Segmental Phonology

The segmental phonology of Logoori is rather complex, compared to other Bantu languages, owing in part to a number of vowel deletions and their interactions with processes affecting consonant sequence. As is typical of Bantu languages, there are many modifications to nasal plus consonant sequences. The general pattern of hardening, voicing and nasal-deletion is further complicated in Logoori by phonetic-phonological asymmetries, for example hardening of labials has to be further distinguished for outcomes for /v/, /f/, /h/, versus /sh/ (where /h/ and /sh/ behave phonologically like labials). Ganda Law (postnasal deletion of voiced consonants when the next syllable has a nasal) behaves differently for /r/ versus other targets. Rather than having a single (progressive) height-harmony process, there are at least two.

1. Post-nasal consonant modifications

Consonants preceded by a nasal are subject to three rules: hardening, voicing and deletion (Ganda Law). The interaction between these processes and pre-labial vowel reduction (/mʊvóˈgósó/ → [m̀bóˈgósó] ‘Bukusu’ is discussed in 5.5; apart from those contexts, hardening and voicing only apply to underlyingly-present NC sequences.

Two classes of prefixes yield underlying NC sequences: the nominal prefixes for cl. 9-10 (used in nouns and adjectives), and the verbal 1st singular prefix (subject and ob-

ject). This results in 8 morphological constructions yielding direct N+C combinations. Discovering the underlying consonant is usually trivial, e.g. in verbal forms the root-initial C is revealed in virtually every other morphemic concatenation.

Nouns in cl 9-10 pose a greater challenge, since the only way to reveal the underlying consonant is via diminutive and augmentative derivation (discussed in ch. X). Diminutive and augmentative formation of cl. 9-10 nouns does not provide compelling evidence for abstract lexical distinctions, since the derived form can be described in terms of a reasonably consistent surface strategy of prefix-removal and consonant-mutation (nevertheless, there is no disadvantage resulting from assuming that the underlying consonant is different from its main surface realizations).

The main interactions between N+C are as follows:

Post-nasal		
/b, d, j, g, z/	mb, nd, nj, ng, nz	
/v, h/	mb	
/f, sh/	f, sh; mb	
/s/	s	
/r/	nd	
/p, t, ch, k/	mb, nd, nj, ng	
/r, y, g/	Ø	[before nasal in next syllable]
/m n ɲ ng'/	Ø	

1.1. Hardening

When an adjective stem begins with /v, h, f, sh/ or with /r/, and is underlyingly preceded by the nasal of a prefix, the first set of consonants harden to [b], and /r/ becomes [d]. In the case of /f, sh/, an alternative treatment is that the nasal is deleted and the fricative does not change. The specific outcome is partially lexical, and partially optional.

1.1.1. Hardening of labials

a. /v/

When /v/ is preceded by /N/, it becomes [b].

Lexical Adj

One example of hardening of /v/ is seen in the cl. 9, 10 forms of the adjective stem /-ví/.

kíháráátó kíví	'bad famine'
má!várú máví	'bad ants'
rókó !róví	'bad firewood'
aváá!ná váví	'bad children'
énzógú ímbí	'bad elephant'
mbóó!zá ímbí	'bad strong wind'
zibáá!kóórá zímbí	'bad walking stick'
zíngó !zímbí	'bad firewoods'

ɪmbítí ˈímbí	‘bad hyena’
enzóká ˈímbí	‘bad snake’
íˈngáánó ˈímbí	‘bad wheat’
íˈmbárá ˈímbí	‘bad scar’
ɪsíiˈmbá ímbí	‘bad lion’

Other adjectives with initial /v/ are seen below.

aváándó váˈvívíívɪ	‘bad people’
máˈbwóóní máˈvívíívɪ	‘bad potatoes’
kígó kívɪɪvíívɪ	‘bad wasp’
mágéémbé mávɪɪvíívɪ	‘bad hoes’
éˈngókó íˈmbívíívɪ	‘bad chicken’
eng’óómbé íˈmbívíívɪ	‘bad cow’
zing’óómbé zíˈmbívíívɪ	‘bad cows’
éngóómbé mbíiˈvíívi	‘bad cow’
zimbúˈrí zímbɪɪvíívɪ	‘bad goats’

vavógʊsʊ vaveereeri	‘sad Bukusus’
kɪbága keveereri	‘sad cat’
zing’oombe zimbeereri	‘sad cows’
ɪmbítí embeereri	‘sad hyena’

chááˈmégéré kívísi	‘raw mushroom’
máˈgómyá ˈmávísi	‘raw banana’
íɲám-íímbísi	‘raw meat’
éndéréˈm-ímbísi	‘raw vegetable’
ɪnjógó ˈímbísɪ	‘raw peanut’
íngóróvé ˈímbísɪ	‘raw pig’
zíˈmbáró ˈzímbísɪ	‘raw ribs’
zíngóróvé ˈzímbísɪ	‘raw pigs’

<u>Deverbal Adj</u>

There are numerous examples of v-hardening with deverbal adjectives, in cl. 9-10.

kɪbágá kevóˈhóóllé	‘untied cat’
eng’óómbé embóˈhóóllé	‘untied cow’
kʊvónɪka	‘to break’
endéˈvé ímbóˈníchí	‘broken chair’
kʊvagara	‘to put something out for all to see’
ɪbíích-ɪmbáˈgáró	‘publically exposed picture’
mábwóóˈní máváˈrízé	‘counted potatos’
éng’óómbé ímbáˈrízé	‘counted cow’

N-to-Adj

N-to-A derivation also gives rise to /N-v/ sequences which undergo hardening.

vavógʊsʊ	'Bukusus'
zingú!zá zímbógósu	'Bukusu vegetables'
eng'óómbe mbʊgʊsʊ	'Bukusu cow'
íngánó ímbó!gósó	'Bukusu story'

N Cl 11-10

Noun stems beginning with /v/ in cl. 11 which have their plurals in cl. 10 provide further examples of /v/-hardening.

róváha	zímbáha	'wing'
rʊvaru	zimbarʊ	'rib'
rʊvʊvi	zimbʊvi	'spider'
róvéere	zímbéere	'nipple'
rʊvaamba	zimbaamba	'clan'
orovega	izimbega	'direction'
ʊró!váángó	izí!mbáángó	'big spear'
ʊrʊvúúsi	izimbúúsi	'thread'

Diminutive and Augmentative 9-10

Based on the evidence of diminutives and augmentatives, nouns in cl. 9-10 which begin with [mb] would appear to underlyingly have /v/, which hardens to [b] after a nasal.

ɪmbʊkʊ	'mole'
kavuku	'mole-dim'
ʊgʊvʊkʊ	'mole-aug'
ógóvúku	'mole-aug'
ímbwá	'dog'
kávwá	'dog-dim'
ɪmbúri	'goat'
kavúri	'goat-dim'
gʊvúri	'goat-aug'
émbódóka	'jealousy'
kávódóka	'jealousy-dim'
ímbúrú	'monitor lizard'
kávúrú	'monitor-dim'
ɪmbáda	'hawk'
ákáváda	'hawk-dim'
ímbítí	'hyena'
akavíti	'hyena-dim'
góvítí	'hyena-aug'

ɪmbíízi	‘warthog’
akavíízi	‘warthog-dim’
gʊvíízi	‘warthog-aug’

Roots can generally begin with any consonant of the language, suggesting that there could, theoretically, exist lexical cl. 9-10 nouns beginning with /b, f, h, p/. Because of post-nasal consonant changes, identification of such a consonant could only be made on the basis of the augmentative or diminutive form of a noun. Hypothetical */ɪN-bera/ or */ɪN-hako/ would surface as **ɪmbera, *ɪmbako*, which are certainly potential nouns of the language, and the underlying form could only be ascertained on the basis of diminutive **akabera*, **akahako*. There appear to be no lexical cl. 9-10 nouns in the language which have [mb] in cl. 9-10 and either [h] or [b] in the diminutive.[1] Apart from the above *mb:v* relationship, the initial consonant of 9-10 nouns transformed into cl. 12-13, 20 is identical to that of the cl. 9 form, with or without the cl. 9 nasal prefix, and thus diminutives and augmentatives will not be further considered. See the discussion of this diminutive and augmentative formation in the noun class chapter.

