g^{w}adalØ-y	*(ma-)k^{w}atara-y	7
	g^{w}e^{n}del g^{w}a^{yn}da^{y}l	*Ø^{n}-g^{w}adal-Ø^{y}			8
1. *k^{w} (> x^{w} > f^{w}) > f; *r > l; ə-epenthesis 2. *k^{w} > x^{w}; *r > l; ə-epenthesis; +W: ə > u 3. *k^{w} > x^{w}; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 4. *k^{w} > x^{w};*r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 5. *k^{w} > g^{w};*r > l; ə-epenthesis; +W: ə > u; *y > Ø^{y}; +Y: *a > e 6. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 7. *k^{w} > g^{w};*t > d; *r > l; metathesis g^{w}d > dg^{w}; *y > Ø^{y}; +Y: *a > e; *m > Ø^{n}; +N: g^{w} > ^{n}g^{w} 8. *k^{w} > g^{w};*t > d; *r > l; *y > Ø^{y}; +Y: *a > e; *m > Ø^{n}; +N: d > ^{n}d					

LAMANG

Lamang	*hʷtiri* xʷtəʸry	*xʷtr-yʸ	*xʷtrØ-y	*kʷtra(-y)	1
Hdi	*hutur* xʷəʷtəʷr	*xʷtr	*xʷtrØ		2
1. *kʷ > xʷ; ə-epenthesis; *y > yʸ > i; +Y: *ə > i 2. *kʷ > xʷ; ə-epenthesis; +W: ə > u					

HIGI

Kirya	*twələ*	*twla	*wtla	*kʷtra	1
1. *kʷ > w; *r > l; metathesis wt > tw; ə-epenthesis; lexical-final *a > ə					

MUSGUM

				√ C C Ca	
Mbara	*huntul* xʷəʷⁿtəʷl	*Øⁿ-xʷtl	*mⁿØ-xʷtlØ	*ma-kʷtra	1
				√ C CaCa	
Vulum	*gidɗer* gəʸɗəʸr	*gdɗar-Øʸ	*gdɗarØ-y	*kʷtara-y	2
1. *kʷ > xʷ; *r > l; ə-epenthesis; +W: ə > u; *m > Øⁿ; +N: t > ⁿt 2. *kʷ (> k) > g; *t > ɗ; *y > Øʸ; +Y: ə > i; +Y: *a > e					

GIDAR

Gidar	*kutur* kʷəʷtəʷr	*kʷtr	*kʷtrØ		1
	kuturo kʷəʷtəʷraʷ	*kʷtra		*kʷtra	2
	kutəro kʷəʷtəraʷ				
1. ə-epenthesis; +W: ə > u 2. ə-epenthesis; +W: ə > u; +W: lexical-final *a > o					

tamarind tree

PCC *(ma-) **b(a)w(a)r(a)na** (-y, -kʷ)

BATA

				√ C C C Ca	
Tsuvan	*ᵐburne* mbwrnaʸ	*mØ-bwrna-Øʸ	*ma-bwrna-y	*ma-bwrna-y	1
				√ CaC CaCa	
Jimi	*ᵐbalan* mbalan	*mØ-balan	*ma-baØlanØ	*ma-bawrana	2
1. *w > u; *y > Øʸ; +Y: lexical-final *a > e 2. *r > l					

MAFA

Mafa	*ᵐburom* mbwraʷm	*mØ-bwʷran	*ma-bwranØ	*ma-bwrana	1
Cuvok	*ᵐbələm* mbələm	*mØ-blan	*ma-bØlanØ		2
1. *w > wʷ > u; +W: *a > o; *n > m (see 3.4.5) 2. *r > l; ə-epenthesis; *n > m (see 3.4.5)					

TERA

Tera	*ᵐbərən* mbərən	*mØ-brn	*ma-bØrnØ	*ma-bwrna	1
1. ə-epenthesis					

SUKUR

Sukur	*ᵐbələm* mbələm	*mØ-bln	*ma-bØlnØ	*ma-bwrna	1
1. *r > l; ə-epenthesis; *n > m (see 3.4.5)					

MARGI

Bura	*ᵐbula* mbwla	*mØ-bwla	*ma-bwlØa	*ma-bwrna(-y)	1
Kilba	*ᵐbəla* mbəla	*mØ-bla	*ma-bØlØa		2
Margi-South	*ᵐbəla* mbəla				2
	ᵐbila mbəʸla	*mØ-bla-Øʸ	*ma-bØlØa-y		3

1. *r > l; ə-epenthesis; w > u 2. *r > l; ə-epenthesis 3. *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > i

MANDARA

Podoko	*^{m}bula* mbwla	*mØ-bwla	*ma-bwlØa	*(ma-)bwrna(-y)	1
Matal	*am^{ə}r*	*Øa-mr	*ma-mØrØØ		2
Glavda	*aw*	*Øa-w	*ma-ØwØØØ		
	awura awə^{w}ra	*Øa-w^{w}ra	*ma-ØwrØa		3
Mandara	*ure* wra^{y}	*wra-Ø^{y}	*ØwrØa-y		4
Malgwa	*ure* wra^{y}				4
	uure ə^{w}wra^{y}				5
1. *w > u; *r > l 2. ə-epenthesis; *b > m 3. ə-epenthesis; *w > w^{w}; +W: ə > u 4. *w > u; *y > Ø^{y}; +Y: lexical-final *a > e 5. ə-prothesis; *w > w^{w} > u; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e					

MOFU

Gemzek	*^{m}bular* mbwlar	*m-bwlar	*mØ-bwlarØ	*ma-bwrana	1
	^{m}bulor mbwla^{w}r	*m-bw^{w}lar			2
Dugwor	*^{m}bəlor* mbəla^{w}r	*m-bØ^{w}lar			3
Merey	*^{m}bulor* mbwla^{w}r	*m-bw^{w}lar			2
	^{m}bəlar mbəlar	*m-blar	*mØ-bØlarØ		4
Zulgo	*^{m}bəlar* mbəlar				4
Mofu North	*^{m}bəlar* mbəlar				4
1. *r > l: *n > r; *w > u 2. *r > l; *n > r; *w > u; +W: *a > o 3. *r > l; *n > r; ə-epenthesis; *w > Ø^{w}; +W: *a > o 4. *r > l; *n > r; ə-epenthesis					

MAROUA

Giziga-Muturwa	*^{m}bulam* mbwlam	*m-bwlan	*mØ-bwlanØ	*ma-bwrana(-k^{w})	1
Giziga-Marva	*^{m}bulam* mbwlam				1
Mbazla	*^{m}bəlaŋ* mbəlaŋ	*m-blaŋ	*mØ-bØlanØ-k		2
1. *w > u; *r > l; *n > m (see 3.4.5) 2. *r > l; ə-epenthesis; *k^{w} > k; fusion *nk > ŋ					

LAMANG

Lamang	*mblama*	*m-blana	*mØ-bØlana	*ma-bwrana	1
Hdi	*^{m}bəlam* mbəlam	*m-blan	*mØ-bØlanØ		2
1. *r > l; *n > m (see 3.4.5) 2. *r > l; ə-epenthesis; *n > m (see 3.4.5)					

HIGI

Kamwe-Nkafa	*^{m}bula* mbwla	*m-bwla	*mØ-bwlaØØ	*ma-bwrana(-k^{w})	1
Kamwe-Futu	*^{m}bula* mbwla				1
Kirya	*^{m}bəla^{ŋ}g* mbəla^{ŋ}g	*m-blaŋ	*mØ-bØlanØ-k		2
Bana	*^{m}b(ə)laŋ* mbəlaŋ				2
1. *w > u; *r > l 2. *r > l; ə-epenthesis; *k^{w} > k; fusion *nk > ŋ~^{ŋ}g					

ten

PCC *(xa-) **k^{w}(a)n(a)ma**[149] (-y, -k^{w}; FV)

MAFA

Mafa	*kula* k^{w}ə^{w}la	*k^{w}la	*k^{w}lØa	*k^{w}nma(-k^{w})	1
Cuvok	*kuraw* k^{w}ə^{w}raw	*k^{w}ra-w	*k^{w}rØa-k^{w}		2
1. *n (> r) > l; ə-epenthesis; +W: ə > u 2. *n > r; suffixal *k^{w} > w; ə-epenthesis; +W: ə > u . Alternatively, we could assume the well-attested sporadic sound change *m > w and not reconstruct suffixal *-k^{w}					

TERA

				√ C C Ca	
Ga'anda	*kum* k^{w}ə^{w}m	*k^{w}m	*k^{w}ØmØ	*k^{w}nma	1
				√ CaC Ca	
Tera	*g^{w}a^{ŋ}g*	*g^{w}aŋ	*g^{w}anØØ-k	*k^{w}anma-k^{w}	2
1. ə-epenthesis; +W: ə > u 2. root-initial *k^{w} > g^{w}; suffixal *k^{w} > k; fusion *nk > ŋ~^{ŋ}g					

SUKUR

Sukur	*waŋ*	*waŋ-Ø	*wanØØ-k	*k^{w}anma-k^{w}	1
1. *root-initial *k^{w} > w; suffixal *k^{w} > k; fusion *nk > ŋ					

HURZA

Mbuko	*kuro* k^{w}ə^{w}ra^{w}	*k^{w}ra-Ø^{w}	*k^{w}rØa-k^{w}	*k^{w}nma-k^{w}	1
1. *n > r; suffixal *k^{w} > Ø^{w}; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o					

MARGI

Bura	*kuma* k^{w}ə^{w}ma	*k^{w}ma	*k^{w}Øma	*k^{w}nma(-k^{w})	1
Margi-South	*kumou* k^{w}ə^{w}ma^{w}w	*k^{w}ma-w^{w}	*k^{w}Øma-k^{w}		2
1. ə-epenthesis; +W: ə > u 2. suffixal *k^{w} > w^{w} > u; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o					

MANDARA

				√ C C Ca	
Glavda	*kəl*	*kl	*klØØ	*k^{w}nma	1
Matal	*k^{u}l(u)* k^{w}ə^{w}l(w)	*k^{w}lw	*k^{w}lwØ		2
				√ C CaCa	
Glavda	*kla:wa*	*klawa		*k^{w}nama	3
				√ CaCaCa	
Mandara	*kelawa* ka^{y}lawa	*kalawa-Ø^{y}	*kalawa-y	*k^{w}anama-y	4
1. *n (> r) > l; *k^{w} > k; ə-epenthesis 2. *n (> r) > l; *m > w > u; ə-epenthesis; +W: ə > u 3. *n (> r) > l; *k^{w} > k; *m > w; vowel length unaccounted for 4. *n (> r) > l; *k^{w} > k; *m > w; *y > Ø^{y}; +Y: *a > e					

[149] Gravina (2015) reconstructs three different roots, each with limited areal distribution: ***k^{w}im**, ***kiriw**, ***hikan**. In the present study, we derive all CC forms from one common PCC root. Note that this root raises questions also in terms of a potential early borrowing from Benue-Congo languages into Chadic, as suggested by Carl Hoffmann (1970), as far as biradical PC reconstructions such as *g^{w}am- (Newman 1977) are concerned. If, however, our triradical PCC reconstruction was valid, then this would throw doubt on the borrowing hypothesis.

MOFU

				√ C C Ca	
Ouldeme	*kulu* $k^wə^wlw$	*k^wlw	*k^wlwØ	*k^wnma	1
Muyang	*kru* krw	*krw	*k^wrwØ		2
Moloko	*kəro* kəra^w	*krØ^{w}a	*krwa		3
Gemzek	*kuro* $k^wə^wra^w$	*k^wrØa	*k^wrwa		4
Merey	*kuro* $k^wə^wra^w$				4
Zulgo	*kurwa* $k^wə^wrwa$	*k^wrwa			5
				√ C CaCa	
Mofu North	*kuraw* $k^wə^wraw$	*k^wrawØ		*k^wnama	5
Mofu-Gudur	*kuraw* $k^wə^wraw$				5
Dugwor	*kurow* $k^wə^wra^ww$				6

1. *n > l; *m > w; ə-epenthesis; +W: ə > u
2. *n > r; *m > w > u
3. *n > r; *k^w > k; *m > w > Ø^w; ə-epenthesis; +W: lexical-final *a > o
4. *n > r; ə-epenthesis; +W: ə > u; +W: lexical-final *a > o
5. *n > r; *m > w; ə-epenthesis; +W: ə > u
6. *n > r; *m > w; ə-epenthesis; +W: ə > u; +W: *a > o

MAROUA

Giziga-Marva	*kuru* $k^wə^wrw$	*k^wrw	*k^wrwØ	*k^wnma(-k^w)	1
Mbazla	*kuru* $k^wə^wrw$				1
	kuru' $k^wə^wrwʔ$	*k^wrwa-ʔ	*k^wrwa-k^w		2
Giziga-Muturwa	*kuru'u* $k^wə^wrwʔw$	*k^wrw-ʔw	*k^wrwØ-k^w		3

1. *n > r; *m > w > u; ə-epenthesis; +W: ə > u
2. *n > r; *m > w > u; suffixal *k^w (> k) > ʔ; ə-epenthesis; +W: ə > u
3. *n > r; *m > w > u; suffixal *k^w > ʔw > ʔu; ə-epenthesis; +W: ə > u

LAMANG

Lamang	*ɣ^{w}aŋa*	*ɣ^{w}aŋa	*ɣ^{w}anØØ-ka	*k^wanma-k^w(a)	1
Hdi	*ɣ^{w}aŋ*	*ɣ^{w}aŋ	*ɣ^{w}anØØ-k		1

1. radical *k^w (> g^w) > ɣ^w; suffixal *k^w > k; fusion *nk > ŋ

HIGI

Kirya	*gum* $g^wə^wm$	*g^wm	*g^wØmØ	*k^wnma	1
Kamwe-Nkafa	*mu^{ŋ}gə* mə$^{w\ŋ}$gə	*m^{n}g^{w}a	*g^{w}n^{n}ma		2
Kamwe-Futu	*mu^{ŋ}gə* mə$^{w\ŋ}$gə				2
Psikye	*məŋə* mə^{ŋ}gə	*mØ^{n}ga			3
Psikye	*məŋ*	*mng			4
Bana	*məŋ*		*gnmØ		4

1. *k^w > g^w; ə-epenthesis; +W; ə > u
2. *k^w > g^w; metathesis g^{w}m > mg^w; ə-epenthesis; *n > n^n > Ø^n; +N; g^w > ^{ŋ}g^w; +W: ə > u; lexical-final *a > ə
3. *k^w > g^w > g; *n > n^n > Ø^n; metathesis gm > mg; ə-epenthesis; lexical-final *a > ə; *n > Ø^n; +N; g > ^{ŋ}g
4. *k^w > g; multiple metathesis gnm > mng; ə-epenthesis; fusion ng > ŋ

KOTOKO-ISLAND

Buduma	*həkan*	*xØ-kan	*xa-kanØØ	*xa-k^wanma	1

1. *k^w > k; ə-epenthesis

KOTOKO-NORTH

Afade	*kan*	*kan	*kanØØ	*k^{w}anma	1
Mpade	*kan*				1
Malgbe	*kan*				1
1. *k^{w} > k					