In the realm of verb inflection, the 1s subject prefix which immediately precedes the stem in the hodiernal perfective, subjunctive and progressive regularly trigger hardening of /v/ to [b].

1s SP perfective

ndava níí mbeji	‘if I had shaved’	kovéga	‘to shave’
mbááyi	‘I visited’	kʊvaaya	‘to visit’
mbɪni	‘I danced’	kʊvína	‘to dance’
mbógɪɪlɪɪ	‘I accept’	kʊvógɪɪlla	‘to accept’
mbarorí	‘I saw them$_{-2}$’	kʊvarorí	‘we saw them$_{-2}$’
mbákaraangɪɪ	‘I fried for them$_{-2}$’		
mbirórí	‘I saw them$_{-8}$’	avirórí	‘he saw them$_{-8}$’

1s SP subjunctive

naa mbégé	‘I will shave’
réká !mbógórí	‘let me take’
reka mbivógʊrɪ	‘let me take them$_{-8}$’
reka mbavógʊrɪ	‘let me take them$_{-2}$’
naa mbégé	‘I will shave’

1s SP progressive

mbórókaa	‘I am flying’
mbegáa	‘I am shaving’
mbááyaa	‘I am visiting’
mbáámbaa	‘I am stretching out’
mbohóólàa	‘I am untying’
mbavégaa	‘I’m shaving it$_{-2}$’

[1] In the data, there have been a very small number of instances where a speaker has performed such an abstract analysis but then rescinded the form, e.g. *katéve* alongside *kandéve* from *endéve* ‘chair’

avavégaa	'he's shaving it$_{-2}$'
mbihéénzaa	'I'm looking at 8'
mbarorá$^{!}$á vára	'I see those ones'

Hardening to *b* also takes place after the 1s object prefix

1s OP

vaambááyırı	'they visited me'
variimbáríza	'they will count me'
mbógólla	'take for me!'
aambéji	'he shaved me'

b. /h/

The consonant /h/ likewise becomes [b] when it is underlyingly preceded by a nasal, as in the following adjectival examples.

Lexical Adj

kí$^{!}$móóná ké$^{!}$hóóma	'gentle squirrel'
móóndó mó$^{!}$hóóma	'gentle person'
vakó$^{!}$róóndó váhóóma	'gentle elder'
íɲámá é$^{!}$mbóómá	'gentle animal'
zíɲámá zí$^{!}$mbóómá	'gentle animals'
éng'óómbé é$^{!}$mbóóma	'gentle cow'
ıdáá$^{!}$ywá mbóóma	'gentle rooster'

Deverbal Adj

zí$^{!}$ngókó $^{!}$zímbííndıra	'aged chickens'
ḿgéní móhííndıra	'aged guest'
ng'óómbé mbííndıro	'aged cow'
engóómbé ímbííndıra	'grown-up cow'
ımbúrí $^{!}$ímbííndıra	'grown-up goat'
eng'óómbé ímbáámbıkó	'drunk cow'
váándó váháá$^{!}$míkó	'drunk people'
zingórove zimbáámbıkó	'drunk pigs'
íɲámá ímbáko	'scorched meat'
zingúzá zímbáko	'scorched vegetables'
koháka	'to be scorched'
zíní$^{!}$mbó zímbáá$^{!}$ndíké	'written songs'
rwíí$^{!}$mbó róháá$^{!}$ndíké	'written song'
ıríí$^{!}$ng-íí$^{!}$mbááné	'given sickle'
koháana	'to give'
ımbwá $^{!}$ímbíí$^{!}$rííto	'snoring dog'
áváándó váhíí$^{!}$rííto	'snoring persons'
vaando vahoondollo	'staring persons'
mndo mohoondollo	'staring person'

ng'óómbé ímbóóndɔraró	'staring cow'
eng'óómbé embóó!réézú	'a calm cow'
mó!zóní móhóóreezó	'gentle sunbird'
zí!ngókó zímbóó!réézó	'gentle chickens'

There are few cl. 1 nouns with roots beginning in *h* which can form the base for N-to-A derivation, nevertheless the cl. 9-10 form of such derived adjectives also undergo hardening of /h/ to [b].[2]

ɪchóó!kóryá !kíhííndɪ	'Indian food'
ɪnyóó!mb-íímbíínd	'Indian house'
ómbán-ómó!hááyá	'Haya knife'
eng'óómb-íí!mbááyá	'Haya cows'

Nouns with root-initial /h/ in cl. 11-10 exhibit hardening in the cl. 10 plural.

N Cl 11-10		
rɔháá!ngáywá	zímbáángaywá	'cave'
oroheni	zimbeni	'lightening'
ɔró!fónó	izí!mbónó	'tether'
rɔhaambo	zimbaambo	'banana leaf bedding'
rɔhágayɔ	zimbágayɔ	'hoof'
ró!hímá	zí!mbímá	'spleen'

The 1s subject and object prefixes also trigger hardening of /h/.

1s SP perfective	
ndava níímbɔrɪɪ	'if I had heard'
mbaani	'I gave'
mbɪɪrɪɪti	'I snored'
mbarórí	'I saw there$_{-16}$'

1s SP subjunctive	
reka mbááné	'let me give'
reka mbééngé	'let me look'
naa mbéére	'I will inhale'
reka mbahéenze	'let me look by there$_{-16}$'

1s SP progressive	
mbeenzáa	'I am looking for'
aheenzáa	'he is looking for'
ahaanáa	'he is giving'

[2] 'Haya' was not known to EM prior to elicitation, which indicates that this alternation is productive, not memorized.

mbaanáa	'I am giving'
mbáándiikaa	'I'm reading'
mbaanáa	'I'm giving'
mbakízáa	'I am scorching'
mbeenzáa	'I'm looking for'
mbáángaaraa	'I am arguing'
mbaangáa	'I am arranging'
mbahéénzaa	'I'm looking at there-$_{16}$'

1s OP

vaambée	'they gave me'
vaambéénzi	'they looked at me'
aambóllıı	'he heard me'
kóómbonya	'to heal me'
aambáánzɔkırıı	'he shouted at me'
kɔ́ɔ́mbiizıra	'to hunt for me'

c. /f/

The labial fricative *f* exhibits two patterns of behavior, one where it hardens to [bw] and the other where (like other voiceless fricatives) it causes deletion of the preceding nasal. The hardening pattern predominates in apparently native vocabulary, and deletion arises in loanwords – however, a single stem can have both behaviors. /f/ is uncommon in Logoori, and no lexical adjectives beginning with /f/. There are also no native cl. 1-2 lexical nouns with initial /f/ which could provide a N→V derivational source of initial /f/. The borrowed word *ɔmfá'ráánza* 'Frenchman' can be subjected to N→A conversion (*ambéér-amafá'ráánza* 'French milk'), and in cl. 9-10 we find deletion of the nasal – *ŋám-íífá'ráánza* 'French meat'. Since there are somewhat more verbs beginning with /f/, opportunities for labial hardening are greater with deverbal adjectives, and we do find both the hardening pattern and the deletion pattern, correlated with the native / borrowed distinction.

deverbal adj

ɔmwáá'n-ɔ́'mfáávé	'exposed child'
ímbwá í'mbwáávé	'exposed dog'
ɔmɔ́ɔ́nd-ɔ́mfɔ́ɔ́ŋagırı	'snorted person'
eng'ɔ́ɔmb-éĭmbɔ́ɔ́ŋagırı	'snorted cow'
esóó'góó'n-íífáí'díké	'profitable market'

N Cl 11-10

There are nouns in cl. 11-10 which exhibit an alternation between /f/ and [b] post-nasally.