KOTOKO-CENTRAL

Lagwan	*xkan*	*xØ-kan	*xa-kanØØ	*(xa-)k^{w}anma	
Mser	*kan*	*kan	*kanØØ		

thorn

PCC *(ma-, va-, xa-) **d(a)yka** (-y, -t)

BATA

Gude	*dəha* dəxa	*dØxa		*dyka	1
Sharwa	*dəhə* dəxə				2
1. *k > x; ə-epenthesis 2. *k > x; ə-epenthesis; lexical-final *a > ə					

MAFA

Mafa	*vatak*	*va-taØkØ		*ma-/va-dayka	1
Cuvok	*mətak*	*mØ-tak	*ma-taØkØ		2
1. *d > t 2. *d > t; ə-epenthesis					

TERA

Tera	*^{n}deki* nda^{y}kə^{y}	*n-daØ^{y}kə	*mØ-dayka	*(ma-) dayka(-y-t)	1
	^{n}dʒakhti ndz^{y}axty	*n-dzaØ^{y}x-t-y	*mØ-dzayxØ-t-y		2
Hwana	*^{n}daxa* ndaxa	*n-daxa	*mØ-daØxa		3
1. homorganic assimilation *m > n/_d; lexical-final *a > ə; +y: *a > e; *y > Ø^{y}; +Y: ə > i 2. homorganic assimilation *m > n/_dz; *d > dz; metathesis yt > ty; *k > x; *y > Ø^{y}; +Y: dz > dʒ ; *y > i 3. homorganic assimilation *m > n/_d; *k > x					

SUKUR

Sukur	*dʒik* dz^{y}yk	*dzy^{y}kØ	*dyka	1
1. *d > dz; *y > y^{y} > i; +Y: dz > dʒ				

HURZA

				√ C C Ca	
Vame	*adəga*	*Øa-dga	*ma-dØga	*ma-dyka	1
				√ CaC Ca	
Mbuko	*adak*	*Øa-dak	*ma-daØkØ	*ma-dayka	
1. *k > g; ə-epenthesis					

MANDARA

Podoko	*taka*	*taØka		*(ma-)dayka	1
Glavda	*taka*				1
Matal	*atak*	*Øa-taka	*ma-taØka		1
Mandara	*dake* daka^{y}	*daØ^{y}ka			2
Malgwa	*dake* daka^{y}				2
1. *d > t 2. *y > Ø^{y}; +Y: lexical-final *a > e					

Mofu

Mofu North	*ⁿdak* ndak	*n-dak	mØ-daØkØ	*ma-/xa-dayka	1
Ouldeme	*adak*	*Øa-daØkØ			
Muyang	*adak*				
Zulgo	*adak*				
Gemzek	*adak*				
Merey	*adak*				
Dugwor	*adak*				
Moloko	*hadak*	*xa-daØkØ			
Mofu-Gudur	*hatak*	*xa-taØkØ			2
1. homorganic assimilation *m > n/_d 2. *d > t					

Lamang

				√ C C Ca	
Lamang	*tiki* tykəʸ	*tyʸka		*dyka	1
				√ CaC Ca	
Hdi	*teki* taʸkəʸ	taØʸkə	*tayka	*dayka	2
1. *d > t; lexical-final *a > ə; *y > *yʸ > i; +Y: ə > i 2. *d > t; lexical-final *a > ə; *y > Øʸ; +Y: *a > e; +Y: ə > i					

Higi

Kamwe-Nkafa	*tikə* tykə	*tyka		*dyka	1
Bana	*t(ə)ki* təkəʸ	tØʸkə	*tyka		2
1. *d > t; *y > i; lexical-final *a > ə 2. *d > t; ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > i					

Musgum

Mbara	*taha*	*taØxa		*(xa-)dayka(-t)	1
Vulum	*hedek* xaʸdaʸk	*xa-daØʸk	*xa-daykØ		2
Muskum	*hedet* xaʸdaʸt	*xa-daØʸ-t	*xa-dayØØ-t		2
1. *d > t ; *k > x 2. *y > Øʸ; +Y : *a > e					

three

PCC *(ma-)[150] **x(a)k(a)na** (-y, -kʷ, -dˆ; FV)

Bata

			√ C C Ca	
Jimi	*mahəkən* maxəkən	*ma-xknØ	*ma-xkna	1
Gude	*makə* makə	*ma-ØkØa		2

[150] Quite a few of the languages show a long vowel [aa] in the first syllable at the juncture of the petrified prefix *{ma-} and the simple root, when the initial consonant of the root (*/x/) is lost. In the words of Gravina (2015): "In several groups, the *h has been lost, triggering compensatory lengthening of the *a from the prefix." Alternatively and without reference to 'compensatory lengthening', one could also simply assume loss of /x/ in intervocalic position /a_a/ resulting in /aa/, as is assumed for other CC languages as well.

				√ CaC Ca	
Bata[151]	*m^{w}aakin* m^{w}aakə^{y}n	*ma-Øakn-Ø^{y}-Ø^{w}	*ma-xaknØ-y-k^{w}	*ma-xakna-y-k^{w}	3
1. ə-epenthesis 2. lexical-final *a > ə 3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; *k^{w} > Ø^{w}; +W: m > m^{w}; (for vowel length see fn.)					

DABA

Buwal	*mahkad̀* maxkad̀	*ma-xkad̀	*ma-xkadØ	*ma-xkana	1
Gavar	*mahkad̀* maxkad̀				1
Mbudum	*makad̀*	*ma-Økad̀			1
Daba	*makad̀*				1
1. *n (> r) > d̀					

MAFA

Mafa	*makar*	*ma-ØkarØ	*ma-xkana	1
Cuvok	*mahkar* maxkar	*ma-xkarØ		1
1. *n > r				

TERA

Ga'anda	*mahkan* maxkan	*ma-xkanØ	*ma-xkana	
SUKUR				
Sukur	*maakən*	*ma-Øakn	*ma-xaknØ	*ma-xakna	1
1. ə-epenthesis; for vowel length see fn.				

HURZA

				√ C CaCa	
Vame	*ma^{n}gan*	*ma-Ø^{n}gan	*m^{n}a-xkanØ	*ma-xkana	1
				√ CaCaCa	
Mbuko	*maakan*	*ma-Øakan	*ma-xakanØ	*ma-xakana	2
1. *k > g; *m > m^{n}; +N: g > ^{n}g 2. for vowel length see fn.					

MARGI

				√ C C Ca	
Bura	*makir* makə^{y}r	*ma-Økr-Ø^{y}	*ma-xkrØ-y	*ma-xkna-y	1
				√ CaC Ca	
Margi-South	*maakər* maakər	*ma-ØakrØ		*ma-xakna(-k^{w})	2
Kilba	*maakəru* maakərw	*ma-Øakr-w	*ma-xakrØ-k^{w}		3
1. *n > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *n > r; for vowel length see fn.; ə-epenthesis 3. *n > r; *k^{w} > w > u; for vowel length see fn.; ə-epenthesis					

[151] The unique occurrence of labialised /m^{w}/ in Bata is somewhat enigmatic. It is here explained as resulting from the desegmentalisation of suffixal */k^{w}/ > Ø^{w} with subsequent leftward transfer of the labialisation to yield m^{w}. The segmental loss of */x/ in root-initial position creates a long surface vowel [aa], which may lead to a synchronic interpretation of the shape of the prefix being m^{w}a- in Bata.

MANDARA

					√ C C Ca	
Matal	*makᵊr* makər	*ma-ØkrØ			*(ma-)xkna (-ɗa/-y(-a))	1
Podoko	*makəra* makəra	*ma-Økra				1
Mandara	*keye* kaʸyaʸ	*ka-yʸa		ØkØa-yʸa		2
Dghwede	*xkre* xkraʸ	*xkra-Øʸ		*xkra-y		3
Glavda	*xkɾɗa* xkɾɗa	*xkrØ-ɗa				4
					√ C CaCa	
Malgwa	*keǧye* kaʸgʸaʸ	*kaʸɗʸaʸ	*kaɗa-Øʸ	*Økaɗa-y	*xkana-y	5
1. *n > r; ə-epenthesis 2. *y > yʸ; +Y: *a > e 3. *n > r; *y > Øʸ; +Y: lexical-final *a > e 4. *n > ɾ 5. *n (> r) > ɗ; *y > Øʸ; +Y: ɗ > ɗʸ > ǧʸ; +Y: *a > e						

MOFU

				√ C C Ca	
Muyang	*mahkər* maxkər	*ma-xkrØ		*ma-xkna	1
Gemzek	*makər*	*ma-Økr	*ma-xkrØ		1
				√ C CaCa	
Gemzek	*makar*	*ma-ØkarØ		*ma-xkana	2
Moloko	*makar*				2
Dugwor	*makar*				2
Mofu-North	*makar*				2
Ouldeme	*makar*				2
Merey	*mahkar* maxkar	*ma-xkarØ			2
				√ CaCaCa	
Mofu-Gudur	*maakar*	*ma-ØakarØ		*ma-xakana	3
1. *n > r; ə-epenthesis 2. *n > r 3. *n > r; for vowel length see fn.					

MAROUA

					√ C C Ca	
Giziga-Muturwa	*makir* makəʸr	*ma-kr-Øʸ	*ma-ØkrØ-y		*ma-xkna-y	1
Giziga-Marva	*makir* makəʸr					1
					√ C CaCa	
Mbazla	*makaŋ*	*ma-kaŋ	*ma-ØkanØ-kʷ		*ma-xkana-kʷ	2
					√ CaCaCa	
Mbazla	*maakaŋ*	*ma-akaŋ	*ma-ØakanØ-k		*ma-xakana-kʷ	3
1. *n > r; ə-epenthesis; +Y: ə > i 2. *kʷ > k; fusion *nk > ŋ 3. *kʷ > k; fusion *nk > ŋ; for vowel length see fn.						

LAMANG

Lamang	*hkəna* xkəna	*xkna	*xkna	1
Hdi	*həkən* xəkən	*xknØ		1
1. ə-epenthesis				

HIGI

				√ C C Ca	
Kirya	*makən*	*ma-ØknØ		*ma-xkna(-k^{w}a)	1
Psikye	*maxkən(ə)*	*ma-xkna			2
Kamwe-Nkafa	*makənə*	*ma-Økna			2
Kamwe-Futu	*makəo* makəa^{w}	*ma-ka-Ø^{w}a	*ma-ØkØa-k^{w}a		3
				√ C CaCa	
Bana	*mahkan* maxkan	*ma-xkanØ		*ma-xkana	
1. ə-epenthesis 2. ə-epenthesis; lexical-final *a > ə 3. ə-epenthesis; +W: lexical-final *a > ə; *k^{w} > Ø^{w}; +W: FV *a > o					

tomb

PCC/Areal root[152] ***dz(a)v(a)ya** (-k^{w}, -n)

DABA

Daba	*tʃivi'* ts^{y}ə^{y}vyʔ	*tsvy^{y}-ʔ	*tsvyØ-k^{w}	*dzvya-k^{w}	1
1. *dz > ts; *y > y^{y} > i; +Y: ts > tʃ; +Y: ə > i; *k^{w} (> k) > ʔ; ə-epenthesis; lexical-final *a > ə					

MAFA

				√ C CaCa	
Cuvok	*dʒəvay* dz^{y}əvay	*dzvay^{y}Ø		*dzvaya	1
				√ CaCaCa	
Mafa	*dzavay*	*dzavayØ		*dzavaya	
1. *y > y^{y}; +Y: *dz > dʒ; ə-epenthesis					

HURZA

Mbuko	*dʒəvay* dz^{y}əvay	*dzvay^{y}Ø	*dzvaya	1
1. *y > y^{y}; +Y: *dz > dʒ; ə-epenthesis				

MANDARA

Matal	*zəvay*	*zvayØ	*dzvaya(-k^{w})	1
Podoko	*dʒuve* dz^{y}ə^{w}va^{y}	*dzvaØ^{y}-Ø^{w}	*dzvayØ-k^{w}	2
1. *dz > z; ə-epenthesis 2. *y > Ø^{y}; +Y: *dz > dʒ; +Y: lexical-final *a > e; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u				

MOFU

				√ C C Ca	
Gemzek	*dzəva*	*dzvØa		*dzvya	1
Zulgo	*dive* də^{y}va^{y}	*dvØ^{y}a			2
				√ C CaCa	
Merey	*tsəvay*	*tsvayØ		*dzvaya	3
Mofu North	*tsəvay*				3
Mofu-Gudur	*tsəvay*				4

[152] According to Gravina (2015), "[t]he range of use of the root implies an origin in the Mandara Mountains, and may reflect an ancient Daba-Mafa practice."

1. ə-epenthesis 2. *dz > d; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 3. *dz > ts; ə-epenthesis

MAROUA

Giziga-Muturwa	*zivi* zəʸvy	*zvyʸØ	*dzvya	1
Giziga-Marva	*zive* zəʸvaʸ	*zvØʸa		2
1. *dz > z; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *dz > z; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e				

LAMANG

Lamang	*vduŋ* vdəʷŋ	*vd-ŋʷ	*dvØØ-ŋʷ	*dzvya-kʷ-n	1
1. *dz > d; metathesis dv > vd; ə-epenthesis; fusion kʷn > ŋʷ; +W: ə > u					

tongue$_1$

PCC/areal root *(ɗa-, ma-, na-) **r(a)n(a)xa** (**-ɗ**, -y, -kʷ, -n)

MAFA

Mafa	*le'en* laʸʔaʸn	*laʔan-Øʸ	*ʔa-lanØØ-y	*ɗa-ranxa-y	*(ɗa-)ranxa -y(-kʷ-n)	1
	lene laʸnaʸ	*lana-Øʸ	*lanØa-y			2
Cuvok	*neneŋ* naʸnaʸŋ	*nana-Øʸ-ŋ-Ø	*lanØa-y-k-n			3
1. *r > l; *ɗ > ʔ; metathesis ʔl > lʔ; *y > Øʸ; +Y: *a > e 2. *r > l; *y > Øʸ; +Y: *a > e 3. (*r > l) assimilation *r/l > n/_n; *y > Øʸ; +Y: *a > e; *kʷ > k; fusion *kn > ŋ						

MANDARA

				√ C C Ca	
Mandara	*nara*	*na-ra	*na-rØØa	*(na-)rnxa(-y)	
Malgwa	*nare* naraʸ	*na-ra-Øʸ	*na-rØØa-y		1
Dghwede	*rəxe* rəxaʸ	*rxa-Øʸ	*rØxa-y		2
				√ CaC Ca	
Matal	*alah* alax	*Øa-lax	*na-laØxØ	*na-ranxa(-y)	3
Glavda	*ɛr̄ɛx̄* aʸraʸx	*Øa-rax-Øʸ	*na-raØØxØ-y		4
1. *y > Øʸ; +Y: *a > e 2. ə-epenthesis; *y > Øʸ; +Y: *a > e 3. *r > l; 4. *r > r̄; *y > Øʸ; +Y: *a > ɛ					