Nouns

rófɔɔngɔ́	zímbɔɔngɔ́	'key'
rɔ́'fúnú	zí'mbúnú	'tethering rope'
rɔfɔ́rɔ	zimbɔ́rɔ	'foam'

These are all of the known nouns in this class with initial /f/.

The disposition of *f* under verbal inflection is more variable: nasal deletion or fricative hardening are both found (similar variation arises with *sh*). When *f* becomes a stop, it becomes *bw*, not *b*. There is a tendency to prefer nasal deletion when the verb is a loanword, but hardening is also attested (e.f. in *-fáidɪka* 'profit'). Some speakers freely use both strategies. There seem to be no roots which absolutely require the hardening strategy, so deletion is always an option, and there are some cases where hardening is rejected (at least some of the time, by some speakers).

<u>1s SP perfective</u>

(deletion pattern)

afóógoyi	'he got crippled'	fóógoyi	'I got crippled'
afʊ́ʊ́twɪɪ	'he got fired'	fʊ́ʊ́twɪɪ	'I got fired'
afaani	'he fanned'	faani	'I fanned'
afaanani	'he resembled'	faanani	'I resembled'
		fíɪ	'I came to an end'
		fóói	'I was exhausted'
		faani	'I fanned'
		fóóchi	'I boiled over'
		fʊrʊvanyɪɪ	'I ate gluttonously'
		faanani	'I resembled'
		fuduchi	'I burst intr.'
		fugumi	'I hummed'
		faavi	'I sat exposed'

(hardening pattern)

afʊʊngʊri	'he opened'	mbʊʊngʊri	'I opened'
afʊnyi	'he stank'	mbʊnyi	'I stank'

(both patterns)

faidɪchi	'I profited'	mbwaidiki	'I profited'
fʊ́tí	'I fired'	mbʊ́tí	'I fired'
fʊgʊmi	'I hummed'	mbʊgʊmi	'I hummed'
fáávi	'I exposed'	mbwáávi	'I exposed'

<u>1s SP subjunctive</u>

naambʊ́nyí	'I will stink'
reka mbʊ́ʊ́ngʊ́rí	'let me open'
reka mbútí	'let me fire'
naa mbʊ́nyíírizɪ	'I will smell tr.'

<u>1s SP progressive</u>

(deletion pattern)

faanáa	'I am fanning a fire'
fóóraa	'I am beating'

fóókaa	'I am boiling over'
fʊróvanyaa	'I am eating gluttonously'
fótáa	'I am firing'
fʊʊngóráa	'I am unlocking'
faanánáa	'I resemble'
faan-ʊmʊllʊ	'I am fanning a fire'
fóógoyaa	'I am deteriorating'
faídíkáa	'I am profiting'
fóóraa	'I am beating'

(hardening pattern)

mbʊʊngóráa	'I am opening'
mbʊɲáa	'I am smelling'
mbwaanánáa	'I resemble'
mbótáa	'I am firing'
mbwaan-ʊmʊllʊ	'I am fanning a fire'
mbwóógoyaa	'I am deteriorating'
mbwaanáa	'I am fanning'
mbwaanánáa	'I resemble'
mbónyíírízáa	'I smell'
mbʊɲáa	'I stink'
mbótáa	'I am firing'
mbʊnyíírˈz̄áa	'I am smelling'
*mb(w)óókaa	
*mbwoora	
*mbwaídíkáa	

<u>1s OP</u>

(deletion pattern)

aafáánɪrɪɪ	'he fanned for me'
aafútí	'he fired me'
aafáidɪkɪrɪɪ	'he profited for me'
aafáánɪrɪɪ	'he fanned for me'
aafóóri	'he beat me'

(hardening pattern)

aambwáánani	'he resembled me'
kʊ́ʊ́mbʊta	'to fire me'
kʊ́ʊ́mbwaanɪra	'to fan a fire for me'
kʊ́ʊ́mbwaanana	'to resemble me'
aambwáánani	'he resembled me'
kʊ́ʊ́mbwaana	'to resemble me'
kʊ́ʊ́mbwoora	'to beat me'

d. /sh/

It was earlier noted that *sh* has multiple sources, coming from earlier *hy*, borrowed *sh*, also for some speakers it comes from *sy*. There are correspondingly two patterns of post-nasal behavior, although only in verb stems.

Lexical Adj

Some stems which begin with *sh* exhibit hardening to [by]. This pattern characterizes nominal stems beginning with *sh*.[3]

adjective:

máá¦zí máshó	'hot water'
mɔgá¦dí móshó	'hot bread'
ng'óómbé ímbyó	'hot cow'
ɪrííngá ¦ímbyó	'hot sickle'
chái ¦ímbyó	'hot tea'
zíngó ¦zímbyó	'hot firewood pl'
mwáá¦mí móshá	'new chief'
myéé¦rí míshá	'new months'
mágáá¦ndá máshá	'new beans'
ɪnávó¦dó ímbyá	'new basket'
ɪmbwá ¦íshá	'new dog'
ínyúúndó ímbyá	'new hammer'
síí¦ndáání mbyá	'new needle'
ísyó ímbyá	'new shaper'
zinávó¦dó zímbyá	'new baskets'
zíngá¦gá zímbyá	'new fences'
é¦ngókó ¦ímbyá	'new chicken'
zí¦ngókó ¦zímbyá	'new chickens'

noun:

rɔshá	zímbyá	'gathering(s) of elders'

The behavior of *sh* in nominal stems seems to be uniform, though there are few such stems – *sh* hardens to *by*, and does not cause deletion of the nasal.

deverbal adjective

The behavior of verbal stems is more variable. Data on deverbal adjectives indicates that *sh* generally undergoes hardening, but in at least one case it only causes deletion of the nasal.

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[3] The behavior of /f/ is variable as noted above. The fricative /s/ always conditions deletion of the preceding nasal, see 2.2.

amáází má!shóóhé	'warm water'
íɲámá í!mbyóóhé	'warm meat'
íɲám-íímbyó	'warm meat'
éng'óómb-ímbíre	'driven cow'
ómbán-ómʃsháá!gáré	'sharpened knife'
ɪnyóónd-ímbyáá!gáré	'sharpened hammer'
but:	
íɲám-ííshée	'ground meat'

The situation is even less clear in inflected verbs. One pattern is that the fricative hardens, as in the following examples:

1s SP	
mbiri	'I drove'
mbiráa	'I am driving'
mbyóóhízáa	'I am warming'

1s OP	
ʊʊmbírɪɪ	'you drove for me'
ʊʊmbíri	'you drove me'
ʊʊmbyééveree	'you danced for me'
ʊʊmbyóóhizi	'you warmed me'
kóómbyaagalla	'to sharpen for you'
kóómbilla	'to drive for me'

On the other hand, initial *sh* may also condition deletion of the nasal.