MOFU

				√ C C Ca	
Ouldeme	*maro* maraʷ	*ma-ra-Øʷ	*ma-rØØa-kʷ	*(ma-)rnxa (-ɗ-kʷ)	1
Muyang	*arəɗ*	*Øa-ra-ɗ	*ma-rØØa-ɗ		2
Mada	*arra*	*Øa-rra	*ma-rnØa		3
				√ C CaCa	
Moloko	*hərnek* xərnaʸk	*xrna-Øʸ-k	*rnaxØ-y-k	*(ɗa-) rnaxa(-y(-kʷ))	4
Merey	*ɗərneh* ɗərnaʸx	*dØ-rnax-Øʸ	*ɗa-rnaxØ-y		5
Mofu-Gudur	*ɗərne* ɗərnaʸ	*dØ-rna-Øʸ	*ɗa-rnaØØ-y		5
Zulgo	*arah* arax	*Øa-rax	*ɗa-rØaxØ		
Gemzek	*arah* arax				

				√ CaCaCa	
Mofu-Gudur	*neneh* naʸnaʸx	*nanax-Øʸ	*ranaxØ-y	*ranaxa-y	6
1. *kʷ > Øʷ; +W: lexical-final *a > o 2. lexical-final *a > ə 3. assimilation *n > r/r_ 4. *kʷ > k; multiple metathesis nrx > xrn; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 5. ə-epenthesis; *y > Øʸ; +Y: *a > e 6. assimilation *r > n/_n; *y > Øʸ; +Y: *a > e					

MAROUA

Giziga-Muturwa	*'irne* ʔəʸrnaʸ	*ʔØ-rna-Øʸ	*ɗa-rnØa-y	*(ɗa-)rnxa-y(-ɗ)	1
	irne əʸrnaʸ	*rna-Øʸ	*rnØa-y		2
Giziga-Marva	*irne* əʸrnaʸ				2
Mbazla	*ne* naʸ	*na-Øʸ	*ØnØa-y		3
	nɛ' naʸʔ	*na-Øʸ-ʔ	*ØnØa-y-ɗ		4
1. *ɗ > ʔ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 2. ə-prothesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 3. *y > Øʸ; +Y: lexical-final *a > e 4. *ɗ > ʔ; *y > Øʸ; +Y: lexical-final *a > E					

tongue$_2$

PCC/areal root *(kʷa-, na-) **g(a)na** (-RED, -ɗ, -y, -kʷ, -n; FV)

BATA

Tsuvan	*agana*	*Øa-gana	*kʷa-gana	*(kʷa-)gana(-y-n)	
Sharwa	*gana*	*gana			
Jimi	*gianan* gʸanan	*gana-Øʸ-n	*gana-y-n		1
1. *y > Øʸ; +Y: *g > gʸ					

DABA

Mbudum	*ganaɗ*	*gana-ɗ		*gana(-RED, -ɗ, -kʷ/-na)	
Gavar	*gaɗaɗaŋ*	*gaɗa-ɗa-ŋ	*gaɗa-RED-ŋ < *gaɗaŋ	*gaɗa-n-k < *gana-ɗ-kʷ	1
Buwal	*ganana*	*gana-na			
Daba	*gana*	*gana			
1. metathesis nɗ > dn; *kʷ > k; fusion kn > ŋ					

TERA

				√ C Ca	
Tera	*ɣin* ɣəʸn	*ɣn-Øʸ	*ɣnØ-y	*gna-y	1
				√ CaCa	
	ɣena ɣaʸna	*ɣana-Øʸ	*ɣana-y	*gana-y	2
1. *g > ɣ; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. *g > ɣ; *y > Øʸ; +Y: a > e					

SUKUR

Sukur	*ɣanay*	*ɣana-y	*gana-y	1
	ɣanai ɣanay			1
1. *g > ɣ				

MARGI

Bura	*keᵑgyar* kaʸŋgyar	*ka-nØ-gar-Øʸ	*ka-na-garØ-y	*(kʷa-na-) gana-y	1
Margi	*kyar* kʸar	*kar-Øʸ	*karØ-y		2
Margi-South	*kyar* kʸar				2
Kilba	*kyar* kʸar				2
1. *n > r; *kʷ > k; *y > Øʸ; +Y: *g > gʸ; +Y: *a > e; homorganic assimilation n > ŋ/__gʸ 2. *n > r; *g > k; *y > Øʸ; +Y: k > kʸ					

LAMANG

Lamang	*ɣene* ɣaʸnaʸ	*ɣana-Øʸ	*ɣana-y	*gana-y(-kʷ)	1
Hdi	*ɣanik* ɣanyk	*ɣan-y-k	*ɣanØ-y-kʷ		2
1. *g > ɣ; *y > Øʸ; +Y: *a > e 2. *g > ɣ; *kʷ > k; y > i					

HIGI

				√ C Ca	
Kamwe-Nkafa	*annyə* annʸə	*Øa-nØ-n-Øʸa	*ka-na-ØnØ-ya	*kʷa-(na-)gna-ya	1
	aniə anʸə	*Øa-n-Øʸa	*ka-ØnØ-ya		1
				√ CaCa	
Bana	*ɣani* ɣany	*ɣan-y	*ɣanØ-y	*(na-)gana(-y)	2
Kamwe-Futu	*ɣani* ɣany				2
Kirya	*nɣanə* nɣanə	*nØ-ɣana	*na-ɣana		3
1. *kʷ > k; *y > Øʸ; +Y: *n > nʸ; FV *a > ə 2. *g > ɣ; *y > i 3. *g > ɣ; lexical-final *a > ə					

tongue$_3$

Areal root *(ma-) **n(a)ɬa** (-a, -y)

HURZA

Mbuko	*mireɬ* məʸraʸɬ	*mØ-raɬ-Øʸ	*ma-raɬØ-y	*ma-naɬa-y	1
Vame	*mənelɬ* mənaʸɬ	*mØ-naɬ-Øʸ	*ma-naɬØ-y		2
1. *n > r; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e 2. ə-epenthesis; *y > Øʸ; +Y: *a > e					

MOFU

Dugwor[153]	*hərnelɬ* (xər-)naʸɬ	*naɬ-Øʸ	*naɬØ-y	*naɬa-y	1
1. *y > Øʸ; +Y: *a > e					

KOTOKO-NORTH

Afade	*enɬi* aʸnɬy	*Øa-nɬ-yʸ	*ma-nɬØ-y	*ma-nɬa-y	1
Malgbe	*enɬi* aʸnɬy				1
Mpade	*enʃi* aʸnsʸy	*Øa-ns-yʸ	*ma-nsØ-y		2
1. *y > yʸ > i; +Y: *a > e 2. *ɬ > s; *y > yʸ > i; +Y; s > ʃ; +Y: *a > e					

KOTOKO-CENTRAL

Lagwan	*nɬi* nɬy	*nɬ-y	*nɬØ-y	*(ma-)nɬa-y	1
Mser	*ensi* aʸnsy	*Øa-ns-yʸ	*ma-nsØ-y		2
	enʃi aʸnsʸy				3

[153] A potential compound, whose first part **xəɾ-* remains unidentified.

1. *y > i 2. *ɬ > s; *y > y^y > i; +Y: *a > e 3. *ɬ > s; *y > y^y > i;+Y: s > ʃ; +Y: *a > e					
Kotoko-South					
Zina	*anisə* anə^{y}sə	*Øa-nsa-Ø^y	*ma-nsa-y	*(ma-)nɬa-y	1
Mazera	*insa* ə^{y}nsa	*nsa-Ø^y	*nsa-y		2
1. *ɬ > s; ə-epenthesis; *y > Ø^y; +Y: ə > i 2. *ɬ > s; ə-prothesis; *y > Ø^y; +Y: ə > i					
Musgum					
Mbara	*nałay*	*nał-ay	*nałØ-a-y	*nała-a-y	

tooth

PCC *(xa-, RED) **ɬ(a)ɗ(a)na** (-y, -k^w, -n, -t; FV)

Bata

Bata	*linto* lynta^w	*lyn-t-Ø^{w}a	*lynØ-t-k^{w}a	*ɬɗna(-n(a)/-t, -k^{w}a)	1
Gude	*linyinə* lə^{y}nyə^{y}nə	*lny^y-na	*lynØ-na		2
Jimi	*linyən* lə^{y}nyən	*lny^y-n	*lynØ-n		3
Sharwa	*linyə* lə^{y}nyə	*lny^{y}a	*lyna		4
Tsuvan	*ɣine* ɣyna^y	*ɣy^{y}na	*ɣyna		5
1. *ɬ > l; *ɗ > y; *k^w > Ø^w; *y > i; +W: FV *a > o 2. *ɬ > l; *ɗ > y; metathesis yn > ny; ə-epenthesis; *y > y^y; +Y: ə > i; FV *a > ə 3. *ɬ > l; *ɗ > y; metathesis yn > ny; ə-epenthesis; *y > y^y; +Y: ə > i 4. *ɬ > l; *ɗ > y; metathesis yn > ny; ə-epenthesis; *y > y^y; +Y: ə > i; lexical-final *a > ə 5. *ɬ > ɣ; *ɗ > y; ə-epenthesis; *y > Ø^y; +Y: ə > i; +Y: lexical-final *a > e					

Daba

Buwal	*ɣədɗə^{y}ŋ*	*ɣɗaŋ-Ø^y	*ɣɗanØ-y-k	*ɬɗana-y-k^w	1
Gavar	*ɣidɗeŋ* ɣə^{y}dɗə^{y}ŋ				2
1. *ɬ > ɣ; ə-epenthesis; *y > Ø^y; +Y: lexical-final *a > e; *k^w > k; fusion *nk > ŋ 2. *ɬ > ɣ; ə-epenthesis; *y > Ø^y; +Y: ə > i; +Y: lexical-final *a > e; *k^w > k; fusion *nk > ŋ					

Mafa

Mafa	*ɣene* ɣa^{y}na^y	*ɣØ^{y}ana	*ɣyana	*ɬɗana(-k^w)	1
Cuvok	*ɣeŋ* ɣa^{y}ŋ	*ɣØ^{y}aŋ	*ɣyan-k		2
1. *ɬ > ɣ; *ɗ > y; *y > Ø^y; +Y: *a > e 2. *ɬ > ɣ; *ɗ > y; *y > Ø^y; +Y: a > e; *k^w > k; fusion *nk > ŋ					

Tera

Tera	*ɣin* ɣə^{y}n	*ɣØ^{y}n	*ɣynØ	*ɬɗna	1
1. *ɬ > ɣ; *ɗ > y; ə-epenthesis; *y > Ø^y; +Y: ə > i					
Sukur					
Sukur	*ɣin* ɣə^{y}n	*ɣØ^{y}n	*ɣynØ	*ɬɗna	1
	ɣyin ɣ^{y}ə^{y}n				2
1. *ɬ > ɣ; *ɗ > y; ə-epenthesis; *y > Ø^y; +Y: ə > i 2. *ɬ > ɣ; *ɗ > y; ə-epenthesis; *y > Ø^y; +Y: ɣ > ɣ^y; +Y: ə > i					

Hurza

Mbuko	*ɬan*	*ɬan	*ɬaØnØ	*(xa-)ɬaɗna	
Vame	*ɬahan*	*ɬaxan	*xa-ɬaØnØ		1
1. metathesis xɬ > ɬx					

MARGI

Margi	*hyir* xʸəʸr	*xØʸr	*xyrØ	*łɗna	1
Margi-South	*hyir* xʸəʸr				1
Kilba	*hyir* xʸəʸr				1
Bura	*hyir* xʸəʸr				1
	hir xyr	*xyr			2
	łir łyr	*łyr	*łyrØ		3

1. *n > r; *ł > x; *ɗ > y; *y > Øʸ; +Y: x > xʸ; +Y: ə > i
2. *n > r; *ł > x; *ɗ > y > i
3. *n > r; *ɗ > y > i

MANDARA

				√ C C Ca	
Glavda	*łrɗa*	*łrɗa	*łɗra	*łɗna(-y)	1
Matal	*łɗ* łəʸɗ	*łɗ-Øʸ	*łɗØØ-y		2
Podoko	*łira* łyra	*łyra			3
Dghwede	*łire* łyraʸ	*łyʸra	*łyra		4
				√ CaCaCa	
Mandara	*łare* łaraʸ	*łaØʸra	*łayØra	*łaɗana	5
Malgwa	*thlaare* łaaraʸ	*łaØʸara	*łayana		5

1. *n > r; metathesis dr > rɗ
2. ə-epenthesis; *y > Øʸ; +Y: ə > I
3. *n > r; *ɗ > y > i
4. *n > r; *ɗ > yʸ > i; +Y: lexical-final *a > e
5. *n > r; *ɗ > y > Øʸ; Y: lexical-final *a > e

MOFU

				√ C C Ca	
Muyang	*ałər*	*Øa-łr	*xa-łØrØ	*(xa-)łɗna	1
Zulgo	*ɮir* ɮyr	*ɮyr	*ɮyrØ		2
				√ C CaCa	
Ouldeme	*ałar*	*Øa-łar	*xa-łØarØ	*(xa-)łɗana	3
Mada	*ałar*				3
Moloko	*ałar*				3
Gemzek	*ɮer* ɮaʸr	*ɮØʸar	*ɮyarØ		4
Merey	*ɮer* ɮaʸr				4
Dugwor	*ɮer* ɮaʸr				4
Mofu North	*łer* łaʸr	*łØʸar	*łyarØ		5
Mofu-Gudur	*łer* łaʸr				5

1. *n > r; ə-epenthesis
2. *n > r; *ł > ɮ; *ɗ > y > i
3. *n > r
4. *n > r; *ł > ɮ; *ɗ > y > Øʸ; +Y: a > e
5. *n > r; *ɗ > y > Øʸ; +Y: a > e

MAROUA

Giziga-Marva	*lin* łyn	*łyn	*łynØ	*łɗna(-kʷ)	1
Gizia-Muturwa	*liŋ* łyŋ				2

Mbazla	*liŋ* łyŋ	*łyŋ	*łynØ-k		2
	hiŋ xyŋ	*xyŋ	*xynØ-k		3
1. *ɗ͡ > y > i 2. *ɗ͡ > y > i; *kʷ > k; fusion nk > ŋ 3. *ɬ > x; *ɗ͡ > y > i; *kʷ > k; fusion nk > ŋ					

LAMANG

Lamang	*łdi͡ŋ* łdəʸŋ	*łdi͡ŋ-Øʸ	*łdi͡nØ-y-k	*łdi͡na-y-kʷ	1
Hdi	*łi'iŋ* łəʸʔəʸŋ	*łʔŋ-Øʸ	*łʔnØ-y-k		2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ 2. *ɗ͡ > ʔ; ə-epenthesis; *y > Øʸ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ					

HIGI

				√ C C Ca	
Psikye	*łənə*	*łna	*łØna	*łdi͡na(-kʷ)	1
Bana	*łini* łəʸny	*łnyʸ	*łynØ		2
Kamwe-Futu	*łino* łynaʷ	*łyna-Øʷ	*łyna-kʷ		3
				√ CaC Ca	
Kirya	*łay*	*łay	*łayØØ	*ładi͡na	4
1. ə-epenthesis; lexical-final *a > ə 2. metathesis dn̄ > nɗ; ə-epenthesis; *ɗ͡ > y > yʸ > i; +Y: ə > i 3. *ɗ͡ > y > i; *kʷ > Øʷ; +W: lexical-final *a > o 4. *ɗ͡ > y					

KOTOKO-ISLAND

Buduma	*hənay*	*xnay	*xyanØ	*łdi͡ana	1
1. *ɬ > x; *ɗ͡ > y; metathesis yn > ny; ə-epenthesis					

KOTOKO-NORTH

				√ C C Ca	
Afade	*łir* łəʸr	*łØʸr	*łyrØ	*łdi͡na	1
Malgbe	*łir* łəʸr				1
				√ C CaCa	
Mpade	*ʃan* sʸan	*sØʸan	*syanØ	*łdi͡ana	2
1. *n > r; ə-epenthesis; *ɗ͡ > y > Øʸ; +Y: ə > ɨ 2. *ɬ > s; *ɗ͡ > y > Øʸ; +Y: s > ʃ					

KOTOKO-CENTRAL

Lagwan	*łini* łəʸny	*łnyʸ	*łynØ	*łdi͡na	1
Mser	*sɨr* səʸr	*sØʸr	*syrØ		2
1. ə-epenthesis; *ɗ͡ > y > yʸ > i; +Y: ə > ɨ 2. *n > r; *ɬ > s; ə-epenthesis; *ɗ͡ > y > Øʸ; +Y: ə > ɨ					

KOTOKO-SOUTH

Zina	*sin* syn	*syn	*synØ	*łdi͡na	1
Mazera	*sine* synaʸ	*syˠna	*syna		2
1. *ɬ > s; *ɗ͡ > y > i 2. *ɬ > s; *ɗ͡ > y > yʸ > i; +Y: lexical-final *a > e					

MUSGUM

Vulum	*liŋłiŋ* łəʸŋłəʸŋ	*ØʸŋʰØʸŋ	*RED-łynØ-k	*RED-łdi͡na-kʷ	1
1. ə-epenthesis; *ɗ͡ > y > Øʸ; +Y: ə > i; *kʷ > k; fusion *nk > ŋ					

Gidar					
Gidar	*ɬaya*	*ɬaya	*ɬayØa	*ɬaɗna	1
1. *ɗ > y					

tree

PCC *(na-) **xʷ(a)fa** (-n, -kʷ; FV)

Bata					
Gude	*uf* wf	*wfØ		*(na-)xʷfa (-y, -n, -kʷa)	1
	ənfʷa ənfʷa	*nØ-Øʷfa	*na-xʷfa		2
Jimi	*fʷən* fʷən	*Øʷfa-n	*xʷfa-n		3
Sharwa	*fʷəgə* fʷəgə	*Øʷf-ga	*xʷfØ-ka		4
Tsuvan	*fʷege* fʷaʸgaʸ	*Øʷfa-Øʸ-ga	*xʷfa-y-ka		5
1. *xʷ > w > u 2. *xʷ > Øʷ; +W: f > fʷ; ə-prothesis 3. *xʷ > Øʷ; +W: f > fʷ; ə-epenthesis 4. *xʷ > Øʷ; +W: f > fʷ; *kʷ > k > g; ə-epenthesis; FV *a > ə 5. *xʷ > Øʷ; +W: f > fʷ; *kʷ > k > g; *y > Øʸ; +Y: *a > e					
Mafa					
Mafa	*waf* waf	*waf	*wafØ	*xʷafa	1
1. *xʷ > w					
Sukur					
Sukur	*fwai* fʷay	*Øʷfa-y		*xʷfa-y	1
	fwoy fʷaʷy				2
1. *xʷ > Øʷ; +W: f > fʷ; *y >i 2. *xʷ > Øʷ; +W: f > fʷ; +W: *a > o; *y >i					
Margi					
Margi	*wu* wʷəʷ	*wʷØa		*(na-)xʷfa	1
Kilba	*wa* wa	*wØa			2
Bura	*ɲfʷa* nfʷa	*nØ-Øʷfa	*na-xʷfa		3
1. *xʷ > wʷ; lexical-final *a > ə; +W: ə > u 2. *xʷ > w 3. xʷ > Øʷ; +W: f > fʷ					
Mandara					
				√ C Ca	
Podoko	*nafa* nafa	*na-fa	*na-Øfa	*(na-)xʷfa	
Mandara	*nafa* nafa				
Dghwede	*ʔufa* ʔʷəʷfa	*ʔʷfa			1
Glavda	*u:fa* əʷwfa	*wʷfa			2
	u w	*w	*wØØ		3
				√ CaCa	
Matal	*ahaf* axaf	*Øa-xaf	*na-xafØ	*na-xʷafa	4
1. *xʷ > ʔʷ; ə-epenthesis; +W: ə > u					

2. *x^{w} > w^{w}; ə-prothesis; +W: ə > u 3. *x^{w} > w > u 4. *x^{w} > x

MOFU

Dugwor	*h^{w}af* x^{w}af	*x^{w}af	*x^{w}afØ	*x^{w}afa	
Muyang	*haf* xaf	*xaf	*xafØ		1
1. *x^{w} > x					

LAMANG

Lamang	*ufu* wfə^{w}	*w^{w}fa	*wfa	*x^{w}fa	1
Hdi	*fu* fw	*fw	*wfØ		2
1. *x^{w} > w^{w} > u; lexical-final *a > ə; +W: ə > u 2. *x^{w} > w > u; metathesis wf > fw					

HIGI

Kamwe-Nkafa	*f^{w}ə* fwə	*fwa	*wfa	*x^{w}fa	1
Kirya	*f^{w}ə* fwə				1
Kamwe-Futu	*f^{w}o* f^{w}a^{w}	*Ø^{w}fa			2
Bana	*fə* fə	*fa	*Øfa		3
1. *x^{w} > w; metathesis wf > fw; lexical-final *a > ə 2. *x^{w} > w > Ø^{w}; +W: *f > f^{w}; +W: lexical-final *a > o 3. lexical-final *a > ə					

KOTOKO-SOUTH

Zina	*mafu* mafw	*ma-fw	*ma-wfØ	*ma-x^{w}fa	1
1. *x^{w} > w > u; metathesis wf > fw					

two$_{1}$

Areal root ***k(a)sa*** (-y, -k^{w}, -d; FV)

LAMANG

			√ C Ca	
Hdi	*his* xə^{y}s	*xsØ-Ø^{y}	*ksa-y	1
			√ CaCa	
Lamang	*hesa* xa^{y}sa	*xasa-Ø^{y}	*kasa-y	2
	hasha xas^{y}a			3
1. *k > x; ə-epenthesis; *y > Ø^{y}; +Y: ə > i 2. *k > x; *y > Ø^{y}; +Y: a > e 3. *k > x; *y > Ø^{y}; +Y: *s > ʃ				

KOTOKO-ISLAND

Buduma	*kixi* kə^{y}xy	*kxØ-y^{y}	*ksa-y	1
1.*s > x; ə-epenthesis; *y > y^{y} > i; +Y: ə > i				

KOTOKO-NORTH

Afade	*gasi* gasy	*gasØ-y	*kasa-y	1
Mpade	*gasi* gasy			1
1. *k > g; *y > i				

KOTOKO-CENTRAL

Lagwan	*xsɨdə* xsəʸdə	*xs-Øʸ-də	*xsØ-y-də	*ksa-y-də/-kʷ	1
Mser	*kitfo* kəʸtsʸaʷ	*ktsa-Øʸ-Øʷ	*ktsa-y-kʷ		2
1. *k > x; ə-epenthesis; *y > Øʸ; +Y: ə > ɨ 2. *s > ts; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: ts > tʃ; *kʷ > Øʷ; +W: lexical-final *a > o					

two$_2$

Areal root ***ɓy(a)ka*** (-a, -kʷ; FV)

BATA

				√ C C Ca	
Jimi	*biik* bəʸyk	*byʸk	*byʸkØ	*ɓyka	1
				√ C CaCa	
Bata	*kpyaq*	*kpyaq	*kpyaqØ	*ɓyaka	2
1. *ɓ > b; ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *ɓ > kp; *k > q					

DABA

				√ C C Ca	
Mbudum	*bək*	*bØkØ		*ɓyka	1
				√ C CaCa	
Buwal	*gbak*	*gØ-bØakØ		*kʷa-ɓyaka	2
Gavar	*gbak*				2
1. *ɓ > b; ə-epenthesis 2. *ɓ > b; prefixal *kʷ (> k) > g					

SUKUR

Sukur	*bak*	*bØakØ		*ɓyaka	1
1. *ɓ > b					

MANDARA

Mandara	*bua* bwa	*b-wa	*bØØØ-kʷa	*ɓyka-kʷa	1
Malgwa	*buwa* bəʷwa	*b-wʷa			2
Glavda	*bu:wa* bəʷwwa	*bw-wʷa	*bØkØ-kʷa		3
1. *ɓ > b; *kʷ > w > u 2. *ɓ > b; *kʷ > w; ə-epenthesis; +W: ə > u 3. *ɓ > b; *k > w; *kʷ > w; assimilation kw > ww; ə-epenthesis; +W: ə > u					

HIGI

				√ C C Ca	
Kirya	*ɓəkə*	*ɓØka		*ɓyka	1
				√ C CaCa	
Bana	*bak(ə)*	*bØaka		*ɓyaka(-kʷ(a))	2
Psikye	*bak*	*bØakØ			3
Kamwe-Nkafa	*ɓwagə*	*ɓaga-Øʷ	*ɓØaka-kʷ		4
Kamwe-Futu	*ɓakəo* ɓakəaʷ	*ɓaka-Øʷa	*ɓØaka-kʷa		5
1. ə-epenthesis; lexical-final *a > ə 2. *ɓ > b; lexical-final *a > ə 3. *ɓ > b 4. *kʷ > Øʷ; +W: ɓ > ɓʷ; *k > g; lexical-final *a > ə 5. lexical-final *a > ɔ; *kʷ > Øʷ; +W: FV *a > o					

two_3

PCC *(ma-, RED-) **s(a)y(a)ra**[154] (-k^{w})

DABA

Daba	*səray*	*sray	*syarØ	*syara	1
1. metathesis yr > ry; ə-epenthesis					

MAFA

Mafa	*tʃew* ts^{y}a^{y}w	*tsØ^{y}a-w	*tsyaØØ-k^{w}	*(ma-/RED-) syara-k^{w}	1
	tʃetʃew ts^{y}a^{y}ts^{y}a^{y}w	*tsa-tsØ^{y}a-w	*RED-tsyaØØ-k^{w}		1
Cuvok	*atʃew* ats^{y}a^{y}w	*Øa-tsØ^{y}a-w	*ma-tsyaØØ-k^{w}		1
1. *s > ts; *k^{w} > w; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e					

TERA

Ga'anda	*sərri* sərrə^{y}	*srrə^{y}	*sy^{y}rə	*syra	1
1. lexical-final *a > ə; *y > y^{y}; +Y: ə > i; assimilation *yr > rr					

HURZA

Mbuko	*tʃew* ts^{y}a^{y}w	*tsØ^{y}a-w	*tsyØa-k^{w}	*syara-k^{w}	1
Vame	*tʃaw* ts^{y}aw				2
1. *s > ts; *k^{w} > w; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e 2. *s > ts; *k^{w} > w; *y > Ø^{y}; +Y: ts > tʃ					

MARGI

Bura	*suda* sə^{w}da	*sda-Ø^{w}	*sØda-k^{w}	*syra-k^{w}	1
1. *r > d; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					

MANDARA

Matal	*sᵊla*	*sla	*sØla	*syra	1
Podoko	*səra*	*sra	*sØra		2
1. *r > l; ə-epenthesis 2. ə-epenthesis					

MOFU

				√ C C Ca	
Mada	*səla*	*sla	*sØla	*(RED-)syra(-k^{w})	1
Dugwor	*səla*				1
Gemzek	*sulo* sə^{w}la^{w}	*sla-Ø^{w}	*sØla-k^{w}		2
Merey	*sulo* sə^{w}la^{w}				2
Ouldeme	*tsiyo* tsə^{y}ya^{w}	*tsy^{y}a-Ø^{w}	*tsyØa-k^{w}		3
Muyang	*tʃiɨ* ts^{y}ə^{w}	*tsØ^{y}ə-Ø^{w}			4
	tʃitʃiɨ ts^{y}ə^{y}ts^{y}ə^{w}	*ts-tsØ^{y}ə-Ø^{w}	*RED-*tsyØa-k^{w}		5
				√ C CaCa	
Zulgo	*sala*	*sala	*sØala	*syara(-k^{w})	
Moloko	*tʃew* ts^{y}a^{y}w	*tsØ^{y}a-w	*tsyØa-k^{w}		6
Mofu North	*tʃew* ts^{y}a^{y}w				6
Mofu-Gudur	*tʃew* ts^{y}a^{y}w				6

[154] This root for 'two' is likely the reflex of a Proto-Chadic root, cf. ***sər(-)** (Newman 1977: 33), ***sr (-y,-n,-d)** (Jungraithmayr & Shimizu 1981: 277). Gravina (2015) reconstructs two different roots (within a total of four), namely ***tsiyiw** and ***siwra**, which we here consider original cognates that have undergone different diachronic developments before they occasionally ended up in same language groups by different paths of inter-dialectal borrowing.