1s SP perfective	
shíɪ, shée	'I ground'
shaagari	'I sharpened'
shʊʊhi	'I got warm'
shoori	'I sinned'
shɪri	'I drove'
shéévi	'I danced'
shaaji	'I beat millet'

1s SP subjunct	
reka shí	'let me grind'
réká shéévé	'let me dance'

1s SP progressive	
shʊʊháa	'I am getting warm'
shóóhízáa	'I am making warm'
shɪráa	'I am driving'

shéézaa	'I am grinding'
shéévaa	'I am dancing'
shoováa	'I am wailing'
shaagáráa	'I am sharpening'
shéévaa	'I am dancing'
shéézaa	'I am grinding'
shaagáráa	'I am sharpening'

<u>1s OP</u>

ʊʊshʊ́ʊ́hizi	'you warmed me'

A single speaker may offer both [em]*ʊʊshʊ́ʊ́hizi* and [em]*ʊʊmbyʊ́ʊ́hizi* 'you warmed me', [em]*mbiri* and [em]*shiri* 'I drove'. The somewhat surprising hardening pattern where *sh* becomes *by* is due to one of the sources of *sh* in Logoori, namely *hi, hy* derived from proto-Bantu *pi, py*. The alternation *kʊshíra ~ mbiri* thus reflects proto-Bantu **mpidi*, and the coexisting variant *shiri* reflects reanalysis of **pi* to /shi/. Such a reanalysis may be helped along by the development of *sy* into *sh*, as in the case of *kʊsha* (*kʊsya* for some speakers, as well as the more general case in Lacustrine Bantu for this root). The stem 'grind' has not ever observed undergoing post-nasal hardening. This work will not attempt to forther resolve the complex problem of variation in post-nasal *sh*.

1.1.2. Hardening of /r/

The consonant /r/ becomes [d] after a nasal.

<u>Lexical Adj</u>

ḿbánó mórávʊ	'white knife'
imisáá¦rá ímírávʊ	'white trees'
ovosera vórávʊ	'white porridge'
nyúú¦mbá índávʊ	'white house'
zinyúú¦mbá zíndávʊ	'white house'
íngóv-ʊ̃ındavʊ	'white cloth'
índá ¦índávó	'white louse'
zííndá ¦zíndávó	'white lice'
ıbáákóʊ́¦rí índávʊ	'white bowl'
ígíríkí índávʊ	'white bull'

ómʊ́ʊ́ndʊ́ móráru	'insane person'
váándʊ́ váráru	'insane people'
íngógí ¦índáru	'insane baboon'
zímbúrí ¦zíndáru	'insane goats'

máká maritu	'heavy charcoals'
séé¦ngé mórítu	'heavy aunt'
ʊmwáá¦n-ómʊ́¦rítu	'heavy child'
ídárája ınditu	'heavy bridge'
íngógí ınditu	'heavy baboon'

ɪmbórá ɪnditu	‘heavy rain’
zindéve zinditu	‘heavy chairs’
zisúgudi zinditu	‘heavy conga drums’
zínzógú zinditu	‘heavy elephants’
zííngó zinditu	‘heavy firewood’
izíníímí izinditu	‘heavy tongues’
eɲeengero ɪnditʊ	‘heavy beer pot’
í!ngókó ɪnditʊ	‘heavy chicken’
ɪzí!ngókó ɪzinditʊ	‘heavy chickens’

avageni varuru	‘fierce guests’
kítoombééro kɪruru	‘bitter sweet-potato sprout’
é!mbóóngó ɪnduru	‘fierce buffalo’
ɪmbítí ɪndʊrʊ	‘fierce hyena’
káháwa ɪnduru	‘bitter coffee’
ɪngavi nduru	‘bitter luck’
ímbáda ɪndʊrʊ	‘fierce hawk’
ɪnyáámbaró ɪndʊrʊ	‘fierce ant’

ʊmwáá!ná móráhi	‘good child’
má!dúú!má máráhi	‘good maize’
vítóó!mí víráhi	‘good mound’
éɲéngéró índáhi	‘good beer pot’
fárá!sí ndáhi	‘good horse’
í!ngóró!vé índáhi	‘good pig’
zíng’óómbé zíndáhi	‘good cows’
zímbá!dá zíndáhi	‘good hawks’
zínóó!ní zíndáhi	‘good sesame’
ɪngógí ɪndáhi	‘good baboon’
ɪzíngózá !nízíndáhi	‘the vegetables are good’
íngokó !índáhi	‘good chicken’
íngóvó índáhi	‘good cloth’

The adjective/numeral ‘one, some’ is complicated. The stem is /rara/, but when preceded by a (surface) V-final prefix, it reduces to *-rra* hence phonetic [-lla].

índʊgónyi ndara	‘1 bug’	/n-rara/
ɪkɪróóngʊ kɪlla	‘1 porcupine’	/kɪ-rara/

Deverbal forms likewise systematically exhibit post-nasal hardening, as do N-to-A derivations.

<u>Deverbal Adj</u>

ɪnyíí!ngú índásu	‘thrown cooking pot’
zíɲám-ízí!ndógé	‘bewitched animals’
eng’óómbé índwaa(y)e	‘a sick cow’

N-to-A

éng'óómbé éndógoori	'Logoori cow'
é!ngók-éendoji	'witch chicken'
é!ngók-íí!ndááyá	'european chicken'

There is only one noun in cl. 11-10 with initial *r* which exemplifies the pattern.[4]

N Cl 11-10

ólléra	ízíndéra	'umbilical cord'

Hardening broadly applies in verbal inflections after the 1s subject and object prefixes.

1s SP perfective

ndaji	'I have promised'
vaaraji	'they have promised'
ndéévi	'I got drunk'
mɒréévi	'2p got drunk'
ndaagɪri	'I ate ugali'
ndákóóri	'I released'
ndɒhi	'I'm tired'

1s SP subjunctive

réká ndééke	'let me cook'
reka ndágé	'let me promise'
reka ndéké	'let me stop'
reka ndigóri	'let me buy it$_{-5}$'
reka ndoréete	'let me bring it$_{-11}$'
naa ndéété	'I will bring'

1s SP progressive

ndakóóraa	'I am releasing'
ndasáa	'I am throwing'
ndíráa	'I am crying'
ndihéénzaa	'I'm looking at 5'
ndohéénzaa	'I'm looking at 11'
ndiizáa	'I am eating'

1s OP

vaandájí	'they promised me'
aandákóóri	'he released me'
vaandórí	'they saw me'

[4] Most r-initial stems in this class happen to have a nasal in the second root syllable and therefore undergo GL, see 1.3.1. II have not obtained a plural for the rare noun *ɒl'liga* 'jug mouth'

vaandééti	‘they brought me’
ndeetéra	‘bring for me!’
ndyá	‘eat me!’

1.1.3. Hardening in y- and Ø-initial roots

There is a distinction between roots which begin with a vowel, versus those beginning with /y/, a distinction which is neutralized in certain contexts (after *-aa-*, 1s SP or OP, and in the imperative). The analysis of the *y* / Ø opposition is taken up in 4.1, and we will discuss *y*- and V-intial roots under the assumption that *y* is first inserted after a nasal in V-initial roots, which may then be subject to hardening (or deletion by GL). Identification of *y*-initial versus V-initial roots is facilitated here by separating examples, listing *y*-initial roots first, plus an accompanying postvocalic form, where overt presence of *y* directly attests underlying *y*, but hiatus-resolution indicates that the root is V-initial. In the discussion below, vowel-initial stems will be referred to as beginning with Ø (which is not a consonant, it is the lack of any consonant).