1. *r > l; ə-epenthesis
2. *r > l; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; +W: lexical-final *a > o
3. *s > ts; ə-epenthesis; *y > y^{y}; +Y: ə > i; *k^{w} > Ø^{w}; +W: lexical-final *a > o
4. *s > ts; *y > Ø^{y}; +Y: ts > tʃ; lexical-final *a > ə; *k^{w} > Ø^{w}; +W: ə > ʉ
5. *s > ts; *y > Ø^{y}; +Y: ts > tʃ; +Y: ə > i; lexical-final *a > ə; *k^{w} > Ø^{w}; +W: ə > ʉ
6. *s > ts; *k^{w} > w; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e

MAROUA

Giziga-Muturwa	*tʃiuw* ts^{y}ə^{w}w			*syra-k^{w}	1
Giziga-Marva	*tʃiuw* ts^{y}ə^{w}w				1
Mbazla	*tʃew* ts^{y}a^{y}w	*tsØ^{y}a-w	*tsyØa-k^{w}		2
	tiaw tyaw	*tya-w	*tyØa-k^{w}		3

1. *s > ts; ə-epenthesis; *y > Ø^{y}; +Y: ts > tʃ; *k^{w} > w^{w}; +W: ə > u
2. *s > ts; *y > Ø^{y}; +Y: ts > tʃ; +Y: *a > e ; *k^{w} > w
3. *s (> ts) > t; *y > i; *k^{w} > w

KOTOKO-SOUTH

Zina	*tʃu* ts^{y}w	*tsØ^{y}-w	*tsyØØ-k^{w}	*syra-k^{w}	1

1. *s > ts; *k^{w} > w > u; *y > Ø^{y}; +Y: ts > tʃ

MUSGUM

Vulum	*sulu* sə^{w}lw	*sl-w^{w}	*sØlØ-k^{w}	*syra-k^{w}	1

1. *r > l; ə-epenthesis; *k^{w} > w^{w} > u; +W: ə > u

GIDAR

Gidar	*sula* sə^{w}la	*sla-Ø^{w}	*sØla-k^{w}	*syra-k^{w}	1
	suula sə^{w}wla	*sla-w^{w}			2

1. *r > l; ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u
2. *r > l; ə-epenthesis; *k^{w} > w^{w}; metathesis lw^{w} > w^{w}l; +W: ə > u

untie, to

PCC *(ma-, RED-) **p(a)ra** (-a, -y, -k^{w}, -n, -t; FV)

BATA

Bata	*pər*	*pr	*prØ	*pra(-n)	1
Gude	*pərə*	*pra			2
Jimi	*pərən*	*pra-n			2

1. ə-epenthesis
2. ə-epenthesis; lexical-final *a > ə

DABA

				√ C Ca	
Gavar	*pəl*	*pl	*plØ	*pra	1
Daba	*pəl*				1
				√ CaCa	
Buwal	*pal (laxarɮak)*	*pal	*palØ	*para	2

1. *r > l; ə-epenthesis
2. *r > l

MAFA

Mafa	*pər*	*pr	*prØ	*(ma-)pra(-a-y)	1
Cuvok	*mepəley* ma^{y}pəla^{y}y	*ma-pl-ay^{y}	*ma-plØ-a-y		2

1. ə-epenthesis 2. *r > l; ə-epenthesis; *y > y^{y}; +Y: *a > e					
TERA					
Tera	*pəri* pəry	*pr-y	*prØ-y	*pra-y	1
1. ə-epenthesis; *y > i					
SUKUR					
Sukur	*pər*	*pr	*prØ	*pra	1
1. ə-epenthesis					
HURZA					
Vame	*para*	*para		*para	
MARGI					
Bura	*mpili* mpə^{y}ly	*mØ-pl-y^{y}	*ma-plØ-y	*(ma-)pra(-ya)	1
Kilba	*pəliya* pələ^{y}ya	*pl-y^{y}a	*plØ-ya		2
1. *r > l; ə-epenthesis; *y > y^{y}; +Y: ə > i; *y > i 2. *r > l; ə-epenthesis; *y > y^{y}; +Y: ə > i					
MANDARA					
				√ C Ca	
Matal	*map^{ə}l*	*ma-pl	*ma-plØ	*(ma-)pra(-y(-k^{w}a)	1
Podoko	*pəla*	*pla			1
Malgwa	*pəla*				1
Glavda	*pilga* pə^{y}lga	*pl-$Ø^{y}$-ga	*plØ-y-k^{w}a		2
				√ CaCa	
Mandara	*pale* pala^{y}	pala-$Ø^{y}$	*pala-y	*para-y	3
	pele pa^{y}la^{y}				3
1. *r > l 2. *r > l; *k^{w} (> k) > g; *y > $Ø^{y}$; +Y: ə > i 3. *r > l; *y > $Ø^{y}$; +Y: *a > e					
MOFU					
				√ C Ca	
Merey	*pəla*	*pla		*(ma-)pra ((-a)-y(-k^{w}-n))	1
Zulgo	*pəl*	*pl	*plØ		1
Ouldeme	*pəl*				1
	məpəleŋ məpəla^{y}ŋ	*mØ-pla-$Ø^{y}$-ŋ	*ma-pla-y-k-n		2
	məpəlay	*mØ-plØ-a-y	*ma-plØ-a-y		1
Gemzek	*mepəla* ma^{y}pəla	*ma-pla-$Ø^{y}$	*ma-pla-y		3
				√ CaCa	
Ouldeme	*peleŋ* pa^{y}la^{y}ŋ	*pala-$Ø^{y}$-ŋ	*pala-y-k-n	*para-y-k^{w}-n	4
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; *k^{w} > k; fusion *kn > ŋ 3. *r > l; ə-epenthesis; *y > $Ø^{y}$; +Y: *a > e 4. *r > l; *y > $Ø^{y}$; +Y: *a > e; *k^{w} > k; fusion *kn > ŋ					
LAMANG					
Lamang	*pəla*	*pla		*pra-a-y	1
Hdi	*pəlay*	*pl-ay	*plØ-a-y		1
1. *r > l; ə-epenthesis					

Higi

Kamwe-Futu	*pələntə*	*plnta	*plØ-n-ta	*(ma-)pra(-y/-n-ta)	1
Kirya	*mpəl*	*mpl	*mØ-plØ		2
Bana	*p(ə)li* pəly	*pl-y	*plØ-y		3
1. *r > l; ə-epenthesis; FV *a > ə 2. *r > l; ə-epenthesis 3. *r > l; ə-epenthesis; *y > i					

Kotoko-Island

Buduma	*felu* fa^{y}lw	*fal-Ø^{y}-w	*falØ-y-k^{w}	*para-y-k^{w}	1
1. *p > f; *r > l; *k^{w} > w > u; *y > Ø^{y}; +Y: *a > e					

Kotoko-North

Mpade	*fal*	*fal	*falØ	*para	1
Malgbe	*fal*				1
1. *p > f; *r > l					

Kotoko-Central

				√ C Ca	
Lagwan	*vɨl* və^{y}l	*vl-Ø^{y}	*vlØ-y	*pra-y(-k^{w}-n)	1
	vilun (he) və^{y}lə^{w}n	*vl-Ø^{y}-Ø^{w}-n	*vlØ-y-k^{w}-n		2
				√ CaCa	
Mser	*valyo* valya^{w}	*val-y-Ø^{w}a	*valØ-y-k^{w}a	*para-y-k^{w}a	3
1. *p (> f) > v; *r > l; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ 2. *p (> f) > v; *r > l; *y > Ø^{y}; +Y: ə > ɨ; *k^{w} > Ø^{w}; +W: ə > u 3. *p (> f) > v; *r > l; *k^{w} > Ø^{w}; +W: FV *a > o					

Gidar

Gidar	*əpɨla* əpə^{y}la	*pla-Ø^{y}	*pla-y	*(RED-)pra(-y)	1
	əppəla	*p-pla	*RED-pla		2
1. *r > l; ə-prothesis; *y > Ø^{y}; +Y: ə > ɨ 2. *r > l; ə-prothesis; ə-epenthesis					

urine

PCC *(ma-, sa-) **k^{w}(a)na** (-a, -y, -n, -k^{w}; FV)

Mafa

Mafa	*kuray* k^{w}ə^{w}ray	*k^{w}r-ay	*k^{w}rØ-a-y	*k^{w}na-a-y	1
1. *n > r; ə-epenthesis; +W: ə > u					

Sukur

Sukur[155]	*miskuir* mə^{y}sk^{w}ə^{w}yr	*mØ-sØ-k^{w}y^{y}r	*ma-sa-k^{w}rØ-y	*ma-sa-k^{w}na-y	1
1. *n > r; ə-epenthesis; metathesis ry > yr; *y > y^{y} > i; +Y: ə > i; +W: ə > u					

Hurza

Mbuko	*məkaɗay*	*mØ-kaɗ-ay	*ma-kaɗØ-a-y	*ma-k^{w}ana-a-y	1
Vame	*kəmaɗay*	*kmaɗ-ay			2
	kumaɗay k^{w}ə^{w}maɗay	*k^{w}maɗ-ay	*mØ-k^{w}aɗØ-a-y		3

[155] Prefixal /s/ is unusual as opposed to the widely spread prefixal root augment *ma-, unless we are here dealing with a compound of sorts in which *mis-* represents something entirely different that remains hitherto unidentified.

1. *k^{w} > k; *n (> r) > ɗ; ə-epenthesis
2. metathesis mk > km; *n (> r) > ɗ; ə-epenthesis
3. metathesis mk > km; *n (> r) > ɗ; ə-epenthesis; +W: ə > u

MARGI

Bura	*kini* kəʸny	*kn-yʸ	*knØ-y	*k^{w}na-y	1
Kilba	*kunyi* k^{w}əʷnʸy	*k^{w}n-yʸ	*k^{w}nØ-y		2

1. ə-epenthesis; *k^{w} > k; *y > yʸ > i; +Y: ə > i
2. ə-epenthesis; +W: ə > u; *y > yʸ > i; +Y: n > nʸ; +Y: ə > i

MANDARA

Matal	*kᵊlay* k^{w}lay	*k^{w}lØ-a-y		*k^{w}na(-a)-y(a)	1
Podoko	*kure* k^{w}əʷraʸ	*k^{w}ra-Øʸ	*k^{w}ra-y		2
Mandara	*kure* k^{w}əʷraʸ				2
Malgwa	*kure* k^{w}əʷraʸ				2
Glavda	*kur* k^{w}əʷr	*k^{w}r	*k^{w}rØ		3
	kuriya k^{w}əʷrəʸya	*k^{w}r-yʸa	*k^{w}rØ-ya		4

1. *n (> r) > l
2. *n > r; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e
3. *n > r; ə-epenthesis; +W: ə > u
4. *n > r; ə-epenthesis; +W: ə > u; *y > yʸ; +Y: ə > i

MOFU

Ouldeme	*kunay* k^{w}əʷnay	*k^{w}n-ay	*k^{w}nØ-a-y	*k^{w}na (-a)-y(-k^{w})(-n)	1
Mada	*kʷne* k^{w}naʸ	*k^{w}na-Øʸ	*k^{w}na-y		2
Moloko	*kʷənen* k^{w}əʷnaʸn	*k^{w}na-Øʸ-n	*k^{w}na-y-n		3
Dugwor	*kuneŋ* k^{w}əʷnaʸŋ	*k^{w}na-Øʸ-ŋ	*k^{w}na-y-k-n		4
Mofu North	*kuray* k^{w}əʷray	*k^{w}r-ay	*k^{w}rØ-a-y		5
Mofu-Gudur	*kuray* k^{w}əʷray				5
Muyang	*kuɗiŋ* k^{w}əʷɗaʸŋ	*k^{w}ɗ-Øʸ-ŋ	*k^{w}ɗØ-y-k-n		6
Zulgo	*kʷiɗe* k^{w}əʸɗaʸ	*k^{w}ɗa-Øʸ	*k^{w}ɗa-y		7
Gemzek	*kuɗe* k^{w}əʷɗaʸ				8
Merey	*kuɗe* k^{w}əʷɗaʸ				8
	kuɗey k^{w}əʷɗaʸy	*k^{w}ɗ-ay	*k^{w}ɗØ-a-y		8

1. ə-epenthesis; +W: ə > u
2. *y > Øʸ; +Y: lexical-final *a > e
3. ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e
4. ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e; *k^{w} > k; fusion *kn > ŋ
5. *n > r; ə-epenthesis; +W: ə > u
6. *n (> r) > ɗ; ə-epenthesis; *k^{w} > k; fusion *kn > ŋ; *y > Øʸ; +Y: ə > i; +W: ə > ʉ
7. *n (> r) > ɗ; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e
8. *n (> r) > ɗ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e

MAROUA

				√ C Ca	
Giziga-Marva	*kunay* k^{w}əʷnay	*k^{w}n-ay	*k^{w}nØ-a-y	*k^{w}na-a-y(-k^{w})	1
Mbazla	*kunay* k^{w}əʷnay				1
	kunai' k^{w}əʷnayʔ	*k^{w}n-a-y-ʔ	*k^{w}nØ-a-y-k^{w}		2
				√ CaCa	
Giziga-Muturwa	*kwanay*	*k^{w}ana-y		*k^{w}ana-y	

1. ə-epenthesis; +W: ə > u
2. suffixal *k^{w} (> k) > ʔ; ə-epenthesis; +W: ə > u; *y > i

LAMANG

				√ C Ca	
Lamang	*kʷini* kʷəʸny	*kʷn-yʸ	*kʷnØ-y	*kʷna-y	1
				√ CaCa	
Hdi	*kʷani* kʷany	*kʷan-y	*kʷanØ-y	*kʷana-y	2
1. ə-epenthesis; *y > yʸ > i; +Y: ə > i 2. *y > i					

KOTOKO-ISLAND

Buduma	*koray* *kʷaʷray	*kʷar-ay	*kʷarØ-a-y	*kʷana-y	1
1. *n > r; +W: *a > o					

KOTOKO-NORTH

Mpade	*kure* kʷəʷraʸ	*kʷra-Øʸ	*kʷra-y	*kʷna-y	1
1. *n > r; *y > Øʸ; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*nkune* nkʷəʷnaʸ	*n-kʷna-Øʸ	*mØ-kʷna-y	*(ma-)kʷna-y	1
Mser	*kure* kʷəʷraʸ	*kʷra-Øʸ	*kʷra-y		2
1. ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > e; partial assimilation *m > n/_kʷ 2. *n > r; *y > Øʸ; +Y: lexical-final *a > e					

KOTOKO-SOUTH

Mazera	*kimaɗe* kəʸmaɗaʸ	*kmaɗa-Øy	*mØ-kaɗa-y	*ma-kʷana-y	1
1. *kʷ > k; *n (> r) > ɗ; metathesis mk > km; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e					

GIDAR

Gidar	*kine* kəʸnaʸ	*kna-Øʸ	*kʷna-y	1
1. *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e				

vomit, to

PCC *(ma-) **v(a)n(a)xʷa** (-y, -kʷ, -n; FV)

BATA

					√ C C Ca	
Jimi	*vənan* vənan	*vna-n		*vnØa-n	*vnxʷa-n	1
					√ CaCaCa	
Gude	*vaana*	*vaØana	*vaxʷana	*vanaxʷa	*vanaxʷa	2
1. ə-epenthesis 2. metathesis nxʷ > xʷn; (vowel length due to loss of intervocalic /xʷ/)						

DABA

Buwal	*vəna*	*vna	*vnØa	*vnxʷa	1
Gavar	*vəna*				1
Daba	*vəna*				1
Mbudum	*vən*	*vnØ			1
1. ə-epenthesis					

MAFA

Mafa	*vənehe* vənaʸxaʸ	*vnaxa-Øʸ	*vnaxa-y	*vnaxʷa(-y)	1
	vineh- vəʸnaʸx-	*vnaxØ-Øʸ			2
Cuvok	*vənaha*	*vnaxa			3

1. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: *a > e 2. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; *Y: ə > i; +Y: *a > e 3. *x^{w} > x; ə-epenthesis					

TERA

Tera	*vənax*	*vnaxØ		*vnax^{w}a	1
1. *x^{w} > x; ə-epenthesis					

SUKUR

Sukur	*vinah* və^{y}nax	*vnaxØ-Ø^{y}		*vnax^{w}a-y	1
1. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

HURZA

Mbuko	*vəne* vəna^{y}	*vna-Ø^{y}	*vnaØØ-y	*vnax^{w}a(-y)	1
Vame	*vənaha*	*vnaxa			2
1. ə-epenthesis, *y > Ø^{y}; +Y: lexical-final *a > e 2. *x^{w} > x; ə-epenthesis					