There are no lexical adjectives beginning with /y/, only one noun (*mʊ́ˈyááyɪ* ‘boy’) in cl. 1 (relevant to N-to-A derivation), and only a handful of cl. 11 nouns (none attested in the corpus), thus most examples of /y/ involve the verbal contrast. All of the following examples involve Ø-initial roots.

Lexical Adj

ʊ́mbír-ʊ́mwéére	‘empty body’
ɪnávʊ́ˈdó énzéré	‘empty basket’
égéengér-éénzéré	‘empty bell’
zígéengéré zínzéré	‘empty bells’
ííndá énzéré	‘empty stomach’
írʊ́ʊ́ˈmʊ́ ínzéré	‘empty room’
rʊdááˈmbí rwááˈkányʊ́	‘red wick’
íngʊ́vʊ́ ínzáˈkányʊ́	‘red cloth’
zing’óómbé zinzáˈkányʊ́	‘red cows’
ɪmbára ɪnzákanyʊ́	‘red scar’
zíˈgóófyá ˈzyááˈkányʊ́	‘red hats’

N Cl 11-10

izínzáchi	rwááchi	‘enclosure’
izinzaro	rwaaro	‘raised floor of a granary’
izinzevo	rweevo	‘fence’
zínzáˈsáyá	rwááˈsáyá	‘slap’
zinzíga	rwíiga	‘horn’
zinyíímbʊ	rwíimbʊ	‘song’
ɪzɪŋanda	rwaanda	‘granite rock outcropping’

N-to-A

The one example of a class 1 noun serving as a source of /y/ for nominal-prefix hardening is that of *mʊ́ˈyááyɪ* 'boy', and the behavior of this root is unusual.[5]

éng'óómbé íˈndááyɪ	éng'óómbé íˈyááyɪ	'boy cow'
ɪzíngúz-ízíˈndááyɪ	ɪzíngúz-ízíˈyááyɪ	'boy vegetables'

Verbs freely contrast *y*-initial and Ø-initial stems, so deverbal adjectives clearly attest the neutralization of y- and Ø-initial roots.

Deverbal A

/y/

íˈngáán-ééˈnzóóyé	'scooped wheat'
ɪnyʊ́ˈmb-ééˈnzéére	'saggy house'
ɪzííng-ízíˈnzávé	'buried firewood'

/Ø/

ɪnyíˈng-ínzáˈdíkí	'broken pot'
ŋ̀nááˈɲ-ínzáˈgórí	'plucked tomato'
ɪnyʊ́ʊ́ˈmb-énzéyé	'swept house'

Inflected verbs likewise merge the two root types post-nasally.

1s SP perfective

/y/

nzééchi	'I bent'	koyeeka	'to bend'
nzavɪri	'I buried'	kɔyavɪra	'to bury'
nzágáyaji	'I glistened'	kɔyagayaga	'to glisten'
nzójí	'I talked'	koyoga	'to talk'
nzóói	'I scooped by hand'	koyooya	'to scoop'

/Ø/

nzerémí	'I floated'	kwéérema	'to float'
nzigʊ́ri	'I opened'	kwiigɔra	'to open'
nzíshí	'I uprooted'	kwíiha	'to uproot'
nzéí	'I swept'	kweeya	'to sweep'
nzashi	'I plucked'	kwáaha	'to pluck'
nzati	'I did surgery'	kwáata	'to do surgery'
nzágaani	'I have met'	kwáágaana	'to meet'
ndava niínzavɔkanyɪɪ	'if I had sorted'	kwaáávɔkanya	'to sort'
ndava níínzasyaaji	'if I had split'	kwáásyaaga	'to split'

[5] There are otherwise no instances of hardening *y* to *d* in the language, except one token [em]*ndááyi* 'I sued' for *nzáári*, from /n-yaar-i/.

1s SP subjunctive

/y/

maa ɲééngé	'I will brew'
maa nzóóyé	'I will scoop'
geeɲékáná'á nzávé	'I have to bury'

/Ø/

náánzígórí	'I will open'	kwíígora	'to open'
naanzerémé	'I will float indef'		
maa nzéyé	'I will sweep'		
naanzígízí	'I will teach'		
naanzísyáámorɪ	'I will sneeze'		
naanzásyáámorɪ	'I will sneeze'		
naanzítóllɪ	'I will pour'		
naanzisyááge	'I will split wood'		

1s SP progressive

/y/

nzávíraa	'I am burying'
nzáváa	'I am digging'
ɲééngaa	'I am brewing'
ɲóómboraa	'I am pouring'
níínzɪraa	'I am working'
nzogáa	'I am talking'
nzóóyaa	'I am scooping'
nzéékaa	'I am sagging'

/Ø/

nzerémáa	'I am floating'
nzitáa	'I am killing'
nzigóraa	'I am opening'
nzaháa	'I am plucking'
nzaraa	'I am spreading'
nzigótáa	'I am getting full'
nzatáa	'I am performing surgery'
nzombákáa	'I am building'
nzonóónyáa	'I am damaging'
nzomíɲáa	'I am drying'
nzíngíráa	'I am entering'
nziɲámiɲaa	'I am inverting'
nzímílaa	'I am leading'
nzínókaa	'I am leaving work'

1s OP
/y/

vaanzéékɪzi	‘they made me bend’
vaanzáári	‘they sued me’
nzavíra	‘bury me!’
ɲeengéra	‘brew for me!’
vaaɲáánzizi	‘they made me happy’

/Ø/

kóónzigʊlla	‘to open for me’
vaanzé!réméráa	‘they are floating for me’
nzatányɪrá	‘smash for me’
nzigórizá	‘satisfy me’
nzizólizá	‘remember me’
nzaví!llá	‘bury for me’
navaanzíti	‘they will kill me’
vaanzávírɪɪ	‘they buried me’

Another outcome for /y/ is that it optionally becomes [b] after a nasal in at least two verbs which begin with /ye/, and one that begins with /yɪ/.

mbééchi	‘I bent’	nzééchi
mbéénji	‘I brewed’	ɲéénji
mbííngʊchi	‘I melted’	ɲííngʊchi
*mbavɪri	‘I buried’	nzavɪri
*mbééri	‘I was allergic’	nzééri
*mbíínzɪri	‘I worked’	ɲíínzɪri

1.2. Voicing

After /N/, voiceless stops become voiced, though examples of /p/ are extremely rare, being limited to the borrowed verb *-páátaana* ‘hire’.