MANDARA

Podoko	*vəraha*	*vraxa		*(ma-)vnax^{w}a ((-a)-y-k^{w}a))	1
Dghwede	*vraxa*				2
Glavda	*vrɛːgɛ* vraːga^{y}	*vra-Ø^{y}-ga	*vraØØ-y-k^{w}a		3
Matal	*mavlahay*	*ma-vlax-ay	*ma-vlaxØ-a-y		4
1. *n > r; ə-epenthesis 2. *n > r 3. *n > r; *k^{w} (> k) > g; *y > Ø^{y}; +Y: *a > ɛ; vowel length unaccounted for 4. *n (> r) > l					

MOFU

				√ C C Ca	
Mofu North	*mevənhey* ma^{y}vənxa^{y}y	*ma-vnxa-y^{y}	*ma-vnxa-y	*ma-vnx^{w}a-y	1
				√ C CaCa	
Moloko	*vənah*	*vnax	*vnaxØ	*(ma-) vnax^{w}a((-a)-y)	2
Merey	*vənaha*	*vnaxa			2
Zulgo	*vənaha*				2
Ouldeme	*vənahay*	*vnax-ay	*vnaxØ-a-y		2
Mada	*mavnaha*	*ma-vnaxa			
Gemzek	*mevənehe* ma^{y}vəna^{y}xa^{y}	*ma-vnaxa-Ø^{y}	*ma-vnaxa-y		3
Dugwor	*məvənehey* məvəna^{y}xa^{y}y	*ma-vnaxa-y^{y}			1
1. *x^{w} > x; ə-epenthesis; *y > y^{y}; +Y: *a > e 2. *x^{w} > x; ə-epenthesis 3. *x^{w} > x; ə-epenthesis; *y > Ø^{y}; +Y: *a > e					

LAMANG

				√ C C Ca	
Hdi	*vənihi* vənə^{y}xy	*vnx-y^{y}	*vnxØ-y	*vnx^{w}a-y	1
	vənihay vənə^{y}xay	*vnxa-y^{y}	*vnxa-y		2
				√ CaCaCa	
Lamang	*vanax^{w}a*	*vanax^{w}a		*vanax^{w}a	
1. *x^{w} > x; ə-epenthesis; *y > y^{y}; > i; +Y: *ə > i 2. *x^{w} > x; ə-epenthesis; *y > y^{y}; +Y: *ə > i					

HIGI

				√ C C Ca	
Bana	*vənəx^{w}ə*	*vnx^{w}a	*vnx^{w}a	*vnx^{w}a	1
Kirya	*vənəhu* vənəx^{w}ə^{w}				2
				√ C CaCa	
Kamwe-Futu	*vineɣo* və^{y}na^{y}ɣa^{w}	*vnaɣ^{w}a-Ø^{y}	*vnaɣ^{w}a-y	*vnax^{w}a-y	3
1. ə-epenthesis; lexical-final *a > ə 2. ə-epenthesis; lexical-final *a > ə; +W: ə > u 3. *x^{w} > ɣ^{w}; +W: lexical-final *a > o; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*vinahi* və^{y}naxə^{y}	*vnaxa-Ø^{y}	*vnaxa-y	*vnax^{w}a-y-k^{w}-n	
	vinahiwun və^{y}naxə^{y}wə^{w}n	*vnaxə-Ø^{y}-w^{w}-n	*vnaxa-y-w^{w}-n		
1. *x^{w} > x; ə-epenthesis; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > i 2. *x^{w} > x; ə-epenthesis; lexical-final *a > ə; *y > Ø^{y}; +Y: ə > i; *k^{w} > w^{w}; +W: ə > u					

KOTOKO-SOUTH

Zina	*vənaha*	*vnaxa	*vnax^{w}a	
1. *x^{w} > x; ə-epenthesis				

MUSGUM

Mbara	*fine* fə^{y}na^{y}	*fna-Ø^{y}	*fnØa-y	*vnx^{w}a-y	
1. *v > f; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: lexical-final *a > e					

wash, to

PCC *(ma-) **b(a)na** (-a, -y, -k^{w}, -n, -x, -b, -v, -RED; FV)

BATA

Jimi	*binə* bə^{y}nə	*bna-Ø^{y}	*bna-y	1
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə				

DABA

Buwal	*ban*	*banØ		*bana(-k^{w})	
Gavar	*ban*				
Mbudum	*baŋ*	*baŋ	*banØ-k		1
Daba	*pan*	*panØ			2
1. *k^{w} > k; fusion nk > ŋ 2. *b > p					

MAFA

Mafa	*pan*	*panØ	*bana	1
Cuvok	*pana*	*pana		1
1. *b > p				

SUKUR

Sukur	*ban*	*banØ	*bana	

HURZA

			√C Ca	
Vame	*buniya* bə^{w}nə^{y}ya	*bnØ-y^{y}-Ø^{w}a	*bna-y-k^{w}a	1
			√CaCa	
Mbuko	*banay*	*banØ-ay	*bana-a-y	
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u; *y > y^{y}; +Y: ə > i				

MANDARA

Podoko	*para*	*para		*(ma-)bana(-k^{w}a/-a-y)	1
Glavda	*barga*	*bar-ga	*barØ-k^{w}a		2
Matal	*mapalay*	*ma-palØ-ay			3
1. *n > r *b > p 2. *n > r; *k^{w} (> k) > g 3. *n (> r) > l; *b > p					

MOFU

				√ C Ca	
Mofu-Gudur	*pər*	*prØ		*(ma-)bna(-a-y)	1
Mofu North	*mepərey* ma^{y}pəra^{y}y	*ma-prØ-ay^{y}			2
				√ CaCa	
Ouldeme	*baraka*	*bara-ka		*bara-k^{w}a	3
	baraha	*bara-xa		*bara-xa	3
	bariya barə^{y}ya	*bara-y^{y}a		*bara-ya	4
	bereya ba^{y}ra^{y}ya				5
	bereŋ ba^{y}ra^{y}ŋ	*bara-Ø^{y}-ŋ	*bara-y-k-n	*bara-y-k^{w}-n	6
Muyang	*baray*	*barØ-ay		*bara-a-y	3
	barafəŋ	*bara-f-ŋ	*bara-f-k-n	*bara-v-k^{w}-n	6
	baraba	*bara-ba		*bara-RED/-ba (?)	3
Zulgo	*bara*	*bara		*bara	3
Merey	*bara*				3
Gemzek	*bara*				3
	mebere ma^{y}ba^{y}ra^{y}	*ma-bara-Ø^{y}		*ma-bara-y	5
Dugwor	*məberey* məba^{y}ra^{y}y	*ma-barØ-a-y^{y}		*ma-bara-a-y	6
Moloko	*balay*	*balØ-ay		*bala-a-y	7
Mada	*mabala(faŋa)* mabalafaŋa	*ma-bala(-fa-k-na)		*ma-bala(-va-k^{w}-na)	8
1. *n > r; *b > p; ə-epenthesis 2. *n > r; *b > p; ə-epenthesis; *y > y^{y}; +Y: *a > e 3. *n > r 4. *n > r; lexical-final *a > ə; *y > y^{y}; +Y: ə > i 5. *n > r ; *y > y^{y}; +Y : *a > e 6. *n > r; *k^{w} > k; fusion kn > ŋ 7. *n (> r) > l 8. *n (> r) > l; *k^{w} > k; fusion kn > ŋ					

MAROUA

				√ C Ca	
Giziga-Muturwa	*bun* bə^{w}n	*bn-Ø^{w}	*bnØ-k^{w}	*bna-k^{w}	
Giziga-Marva	*bun* bə^{w}n				
	buna bə^{w}na	*bna-Ø^{w}	*bna-k^{w}		
				√ CaCa	
Mbazla	*ban*	*banØ		*bana	
1. ə-epenthesis; *k^{w} > Ø^{w}; +W: ə > u					

Higi

Psikye	*pe* pa^{y}	*pa-Ø^{y}	*pØa-y	*bna-y	1
Bana	*pi* py	*p-y	*pØØ-y		2
1. *b > p; *y > Ø^{y}; +Y: lexical-final *a > e 2. *b > p; *y > i					

water

Bata

Gude	*ma'inə* maʔynə	*maʔyØ-na	*ʔyama-na		1
Jimi	*ma'i* maʔy	*maʔyØ	*ʔyama	*ʔyama(-na)	2
Sharwa	*ma'i* maʔy				2
1. metathesis ʔyama > maʔya; *ʔy > ʔi; FV *a > ə 2. metathesis ʔyama > maʔya; *ʔy > ʔi					

Daba

				√ C C Ca	
Gavar	*yəm*	*Øym	*ʔymØ	*ʔyma	1
Daba	*yəm*				1
Mbudum	*yim* yə^{y}m	*Øy^{y}m			2
				√ CCaCa	
Buwal	*yam*	Øyam	*ʔyamØ	*ʔyama	3
1. *ʔy > y; ə-epenthesis 2. *ʔy > y; ə-epenthesis; +Y: ə > i 3. *ʔy > y					

Mafa

Mafa	*yam*	*Øyam	*ʔyamØ	*ʔyama	1
Cuvok	*yam*				1
1. *ʔy > y					

Tera

				√ C C Ca	
Tera	*yîm (dyim)* d^{y}ə^{y}m	*d^{y}mØ		*ʔyma	1
				√ CCaCa	
Hwana[156]	*aama* [a]ama	*[a]ØØama	*[a]ʔyama	*ʔyama	2
1. *ʔy > d^{y}; ə-epenthesis; +Y: ə > i 2. a-prothesis (before original consonant cluster); vowel length resulting from prothetic [a] plus medial */a/					

Sukur

Sukur[157]	*iyam* ə^{y}yam	*[ə]y^{y}am	*[ə]ʔyamØ	*ʔyama	1
	yam	*Øyam	*ʔyamØ		2
1. ə-prothesis; *ʔy > y > y^{y}; +Y: ə > i 2. *ʔy > y					

[156] Vowel prothesis is a fairly frequent process in some Central Chadic languages in cases of initial consonant clusters; vowel prothesis in Tera (and Sukur) could be yet another indication of an underlying reanalysis of the root as triradical √CCaCa, i.e. ***ʔyama**.

[157] See footnote 156.

HURZA

Mbuko	*a'am*	*Øa-ʔamØ	*Ca-ʔØamØ	*Ca-(xʷa-) ʔyama	1
Vame	*ahʷam* axʷam	*Øa-xʷØ-am	*Ca-xʷa-ØØamØ		
1. *ʔy > ʔ					

MARGI

Margi	*'imi* ʔymaʸ	*ʔyʸma	*ʔyma	1
Margi South	*imi* ymaʸ	*Øyʸma		1
Bura	*yimi* yaʸmaʸ			2
1. lexical-final *a > ə; *y > yʸ > i; +Y: ə > i 2. ə-epenthesis; lexical-final *a > ə; *y > yʸ > i +Y: ə > i Alternatively, final i could be interpreted as reflex of suffixal *-y which, however, is not reconstructed for this lexical item.				

MANDARA

			√ C C Ca	
Podoko	*yəwa*	*Øywa	*ʔyma	1
Glavda	*yuwa* yaʷwa	*Øywʷa		2
	yu yw	*ØywØ		3
	ii əʸy	*ØyʸØØ		4
			√ C CaCa	
Matal	*yːaw* yyaw	*ʔyawØ	*ʔyama	5
Mandara	*yawe* yawaʸ	*yʸawa		6
Malgwa	*yawe* yawaʸ			6
1. ə-epenthesis; *m > w 2. ə-epenthesis; *m > wʷ; +W: ə > u 3. *m > w; *w > u 4. ə-prothesis; *y > yʸ; +Y: ə > i; əʸy > ii 5. *m > w; assimilation *ʔy > yy 6. *m > w; *y > yʸ; +Y: lexical-final *a > e				

MOFU

Ouldeme	*yam*	*Øyam	*ʔyamØ	*ʔyama	1
Muyang	*yam*				1
Moloko	*yam*				1
Zulgo	*yam*				1
Gemzek	*yam*				1
Merey	*yam*				1
Dugwor	*yam*				1
Mofu-North	*yam*				1
Mofu-Gudur	*yam*				1
1. *ʔy > y					

MAROUA

Giziga Marva	*yam*	*Øyam	*ʔyamØ	*ʔyama	1
Mbazla	*yam*				1
1. *ʔy > y					

LAMANG

Lamang	*imi* ymaʸ	*yʸma	*Øyʸma	*ʔyma	1
Hdi	*imi* ymaʸ				1
1. lexical-final *a > ə; *ʔy > yʸ > i; +Y: ə > i Alternatively, final i could be interpreted as reflex of suffixal *-y which, however, is not reconstructed for this lexical item.					