Lexical Adj
/k/

avááguugá !vákórʊ	‘old grandfathers’
kɪbúú!sí kíkórʊ	‘old cat’
iddóshí irikórʊ	‘old house-mud’
endéve ɪngórʊ	‘old chair’
eng’óombé ngórʊ	‘old cow’
é!ngókó íngórʊ	‘old chicken’
zíɲámá zíngórʊ	‘old animals’
zindéve zingórʊ	‘old chairs’
ɪríínga íngórʊ	‘old sickle’

vasyaará !váké	‘small2(few) cousins’

voséŕá vóké	‘a little porridge’
íngógí ˈíngé	‘small2 baboon’
zíímbwá ˈzíngé	‘few dogs’
mórímí móˈkózúúzú	‘small3 farmer’
zimbwá ˈzíngúˈzúúzu	‘small3 dogs’
eng’oombe íngóˈzóózɔ́	‘small cow’
ímbúrú íngóˈzóózó	‘small monitor’
zímbúrú zíngóˈzóózɔ́	‘small monitors’
kémóórí kékóméru	‘fat calf’
énzógwíngóméro	‘fat elephant’
enzóki engóméro	‘fat bee’
eng’ééˈndé éngóméru	‘fat jigger’
ímbúkú engoméru	‘fat mole’
zingő zingómero	‘fat leopards’
éˈngókó ˈéngóméro	‘fat chicken’
/t/	
chééyó kítáámbi	‘long broom’
vágéní vatáámbɪ	‘long (tall) guests’
íkígóró íkítáámbɪ	‘long (tall) hill’
ɪbááˈkúúˈlí ndáámbɪ	‘long bowl’
ɪbááˈkóórá ɪndáámbɪ	‘long swagger stick’
íngóv-ŏɪndáámbi	‘long cloth’
índógóˈtá ˈíndáámbɪ	‘tall letter’
zííngó zindáámbɪ	‘long firewood’
zíngáˈgá zíndáámbi	‘long fences’
engóˈf-índáámbɪ	‘long umbilical cord’
ítíiˈró índáámbɪ	‘long centerpole’
kéróóˈrí kítíindi	‘pugnacious heifer’
ḿḿndó ḿtííndi	‘pugnacious person’
ɪngiri ndíindi	‘pugnacious warthog’
eng’óómbé índíindi	‘pugnacious cow’
/ch/	
ɔmbírí ḿˈchááfŏ	‘dirty body’
ɔmgádí ˈóḿóˈchááfu	‘dirty bread’
éˈngókó íˈnjááfɔ	‘dirty chicken’
éng’óómbé íˈnjááfŏ	‘dirty cow’
éˈnzógú íˈnjááfŏ	‘dirty elephant’
ɪmbóˈrí ínjáafu	‘dirty goat’
zíngúvó zíˈnjááfŏ	‘dirty cloth’
zíng’óómbé zínˈjááfŏ	‘dirty cows’

mwáá˥ná ḿ˥cháafu	‘dirty child’
ḿgéní móchaafu	‘dirty guest’
váándɔ́ vá˥chááfú	‘dirty people’
mifé˥réjí míchaafu	‘dirty water taps’
ryéé˥ngú rí˥cháafu	‘dirty banana’
kímiiɲú ˥kícháafu	‘dirty chicken’
íngógíí njaafɔ	‘dirty baboon’
endé˥vé í˥njáafu	‘dirty chair’
zíngógí zí˥njáafɔ	‘dirty baboons’
zindé˥vé zí˥njáafu	‘dirty chairs’
zínjí zí˥njááfú	‘dirty flies’

<u>Deverbal Adj</u>

/k/

mbóyɔ makáraaɲé	‘chopped eggs’
endévé ˥íngá˥rágé	‘chopped chair’
zíngɔ́ ˥zíngá˥rágé	‘chopped firewood’
íɲámá íngá˥rááɲé	‘chopped meat’
é˥ngókó ˥ngárágé	‘a carved-up chicken’
íɲámá íngá˥ráángé	‘fried meat’
íɲámá íngá˥ráángé	‘fried meat’
zingúrúvé zingá˥ráángé	‘fried pigs’

/t/

ligama litáándɔrí	‘torn roof’
ɪkáratáási ndáándɔrí	‘torn paper’
ɔmwáá˥ná mtéllechi	‘slippery child’
msáára mtéllechi	‘slippery tree’
ɪsáá˥vúúní endéllechi	‘slippery soap’

/ch/

é˥ngók-í˥ínjí˥ríng’áné	‘quiet chicken’
é˥ngók-í˥ínjí˥ríng’ánɔ́	‘quiet chicken’
ɪcháá˥í í˥njóóngí	‘strained tea’

<u>N-to-A</u>

/k/

é˥ngókó íngári	‘female chicken’
ɪmbítí ɪngari	‘female hyena’
eng’óómb-éé˥ngóózá	‘uncle cow’
kɪbágá kekeere	‘old (f) cat’
ɪngóróvé engeere	‘old (f) pig’

/t/

kí¦fóó¦y-íkítíga	‘widow rabbit’
éng’óómbéé ndíga	‘widow cow’
ríngó¦ró rítéénde	‘neighbor snail’
ɪmbʊkú¦ éndéénde	‘neighbor mole’

N Cl 11-10

rʊkaayɪrʊ	‘sickle’	zingaayɪrʊ
ʊrókó	‘firewood’	zíingó
ró¦kééyó	‘banana plantation’	zí¦ngééyó
rókáɲa	‘bundle of firewood’	zíngána
rʊká¦rááye	‘wash basin’	zí¦ngárááye
rʊtávati	‘thorny plant’	zindávati

The verbal inflectional prefix /N/ regularly conditions voicing of stops.

1s SP perfective

mbaataani	‘I hired’	apaataani	‘he hired’
ngaavi	‘I searched’	akaavi	‘he searched’
ngoonyi	‘I helped’	akoonyi	‘he helped’
ndáándʊri	‘I tore’	atáándʊri	‘he tore’
njeerizi	‘I greeted’	acheerizi	‘he greeted’
ndodéékeree	‘I cooked for them$_{-13}$’		
ngedééchi	‘I cooked it$_{-7}$’		
ngwée	‘I have paid dowry’	akwée	‘he has paid dowry’
ngɪri kʊrɪma	‘I haven’t yet plowed’	akɪri kʊrɪma	‘he hasn’t plowed’

1s SP subjunct

nɪɪ mbáátáane	‘I will hire’
reka njéérízí	‘let me greet’
reka ngáávé	‘let me search’
reka ndʊgórí	‘let me buy them$_{-13}$’
reka njíítɪ	‘let me kill it$_{-7}$’
reka ngɪgórízɪ	‘let me sell it$_{-7}$’
reka ngakóoɲe	‘let me help him$_{-12}$’
naa ngáráange	‘I will fry’
nɪɪ njóóré	‘I will draw’

1s SP progressive

ngubáa	‘I am calling’
ngooɲáa	‘I am helping’
ndáándʊraa	‘I am tearing’
ngohéénzaa	‘I’m looking at you’

ngaráángáa	'I am frying'
ngɪnáa	'I'm playing'
njóóraa	'I am drawing'
ngaráángáa	'I am frying'
ngaaváa	'I am searching'
ndígíɲaa	'I am tickling'
ngehéénzaa	'I'm looking at it$_{-7}$'
ngahéénzaa	'I'm looking at it$_{-12}$'
ndohéénzaa	'I'm looking at them$_{-13}$'

1s OP

mbaatána	'hire me!'
vaandéévi	'they asked me'
vaangáí	'they forbade me'
vaanjáái	'they disparaged me'
aangárí	'he cut me'
aandúmi	'he sent me'
aandʊ́maa	'he is sending me'
aandíízaa	'he's fearing me'
aangáraangɪraa	'he's frying for me'
aangóóɲaa	'he's helping me'
reka vaanjóolle	'let them draw for me'
reka vaandé	'let them bury me'
ngaráángɪrá	'fry for me!'
ndʊmá	'send me!'
ondéeve	'ask me!'
kóóngooɲa	'to help me'
kóónjoolla	'to draw for me'
yaakʊ́ʊ́ngʊba	'he just hit me.'
aanjéreveree	'he was late on me'
aráándaandʊlla	'he will tear up on me'
naangáraangɪrɪ	'he will fry for me'

1.3. Ganda Law

When the root-initial consonants /r, g, y, v/ are immediately preceded by /N/ and are followed in the onset of the next syllable by a nasal, the oral consonant deletes, resulting in [n, ng', ɲ, m] respectively. The same result is observed with vowel-initial verbs, and as discussed in 4.1, it is assumed that vowel-initial verbs undergo insertion of *y* which then becomes *z* or deletes, following Ganda Law.