HIGI

Bana	*yam*	*yam	*ØyamØ		1
Kamwe-Nkafa	*yame* yama^{y}	*y^{y}ama	*Øyama	*ʔyama	2
Kamwe-Futu	*yem^{y}i* ya^{y}m^{y}ə^{y}	*y^{y}amə			3
Kirya	*yamə*	*yamə			4
Psikye	*yemu* ya^{y}mw	*y^{y}am-w	*ØyamØ-k^{w}		5
1. *ʔy > y 2. *ʔy > y^{y}; +Y: lexical-final *a > e 3. lexical-final *a > ə; *ʔy > y^{y}; +Y: *a > e; +Y: m > m^{y}; +Y : ə > i 4. *ʔy > y; lexical-final *a > ə 5. *ʔy > y^{y}; +Y: *a > e; *k^{w} > w > u					

KOTOKO-ISLAND

Buduma	*amay*	*a-may	*Øa-ØyamØ	*Ca-ʔyama	1
1. metathesis ym > my					

KOTOKO-NORTH

Afade	*ame* ama^{y}	*Ø^{y}ama	*Øyama	*ʔyama	1
Mpade	*ame* ama^{y}				1
Malgbe	*am*	*am	*ØØamØ		
1. *ʔy > y > Ø^{y}; +Y: lexical-final *a > e					

KOTOKO-CENTRAL

Lagwan	*am*	*am	*ØØamØ	*ʔyama	
Mser	*am*				

KOTOKO-SOUTH

				√ C C Ca	
Mazera	*aʔim* aʔə^{y}m	*aʔ^{y}m	*ʔ^{y}mØ	*ʔyma	1
				√ C CaCa	
Zina	*ami* amə^{y}	*Ø^{y}amə	*y^{y}ama	*ʔyama	2
1. a-prothesis; ə-epenthesis; *ʔy > ʔ^{y}; +Y: ə > i 2. lexical-final *a > ə; *ʔy > y^{y} > Ø^{y}; +Y: ə > i					

MUSGUM

Mbara	*'am*	*ʔam	*ʔØamØ		1
Vulum	*yem* ya^{y}m	*y^{y}am	*ØyamØ	*ʔyama(-k^{w})	2
Muskum	*yamu* yamw	*yam-w	*ØyamØ-k^{w}		3
1. *ʔy > ʔ 2. *ʔy > y^{y}; +Y: *a > e 3. *ʔy > y; *k^{w} > w > u					

whistle, to

PCC *(ma-, RED-) **f(a)y(a)k^{w}a** (-a, -y, -n)

BATA

Gude	*fiku* fykw	*fykw	*fyk^{w}Ø	*fyk^{w}a(-n)	1
Jimi	*fikwən* fyk^{w}ən	*fyk^{w}a-n			2
1. *y > i; re-segmentalisation *k^{w} > k+w; w > u 2. *y > i; lexical-final *a > ə					

DABA

				√ C C Ca	
Mbudum	*fəfək*	*f-fk	*RED-fØkʷØ	*RED-fykʷa	1
				√ CaC Ca	
Mbudum	*fəfek* fəfaʸk	*fa-faØʸk	*RED-faykʷØ	*RED-faykʷa	2
Buwal	*fefekʷ* faʸfaʸkʷ	*fa-faØʸkʷ			3
1. ə-epenthesis; *kʷ > k 2. ə-epenthesis; *kʷ > k; *y > Øʸ; +Y: *a > e 3. *y > Øʸ; +Y: *a > e					

MAFA

				√ C C Ca	
Mafa	*fukʷ* fəʷkʷ	*fØkʷØ		*(RED-)fykʷa	1
Cuvok	*fəfkʷa*	*f-fkʷa	*RED-fØkʷa		2
				√ CaC Ca	
Cuvok	*fafkʷa*	*fa-fØkʷa	*RED-faØkʷa	*RED-faykʷa	
1. ə-epenthesis; +W: ə > u 2. ə-epenthesis					

HURZA

Vame	*fəfu* fəfw	*f-fw	*RED-fØkʷØ	*RED-fykʷa	1
1. *kʷ > w > u; ə-epenthesis					

MANDARA

				√ C C Ca	
Podoko	*fikʷa* fykʷa	*fykʷa		*fykʷa	1
Mandara	*fikʷa* fykʷa				1
Malgwa	*fiikʷa* fəʸykʷa	*fyʸkʷa			2
Dghwede	*fəge* fgaʸ	*fØʸga			3
				√ CaC Ca	
Glavda	*fafikʷa* fafykʷa	*fa-fØykʷa	*RED-faykʷa	*RED-faykʷa	1
1. *y > i 2. ə-epenthesis; *y > yʸ > i; +Y: ə > i 3. *kʷ (> k) > g; ə-epenthesis; *y > Øyʸ; +Y: lexical-final *a > e					

MOFU

				√ C C Ca	
Muyang	*fikʷey* fykʷaʸy	*fyʸkʷ-ay	*fykʷØ-a-y	*(ma-/RED-) fykʷa(-a-y)	1
Gemzek	*fuk* fəʷkʷ	*fkʷ	*fØkʷØ		2
	məfukʷe məfəʷkʷaʸ	*m-fØʸkʷa	*mØ-fykʷa		3
Merey	*fəfəkʷ*	*f-fkʷ	*RED-fØkʷØ		4
				√ CaC Ca	
Moloko	*fokay* faʷkay	*fakʷ-ay	*faØkʷØ-ay	*(RED-) faykʷa(-a-y)	5
Zulgo	*fefekʷe* faʸfaʸkʷaʸ	*fa-faØʸkʷa	*RED-faykʷa		6
Mofu-Gudur	*fafakʷ*	*fa-faØkʷØ	*RED-faykʷØ		
1. *y > yʸ > i; +Y: *a > e 2. ə-epenthesis; +W: ə > u 3. ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: *a > e 4. ə-epenthesis 5. +W : *a > o 6. *y > Øʸ; + Y: *a > e					

LAMANG

Hdi	*vihay* vyxay	*vyx-ay	*vyxØ-a-y	*fyk^{w}a-a-y	1
1. *f > v; *k^{w} (> k) > x; radical *y > i					

HIGI

Kamwe-Futu	*fig^{w}e* fyg^{w}a^{y}	*fy^{y}g^{w}a	*fyk^{w}a	1
1. *y > i; *k^{w} > g^{w}; *y > y^{y}; +Y: lexical-final *a > e				

white

PCC *(ma-, RED-) **k^{w}(a)ɗ(a)ka** (-y, -r; FV)

DABA

Mbudum	*k^{y}k^{y}*ɗ̰ek k^{y}k^{y}ɗ̰a^{y}k	*k-kɗakØ-Ø^{y}	*RED-k^{w}ɗaka-y	1
1. *k^{w} > k; *y > Ø^{y}; +Y: *k > k^{y}; +Y: *a > e; source of consonant length [ɗ̰] remains obscure				

MAFA

				√ CaC Ca	
Cuvok	*k^{w}ed* k^{w}a^{y}ɗ	*k^{w}aɗ-Ø^{y}	*k^{w}aɗØØ-y	*k^{w}aɗka-y	1
				√ C CaCa	
Mafa	*k^{w}id*k^{w}iddə'e* k^{w}ə^{y}dk^{w}ə^{y}dəa^{y}ʔa^{y}	*k^{w}ɗ-k^{w}ɗaʔa-Ø^{y}	*RED-k^{w}ɗaka-y	*RED-k^{w}ɗaka-y	2
1. *y > Ø^{y}; +Y : *a > e 2. ə-epenthesis; *k > ʔ; *y > Ø^{y}; +Y : ə > i ; +Y : *a > e; source of consonant length [ɗ̰] remains obscure					

HURZA

				√ CaC Ca	
Vame	*medek^{w}e* ma^{y}ɗa^{y}k^{w}a^{y}	*ma-ɗak^{w}a-Ø^{y}	*ma-k^{w}aɗØa-y	*ma-k^{w}aɗka-y	1
				√ CaCaCa	
Mbuko	*k^{w}edek* k^{w}a^{y}ɗa^{y}k	*k^{w}aɗak-Ø^{y}	*k^{w}aɗakØ-y	*(RED-) k^{w}aɗaka-y	2
	k^{w}ek^{w}edek k^{w}a^{y}k^{w}a^{y}ɗa^{y}k	*k^{w}a-k^{w}aɗak-Ø^{y}	*RED-k^{w}aɗakØ-y		2
1. metathesis k^{w}ɗ > ɗk^{w}; *y > Ø^{y}; +Y: *a > e 2. *y > Ø^{y}; +Y: *a > e					

MANDARA

				√ C C Ca	
Matal	*mæɗik^{w}u*ga* ma^{y}ɗə^{y}k^{w}ə^{w}ga	*ma-ɗk^{w}ga-Ø^{y}		*ma-k^{w}ɗka-y	1
Glavda	*maɗ^{ə}k^{w}a* maɗək^{w}a	*ma-ɗk^{w}Øa			2
				√ CaC Ca	
Podoko	*medek^{w}e* ma^{y}ɗa^{y}k^{w}a^{y}	*ma-ɗak^{w}Øa-Ø^{y}		*ma-k^{w}aɗka(-y(-ra))	3
	medekula ma^{y}ɗa^{y}k^{w}ə^{w}la	*ma-ɗak^{w}ØØ-Ø^{y}-la			4
Dghwede	*mat'ak^{w}a* maɗak^{w}a		*ma-ɗak^{w}aØa		5
1. *k > g; metathesis *k^{w}ɗ > ɗk^{w}; ə-epenthesis; *y > Ø^{y}; +Y: *a > æ; +Y: ə > I; +W: ə > u 2. metathesis *k^{w}ɗ > ɗk^{w}; ə-epenthesis 3. metathesis *k^{w}ɗ > ɗk^{w}; *y > Ø^{y}; +Y: *a > e 4. metathesis *k^{w}ɗ > ɗk^{w}; *y > Ø^{y}; +Y: *a > e ; +W : ə > u 5. metathesis *k^{w}ɗ > ɗk^{w}					

MOFU

			√ CaC Ca	
Ouldeme	*medɛkʷe* maʸdəʸkʷaʸ	*ma-dəkʷØa-Øʸ	*ma-kʷadka-y	1
			√ C CaCa	
Merey	*kudɛkudɛk* kʷəʷdəʸkʷəʷdəʸk	kʷdə-kʷdəkØ-Øʸ	*RED-kʷdəka-y	2
			√ CaCaCa	
Merey	*kʷedɛk* kʷaʸdəʸk	*kʷadəkØ-Øʸ	*kʷadəka-y	3
Gemzek	*kʷedɛk* kʷaʸdəʸk			3
Mofu North	*kʷedɛk* kʷaʸdəʸk			3
Mofu-Gudur	*kʷedɛk* kʷaʸdəʸk			3
1. metathesis *kʷɗ > dkʷ; *y > Øʸ; +Y: *a > e 2. *y > Øʸ; +Y: *a > e; +W: ə > u 3. *y > Øʸ; +Y: *a > e				

MAROUA

Giziga-Muturwa	*kʷedɛk* kʷaʸdəʸk	*kʷadəkØ-Øʸ	*kʷadəka-y	1
1. *y > Øʸ; +Y: *a > e				

MUSGUM

Mulwi	*muduʷii* məʷdəʷkʷəʸy	*mØ-dkʷØa-yʸ	*ma-kʷdka-y	1
Vulum	*muduʷii* məʷdəʷkʷəʸy			1
1. metathesis *kʷɗ > dkʷ; +W: ə > u; lexical-final *a > ə; *y > yʸ; +Y: ə > i; *y > i				

white hair

PCC *(ma-, də-, RED-) **kʷ(a)ra** (-RED, -a, -y; FV)

DABA

Daba	*huhul* xəʷxəʷl	*xʷ-xʷlØ	*RED-xʷla	*RED-kʷra	1
1. *r > l; ə-epenthesis; *kʷ > xʷ; +W: ə > u					

MAFA

Cuvok	*kʷalay* kʷalay	*kʷal-ay	*kʷalØ-a-y	*kʷara-a-y	1
1. *r > l					

SUKUR

Sukur	*kʷir* kʷəʸr	*kʷrØ-Øʸ	*kʷra-y	1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i				

HURZA

Mbuko	*dəduʷar* dədəʷkʷar	*dɗ-kʷarØ	*mØ-dØ-kʷarØ	*ma-də-/da-kʷara	1
	dədukwar dədəʷkʷar	*dd-kʷarØ	*mØ-dØ-kʷarØ		2
Vame	*akʷar* akʷar	*Øa-kʷarØ	*da-kʷara		
1. assimilation *m > d/_ɗ; ə-epenthesis; +W: ə > u 2. assimilation *m > d/_d; ə-epenthesis; +W: ə > u					

MANDARA

Podoko	*kulala* kʷəʷlala	*kʷla-la	*kʷla-RED	*kʷra-ya/-RED	1
Mandara	*kuliye* kʷəʷləʸyaʸ	*kʷlØ-yʸa	*kʷla-ya		2
1. *r > l; ə-epenthesis; +W: ə > u 2. *r > l; ə-epenthesis; +W: ə > u; *y > yʸ; +Y: ə > i; +Y: FV *a > e					

MOFU

				√ C Ca	
Moloko	*ɗak^{w}əl*	*ɗa-k^{w}lØ		*ɗa-k^{w}ra	1
Zulgo	*akul* ak^{w}ə^{w}l	*Øa-k^{w}l	*ɗa-k^{w}lØ		2
				√ CaCa	
Mofu-Gudur	*eg^{w}el* a^{y}g^{w}a^{y}l	*Øa-g^{w}al-Ø^{y}	*ɗa-g^{w}alØ-y	*(ma-)ɗa-k^{w}ara(-y)	3
Muyang	*ak^{w}al*	*Øa-k^{w}al	*ɗa-k^{w}alØ		4
Gemzek	*ak^{w}al*				4
Mada	*akk^{w}al* akk^{w}al	*Øa-k-k^{w}al	*ma-dØ-k^{w}alØ		5
Merey	*madak^{w}a*l madak^{w}al	*ma-dɗa-k^{w}al	*ma-dɗa-k^{w}alØ		4
Dugwor	*madakol* madak^{w}a^{w}l				6
1. *r > l; ə-epenthesis 2. *r > l; ə-epenthesis; +W: ə > u 3. *r > l; *k^{w} > g^{w}; *y > Ø^{y}; +Y: *a > e 4. *r > l 5. *r > l; assimilation dk^{w} > kk^{w} 6. *r > l; +W: *a > o					

MAROUA

Giziga-Muturwa	*hol* x^{w}a^{w}l	*x^{w}alØ		*(ma-)k^{w}ara	1
Giziga-Marva	*anhol* a^{n}x^{w}a^{w}l	*Ø^{n}a-x^{w}al	*m^{n}a-x^{w}alØ		2
1. *k^{w} > x^{w}; *r > l; +W: *a > o 2. *k^{w} > x^{w}; *r > l; +W: *a > o; *m > Ø^{n}; +N: x^{w} > ^{n}x^{w}					

wind, cold (season); breath/life

PCC *(ma-) **s(a)m(a)ɗa**[158] (-a, -y, -k^{w}, -n; FV)

BATA

Gude	*məɗa*	*mɗa	*Ømɗa	*(ma-)smɗa(-y, -n)	1
Jimi	*^{m}bidən* mbə^{y}dən	*m-bɗa-Ø^{y}-n	*mØ-Øbɗa-y-n		2
1. ə-epenthesis 2. dissimilation *m > b/mX_; ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

DABA

				√ C C Ca	
Gavar	*miɗ* mə^{y}ɗ	*mɗ-Ø^{y}	*ØmɗØ-y	*smɗa-y	1
Daba	*miɗ* mə^{y}ɗ				1
				√ C CaCa	
Buwal	*maɗ*	*maɗ	*ØmaɗØ	*smaɗa	
Mbudum	*maɗ*				
1. ə-epenthesis; *y > Ø^{y}; +Y: ə > i					

[158] For this root, it is currently not clear whether to best reconstruct */x/ or */s/ as initial consonant for PCC. (See a comparable case regarding the medial consonant of the root for 'mouse$_{1}$'.) Both consonants tend to form sets of sound correspondences beyond Buduma (KOTOKO-ISLAND), where the s : x correspondence is well established. The regularities and patterns of distribution of this correspondence across CC are not yet fully understood.