The conditions on GL are not uniform, and vary according to the root-initial consonant. GL almost never applies to /v/. There is the single noun *emóni* 'eye' from /e-N-voni/, cf. *akávóni* 'eye dim', which exemplifies GL applied to /v/. Contrast that with *ɪmbáá'mbálló* 'wide-$_9$', *kɪváá'mbálló* 'wide-$_7$'. The consonant /v/ is therefore excluded from the target class, and this noun is assumed to be historical residue of earlier wider application of the rule.

1.3.1. Ganda Law targeting /r/

GL applied to /r/ is obligatory in all contexts.

Lexical Adj

gʊtó ˈgórʊ́ʊ́ngi	'right ear'	
ryéengú ˈllʊ́ʊ́ngi	'straight banana'	
méengú ˈmárʊ́ʊ́ngi	'straight bananas'	
ɪbáákʊ́órá ɪnʊ́ʊ́ngi	'straight walking stick'	
zibáákʊ́órá zinʊ́ʊ́ngi	'straight walking stick'	
ɪbááˈkʊ́ʊ́ˈrá nʊ́ʊ́ngí	'straight cane'	
váándʊ́ váraambá	'whole people'	
ng'ʊ́ʊ́mbé náámba	'whole cow'	
zíng'ʊ́ʊ́mbé zíˈnáámbá	'whole cows'	
eng'ʊ́ʊ́mbé ínámʊ	'healthy cow'	
ḿḿndʊ́ mʊ́rámʊ	'healthy person'	
zíngokó ˈzínámʊ	'healthy chickens'	
kɪbúúˈsí kírámʊ	'healthy cat'	
zíˈngókó ˈzínám̀	'healthy chickens'	
eng'ʊ́ʊ́mbé ínámʊ	'healthy cow'	*eng'ʊ́ʊ́mbé índámʊ

Deverbal Adj

rʊgága rʊraambɪrʊ́	'collapsed fence'
zingága zindaambɪrʊ́	'collapsed fences'
íɲám-ííˈnʊ́ʊ́ngí	'seasoned meat'
eng'ʊ́ʊmb-ééˈnʊ́ʊ́ndé	'followed cow'
zíngʊ́v-ízíˈnííngʊ́	'folded clothes'

N-to-Adj

kɪbúúˈsí kírína	'friendly cat'
vibúúˈsí vírína	'friendly cats'
embwá ˈíndína	'friendly dog'
zíng'ʊ́ʊ́mbé zíndína	'friendly cows'
ímbwí ɪndɪna	'friendly dog'
éˈngók-ííˈnámwá	'in-law chicken'

N Cl 11-10

Íllími	'tongue'	zíníimi	'tongues'
ʊ́ˈllʊ́ʊ́ngo	'white clay'	ɪzíˈnʊ́ʊ́ngo	'white clay batches'

1s SP perfective

nííndi	'I waited'
náámbɪrizi	'I stretched s.t. out'

náánji	'I called'
nééng'aani	'I was equal'
némí	'I was crippled'
nɒmi	'I bit'
nwáání[6]	'I fought'
nɔ́mí	'I bit'
neeng'aani	'I was equal'

1s SP subjunct

reka nóónde	'let me follow'
reka nɔ́ɔ́mbí	'let me push'
geeɲékáá ǃnííndí	'I should wait'
geeɲéká!á náángé	'I should call'

1s SP progressive

nóóndaa	'I am following'
nɒmáa	'I am biting'
ndwáánaa	'I am fighting'
nímáa	'I am plowing'
nɔ́ɔ́mbaa	'I am pushing'
nwáána	'I am fighting'
niingáa	'I am folding'

1s OP

vaanáánji	'they called me'
vaanɔ́mi	'they bit me'
vaanímírɪɪ	'they plowed for me'
nɪɪndá	'wait for me'
nɒmá	'bite me!'
yáánɒma	'he bit me'

*ndímáa
*ndáángaa

Ganda Law does not apply to NC arising from combination of the SP /N/ plus an OP before a nasal-initial root.

n-di-ɲááɲaa	'I am eating it$_{-5}$'	*niɲááɲaa
n-di-ng'óódaa	'I am writing it$_{-5}$'	*ning'óódaa
n-di-ɲóóraa	'I am getting it$_{-5}$'	*niɲóóraa
n-do-ɲóóraa	'I am getting it$_{-11}$'	*noɲóóraa
n-di-ɲóóri	'I found it$_{-5}$'	*niɲóóri
n-do-ɲóóri	'I found it$_{-11}$'	*noɲóóri

[6] The token $_{fa}$[ndwaani] is attested once, alonside regular [nwaani].

geeŋéká!á ndong'óode	'I should write it$_{-11}$'	*geeŋéká!á nong'óode

Neither does it apply to a 1s SP before the tense prefixes *ri* and *ra*.

ndamoroma	*namoroma	'I will speak'
ndáméŋa	*náméŋa	'I will reside'
nding'óóda	*ning'óóda	'I will write'
ndinwa	*ninwa	'I will drink'
ndimeŋa	*nimeŋa	'I will reside'
ndim̀mórómera	*nim̀mórómera	'I will speak to him'

1.3.2. Ganda Law targeting /g, y, Ø/

GL as applied to *g* and *y* (including *y* inserted post-nasally in underlyingly Ø-initial stems) is optional, thus one finds both *ng* and *ng'*, *nz* and *ɲ*. As discussed in 4, the underlying distinction between y-initial and V-initial roots is neutralized in most contexts, and with respect to GL such roots are treated the same. Speakers differ significantly in the likelihood that GL applies in this context, and a speaker may strongly resist applying, or not applying, GL in some context, while other speakers freely apply / don't apply the rule in that context. Hence, all observed tendencies are reduced to the simple generalization that GL is optional.[7]

The examples below predominantly merge the two outcomes of GL (applies / does not apply), in that order, and keeps separate the constructions where the rule is relevant as well as the underlying initial consonant. There is also variation between [ɲ] and [ny] before [ɪ], governed by a rule discussed in 12 – ɲ becomes [ny] in certain contexts.

Lexical Adj

/g/

é!ngókó eng'eni	'strange chicken'
ɪmbw-éeng'eni	'strange dog'
ɪmbw-éengeni	'strange dog'
endé!vé í!ng'úúndú	'rotten chair'
zíŋámá zí!ng'úúndú	'rotten meats'
íŋámá í!ngúúndú	'rotten animal'
ŋam-íí!ngóóndó	'rotten meat'

/Ø/

ɪnzár-ɪŋangʊ	'light gravel'
ɪnzár-ɪŋzangʊ	'light gravel'

[7] This is in contrast with GL applied to /r/, which is virtually obligatory for all speakers, though occasionally fails to apply in some token. Likewise, the optionality of vowel harmony (see 6.1) is more systematic: some speakers always apply harmony; all speakers have a tendency to not harmonize in multiple-prefix contexts in verbs.