MAFA

Cuvok	*memeɗ* maʸmaʸɗ	*ma-maɗ-Øʸ	*ma-ØmaɗØ-y	*ma-smaɗa-y	1
1. *y > Øʸ; +Y: a > e					

SUKUR

Sukur	*miɗ* məʸɗ	*mɗ-Øʸ	*ØmɗØ-y	*smɗa-y	1
1. ə-epenthesis; *y > Øʸ; +Y: ə > i					

HURZA

Mbuko	*maɗ*	*maɗ	*ØmaɗØ	*smaɗa-y	
Vame	*həmaɗe* xəmaɗaʸ	*xmaɗa-Øʸ	*xmaɗa-y		1
Ndreme	*humaɗɛ* xəʷmaɗaʸ	*xʷmaɗa-Øʸ	*xʷmaɗa-y		2
1. *s > x; ə-epenthesis; *y > Øʸ; +Y: lexical-final *a > e 2. *s (> x) > xʷ; ə-epenthesis; +W: ə > u; *y > Øʸ; +Y: lexical-final *a > E					

MARGI

				√ C CaCa	
Margi-South	*yəᵐbaɗu* yəᵐbaɗw	*Øⁿ-ybaɗ-w	*mⁿØ-ybaɗØ-kʷ	*ma-smaɗa-kʷ	1
				√ CaCaCa	
Bura	*ɟaᵐbar* sʸaᵐbar	*Øⁿ-sabar-Øʸ	*mⁿØ-sabarØ-y	*(ma-)samaɗa	2
Margi	*yamadə*	*yamaɗa	*samaɗa	(-y)	3
1. *s > y; dissimilation *m > b/mX_; *m > mⁿ; +N: b > ᵐb; *kʷ > w > u; ə-epenthesis 2. dissimilation *m > b/mX_; *m > mⁿ; +N: b > ᵐb; *ɗ > r; *y > Øʸ; +Y: *s > ʃ 3. *s > y; lexical-final *a > ə					

MOFU

				√ C C Ca	
Zulgo	*hiᵐbiɗ* xəʸᵐbəʸɗ	*Øⁿ-xbɗ-Øʸ	*mⁿØ-xᵐbɗØ-y	*ma-smɗa-y	1
Mofu North	*meməɗ* maʸməɗ	*ma-mɗ-Øʸ	*ma-ØmɗØ-y		2
				√ C CaCa	
Moloko	*həmaɗ*	*xmaɗ	*xmaɗØ	*(ma-)smaɗa(-y)	3
Dugwor	*həmeɗ* xəmaʸɗ	*xmaɗ-Øʸ	*xmaɗØ-y		4
Gemzek	*həᵐbeɗ* xəᵐbaʸɗ	* Øⁿ-xbaɗ-Øʸ	*ma-xbaɗØ-y		5
Mofu-Gudur	*memeɗ* maʸmaʸɗ	*ma-maɗ-Øʸ	*ma-ØmaɗØ-y		6
				√ CaC Ca	
Muyang	*aməɗ*	*amɗ	*ØamɗØ	*samɗa	7
				√ CaCaCa	
Ouldeme	*amaɗ*	*amaɗ	*ØamaɗØ	*samaɗa	
Mada	*amaɗ*				
1. *s > x; *m > mⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: ə > i 2. ə-epenthesis; *y > Øʸ; +Y: a > e 3. *s > x; ə-epenthesis 4. *s > x; ə-epenthesis; *y > Øʸ; +Y: a > e 5. *s > x; radical *m > b (dissimilation); prefixal *m > Øⁿ; +N: b > ᵐb; ə-epenthesis; *y > Øʸ; +Y: a > e 6. *y > Øʸ; +Y: a > e 7. ə-epenthesis					

MAROUA

				√ C C Ca	
Giziga-Muturwa	*himiɗ(i)* xəʸməʸɗy	*xmɗ-yʸ	*xmɗØ-y	*smɗa-y	1
				√ C CaCa	
Giziga-Marva	*himeɗ* xəʸmaʸɗ	*xmaɗ-Øʸ	*xmaɗØ-y	*smaɗa-y	2
Mbazla	*simeɗ* səʸmaʸɗ	*smaɗ-Øʸ	*smaɗØ-y		3
	tʃimeɗ tsʸəʸmaʸɗ	*tsmaɗ-Øʸ	*tsmaɗØ-y		4
1. *s > x; ə-epenthesis; +Y: ə > i; *y > i 2. *s > x; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e 3. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e 4. *s > ts; ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: *a > e					

LAMANG

Lamang	*safaka*	*safa-ka	*safaØØ-ka	*samaɗa-kʷ(a)	1
Hdi	*falak*	*fala-k	*ØØfala-k		2
1. *m > f; *kʷ > k 2. *m > f; *ɗ> l; *kʷ > k					

KOTOKO-ISLAND

				√ CaC Ca	
Buduma	*haᵐbəɗa*	*Øⁿ-xabɗa	*mⁿØ-xabɗa	*ma-samɗa	1
				√ CaCaCa	
	haᵐbaɗə	*Øⁿ-xabaɗa	*mⁿØ-xabaɗa	*samaɗa	2
1. *s > x; radical *m > b (dissimilation); prefixal *m > mⁿ; +N: b > ᵐb; ə-epenthesis 2. *s > x; radical *m > b (dissimilation; prefixal *m > mⁿ; +N: b > ᵐb; lexical-final *a > ə					

KOTOKO-NORTH

				√ C CaCa	
Mpade	*simaɗi* səʸmaɗəʸ	*smaɗa-Øʸ	*smaɗa-y	*smaɗa-y	1
				√ CaCaCa	
Afade	*semaɗe* saʸmaɗaʸ	*samaɗa-Øʸ	*samaɗa-y	*samaɗa-y	2
Malgbe	*tʃ'amare* tsʸʔamaraʸ	*tsamaØʔra-Øʸ	*tsamaʔra-y		3
1. ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > ɨ 2. *y > Øʸ; +Y: *a > e 3. *s > ts; re-segmentalisation *ɗ> ʔ+r; ʔ > Øʔ; +ʔ: ts > ts'; *y > Øʸ; +Y: *a > e					

KOTOKO-CENTRAL

Lagwan	*ʃima* sʸəʸma	*sma-Øʸ	*smaØØ-y	*smaɗa-y	1
	simaɗi səʸmaɗəʸ	*smaɗa-Øʸ	*smaɗa-y		2
Mser	*simaɗi* səʸmaɗy	*smaɗ-yʸ	*smaɗØ-y		3
1. ə-epenthesis; *y > Øʸ; +Y: *s > ʃ; +Y: ə > i 2. ə-epenthesis; lexical-final *a > ə; *y > Øʸ; +Y: ə > i 3. ə-epenthesis; *y > yʸ > i; +Y: ə > i					

KOTOKO-SOUTH

				√ C C Ca	
Mazera	*simɗe* səʸmɗaʸ	*smɗa-Øʸ	*smɗa-y	*smɗa-y	1
				√ C CaCa	
Zina	*asmadə*	*Øa-smaɗa	*ma-smaɗa	*ma-smaɗa	2
1. ə-epenthesis; *y > Øʸ; +Y: ə > i; +Y: lexical-final *a > e 2. lexical-final *a > ə					

MUSGUM

				√ C C Ca	
Mbara	*sum'day* sə^{w}mɗay	*smɗ-ay-Ø^{w}	*smdØ-a-y-Ø^{w}	*smɗa-a-y-k^{w}	1
				√ C CaCa	
Muskum	*simet* sə^{y}ma^{y}t	*smat-Ø^{y}	*smatØ-y	*smaɗa-y	2
Vulum	*sɨmer* sə^{y}ma^{y}r	*smar-Ø^{y}	*smardØ-y		3
1. ə-epenthesis ; *k^{w} > Ø^{w} ; +W: ə > u 2. *ɗ > t; ə-epenthesis; *y > Ø^{y}; +Y: ə > i; +Y: *a > e 3. *ɗ > r; ə-epenthesis; *y > Ø^{y}; +Y: ə > ɨ; +Y: *a > e					

GIDAR

Gidar	*səmya*	*smya	*smya	*smɗa	1
	sɨmya sə^{y}mya	*smy^{y}a			2
1. *ɗ>y; ə-epenthesis 2. *ɗ> y; ə-epenthesis; *y > y^{y}; +Y: ə > ɨ					

woman, wife

PCC *(ma-) **g^{w}(a)sa** (-y)

MAFA

Mafa	*ŋgʷaz*	*ŋ-gʷaz	*mØ-gʷazØ	*ma-gʷasa	1
Cuvok	*ŋgʷaz*				1
1. *s > z; homorganic assimilation *m > ŋ/_g^{w}					

TERA

Tera	*nuʃu* nəʷsʸəʷ	*n-ʷsa-Øʸ	*mØ-Øʷsa-y	*ma-gʷsa(-y)	1
	nusu nəʷsəʷ	*n-ʷsa	*mØ-Øʷsa		2
	noɣzə naʷɣʷzə	*na-ɣʷza	*ma-ɣʷza		3
1. *g^{w} > Ø^{w}; homorganic assimilation *m > n/_s; ə-epenthesis; lexical-final *a > ə; +W: ə > u; *y > Ø^{y}; +Y: *s > ʃ 2. *g^{w} > Ø^{w}; homorganic assimilation *m > n/_s; ə-epenthesis; lexical-final *a > ə; +W: ə > u 3. *g^{w} > ɣ^{w}; +W: *a > o; *s > z; (analogical?) partial assimilation *m > n/_x^{w}					

MANDARA

Malgwa	*mukse* məʷksaʸ	*m-kʷsa-Øʸ	*mØ-kʷsa-y	*ma-gʷsa(-y)	1
Matal	*mifˇ* məʸsʸ	*m-s-Øʸ	*mØ-ØsØ-y		2
Dghwede	*nifə* nəʸsʸaʸ	*n-sa-Øʸ	*mØ-Øsa-y		3
Podoko	*nəsa*	*n-sa	*mØ-Øsa		4
Glavda	*uu* ww	*w-w	*wØ-wØØ		5
	u:sa wwsa	*w-wsa	*wØ-wsa		5
1. ə-epenthesis; *g^{w} > k^{w}; +W: ə > u; *y > Ø^{y}; +Y: lexical-final *a > e 2. ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i 3. ə-epenthesis; *y > Ø^{y}; +Y: *s > ʃ; +Y: ə > i; +Y: lexical-final *a > e; homorganic assimilation *m > n/_s 4. ə-epenthesis; homorganic assimilation *m > n/_s 5. *m > w > u; *g^{w} > w > u					

Mofu

				√ C Ca	
Zulgo	*məkəs*	*m-ks	*mØ-ksØ	*ma-g^{w}sa	1
Mofu-Gudur	*ma^{ŋ}gusa* ma^{ŋ}g^{w}ə^{w}sa	*ma-^{ŋ}g^{w}sa	*m^{n}a-g^{w}sa		2
				√ CaCa	
Gemzek	*məkas*	*m-kas	*mØ-kasØ	*ma-g^{w}asa	1
Merey	*ŋgwas*	*ŋ-g^{w}as	*mØ-g^{w}asØ		3
Mofu North	*ŋgwas*				3
Mofu-Gudur	*ŋgwas*				3
Dugwor	*ŋgwos* ŋg^{w}a^{w}s				4

1. *g^{w} (> g) > k; ə-epenthesis
2. *m > m^{n}; +N: *g^{w} > ^{ŋ}g^{w}; ə-epenthesis; +W: ə > u
3. homorganic assimilation *m > ŋ/_g^{w}
4. homorganic assimilation *m > ŋ/_g^{w}; +W: *a > o

Maroua

Giziga-Marva	*g^{w}as*	*g^{w}as	*g^{w}asØ	*(ma-)g^{w}asa	
Mbazla	*^{ŋ}gasa*	*ŋ-gasa	*mØ-gasa		1
	^{ŋ}gas	*ŋ-gasØ	*mØ-gasØ		1

1. *g^{w} > g; homorganic assimilation *m > ŋ/_g

work(, to)

PCC *(k^{w}a-, ma-) **ɬ(a)na** (-t, -y, -k^{w}, -n, -r ; FV)

Bata

			√ C Ca	
Gude	*ləna*	*ɬna	*ɬna(-y(-k^{w})-n)	1
	lənə			2
Sharwa	*lən*	*ɬnØ		1
Jimi	*linən* ɬə^{y}nən	*ɬna-Ø^{y}-n		3
Tsuvan	*linikən* ɬə^{y}nykən	*ɬnØ-y-k-n		4
			√ CaCa	
Bata	*lento* la^{y}nta^{w}	*ɬanØ-Ø^{y}-t-Ø^{w}a	*ɬana-y-t-k^{w}a	5

1. ə-epenthesis
2. ə-epenthesis; lexical-final *a > ə
3. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə
4. ə-epenthesis; *k^{w} > k; +Y: ə > i; *y > i
5. *y > Ø^{y}; +Y : *a > e; *k^{w} > Ø^{w}; +W: FV *a > o

Daba

			√ C Ca	
Gavar	*ɮən*	*ɮnØ	*ɬna	1
			√ CaCa	
Buwal	*ɮan*	*ɮanØ	*ɬana	2

1. *ɬ > ɮ; ə-epenthesis
2. *ɬ > ɮ

Tera

Tera	*ləna*	*ɬna	*ɬna	1

1. ə-epenthesis

Sukur

Sukur	*ɮən*	*ɮnØ	*łna	1
1. *ł > ɮ; ə-epenthesis				

Hurza

			√ C Ca	
Vame	*łəra*	*łra	*łna	1
			√ CaCa	
Mbuko	*ałan*	*Øa-łanØ	*ma-łana	
1. *n > r; ə-epenthesis				

Margi

Margi	*łər*	*łrØ		*(kʷa-)łna(-y)	1
Kilba	*łəra*	*łra			1
Bura	*kilir* kəʸłəʸr	*k-łr-Øʸ	*kØ-łrØ-y		2
1. *n > r; ə-epenthesis 2. *n > r; *kʷ > k; ə-epenthesis; *y > Øʸ; +Y: ə > i					

Mandara

Matal	*ᵊray*	*łrØ-ay	*łna(-a-y)	1
Podoko	*łəra*	*łra		1
Malgwa	*thləra* łəra			1
Dghwede	*łəra*			1
Glavda	*łra* łra			2
	łə łə	*łØa		3
1. *n > r; ə-epenthesis 2. *n > r 3. lexical-final *a > ə				

Mofu

Mofu-Gudur	*ləra*	*łra		*(ma-)łna(-y-ra)	1
Ouldeme	*ałər*	*Øa-łr	*ma-łrØ		1
Gemzek	*məłər*	*ma-łrØ			1
Dugwor	*məłər*				1
Merey	*məłər*				1
Moloko	*ləreleˡ* łəraʸlaʸ	*łra-Øʸ-la	*łra-y-la		2
1. *n > r; ə-epenthesis 2. *n > r; ə-epenthesis; *y > Øʸ; +Y: *a > e					

Maroua

Giziga-Muturwa	*łra*	*łra		*łna(-y)	1
Giziga-Marva	*łira* łəʸra	*łra-Øʸ	*łra-y		2
1. *n > r; ə-epenthesis 2. *n > r; ə-epenthesis; *y > Øʸ; +Y: ə > i					

Lamang

Lamang	*łəna*	*łna	*łna	1
Hdi	*łəna*			1
1. ə-epenthesis				

HIGI

Kamwe-Nkafa	*łənə*	*łna	*łna(-y)	1
Kirya	*łənə*			1
Psikye	*łənə*			1
Kamwe-Futu	*łinə*	*łna-Ø^{y}		2
Bana	*łəni* łəny	*łnØ-y		3
1. ə-epenthesis; lexical-final *a > ə 2. ə-epenthesis; *y > Ø^{y}; +Y: ə > i; lexical-final *a > ə 3. ə-epenthesis; *y > i				