ɪɲááˈɲ-éɲéngó	‘light tomato’
ɪɲááˈɲ-énzéngó	‘light tomato’
endéˈv-ínyímbí	‘short chair’
endéˈv-ínzíímbɪ	‘short chair’
ɪmbw-íˈíɲómó	‘dry dog’
ɪmbw-íˈínzómó	‘dry dog’

Deverbal Adj

/g/

éngó éng’óne	‘sleeping leopard’
éng’óómb-ééˈng’ééndé	‘walking cow’
íˈngááˈnó íng’úúˈnámé	‘fermented wheat’
éngó éngóne	‘sleeping leopard’
éng’óómb-ééˈngééndé	‘walking cow’
íˈngááˈnó íngúúˈnámé	‘fermented wheat’

/Ø/

ɪmbáˈrábáˈr-íɲáˈmbóki	‘crossed road’
ɪmbárábárá ínzáˈmbókó	‘crossed road’
ɪnyóómb-ɪɲóˈmbáké	‘built house’
ɪnyóómb-ɪɪnzóˈmbáké	‘built house’
ɪɲááˈɲ-ééˈɲéɲé	‘desired tomato’
ɪɲááˈɲ-ééˈnzéɲé	‘desired tomato’
endéˈv-íɲááˈmbákáné	‘refused chair’

/y/

ɪbúˈs-ééˈɲéengé	‘brewed busa’
ɪmbw-íˈíˈnyíingí	‘foolish dog’
ɪmbw-íˈíˈnzíiˈngírí	‘working dog’
ɪbúˈs-ééˈnzéengé	‘brewed busa’
ɪmbw-íˈíˈnzíingí	‘foolish dog’
ɪmbw-íˈíˈɲiiˈngírí	‘working dog’

N-to-A

/Ø/

ɪmbw-íˈíɲána	‘young dog’
íˈndógóˈnyí ínzána	‘young ant’
ɪmbwá ɪnzana	‘young dog’
ímbwá ˈínzána	‘young dog’
ɪmbúˈrí ínzána	‘young goat’
íngógí ɪnzána	‘young baboon’

N Cl 11-10

/g/		
ʊrʊgano		‘story’
ɪzingano	zing’ano	‘stories’
ɪzíngóma	ɪzíng’óma	‘head wounds’
ʊrʊgɪna		‘grinding stone’
ɪzingɪna	ɪzing’ɪna	‘grinding stones’
ɪzingéémbe	ɪzing’éémbe	‘razors’
izingeendo	izing’eendo	‘journeys’
/Ø/		
ɪzínzána	*ɪzínyána	‘childishness (types)’
iziŋanda		‘wide rocks’
urwaanda		‘wide rock’
ʊrwíɪmbʊ		‘song’
ɪziŋímbʊ	ɪzínzímbʊ	‘songs’

There is likewise optionality of GL in the context of verbal inflections.

1s SP perfective

/g/	
ng’ééndi	‘I walked’
ng’óóngomi	‘I rolled’
ng’énYí	‘I wondered’
ng’úúnami	‘I fermented’
ngóóngomi	‘I rolled’
ngénYí	‘I wondered’
ngúúnami	‘I fermented’
/y/	
nyíínji	‘I was stupid’
ɲíínzɪri	‘I worked’
ɲʊʊmbi	‘I was overgrown’
ɲáánzi	‘I loved’
ɲóómboori	‘I over-poured’
nzʊ́ʊ́mbi	‘I was overgrown’
nzéénji	‘I brewed’
nzíínji	‘I was foolish’

/Ø/

ɲámbɒchi	'I forded'
ɲényí	'I wanted'
ɲaani	'I mooed'
nɪɪmbi	'I sang'
ɲɪmíllɪɪ	'I led'
nyingɪrii	'I entered'
nzaambɒchi	'I forded'
nzɪmíllɪɪ	'I led'
nzɪnámi	'I bent'
nzɪmbɪhi	'I was short'
nzímani	'I was selfish'
nzingɪrii	'I entered'

<u>1s SP subjunct</u>

/g/

geeɲékáá ꜜng'ééndé	'I should walk'
réká ng'ánágáne	'let me think'
réká ng'óné	'let me sleep'
réká ngóné	'let me sleep'
geeɲékáá ꜜngómírí	'I should catch'
geeɲékáá ngánágányɪ	'I should think'
geeɲékáá ngóóngómáne	'I should roll'
réká ngóné	'let me sleep'

/y/

reka ɲéengé	'let me brew'
reka ɲíínzírí	'let me work'
geeɲéká ꜜɲóómbí ꜜdáave	'I should not be overgrown'
reka nzéémbéere	'let me sag'
reka nzééké	'let me sag'
geeɲéká ꜜnzóóyé	'let me scoop'
geeɲéká ꜜnzóómbí ꜜdáave	'I should not be overgrown'

/Ø/

geeɲékáá ꜜɲíínzírí	'I should work'
réká ɲámbóki	'let me ford'
réká nyíngírí	'let me enter'
geeɲékáá ꜜnzínámé	'I should bend'
leka nzámbóki	'let me ford'
reka nzímbí	'let me sing'
réká nzíngírí	'let me enter'

1s SP progressive

/g/

ng'úúndaa	'I am rotting'
ng'ééndaa	'I am walking'
ng'ónáa	'I am sleeping'
ng'ánáganaa	'I am thinking'
ngeɲáa	'I am uncertain'
ngóóngomanaa	'I am rolling'
ngónáa	'I am sleeping'
ngánáganaa	'I am thinking'
ngúúndaa	'I am rotting'

/y/

ɲééngaa	'I am brewing'
ɲʊ́ʊ́mbaa	'I am being overgrown'
nyííngaa	'I am being foolish'
nzóóyaa	'I am scooping'
nzééngaa	'I am brewing'
nzáváa	'I am digging'

/Ø/

ɲánigɪraa	'I am going ahead'
ɲéɲáa	'I am wanting'
ɲʊmáa	'I am being dry'
nzéɲáa	'I am wanting'
nzʊmáa	'I am being dry'
nzánigɪraa	'I am going ahead'

1s OP

/g/

arɪkááng'onizɪ	'he will make me sleep'
arɪkááng'uundizɪ	'he will make me rot'
arɪkááng'ʊmɪrɪ	'he will catch me'
arɪkááng'unamizɪrɪ	'he will ferment for me'
arɪkáánguundizɪ	'he will make me rot'
arɪkáángʊmɪrɪ	'he will catch me'
arɪkáángunamizɪrɪ	'he will ferment for me'
arɪkáángonizɪ	'he will make me sleep'

/y/

vaaɲáánzi	'they loved me'

varaáɲɪɪnzɪlla	‘they will work for me’
ɲeengéra	‘brew for me!’
nzeengéra	‘brew for me!’
nzavíra	‘dig for me!’

/Ø/

arɪkááɲɔmizɪ	‘he will dry me’
arɪkáányɪmɪllɪ	‘he will lead me’
arɪkáánzɪmɪllɪ	‘he will lead me’
mayaanzámbɔ́kɪrɪ	‘he will ford for me’

When the reflexive prefix /ɪ/ comes between the 1s SP and a nasal-initial verb root, only *y*-insertion and hardening are observed, and not GL.

geeŋéká¦á nz-i-nywéeke	‘I should whip self’	*geeŋéká¦á nyinywéeke
nz-i-mínágɪraa	‘I am stirring for self’	*ɲimínágɪraa
nz-e-mórómeraa	‘I am speaking to self’	*ɲemórómeraa
nz-ɪ-ɲágɔllɪɪ	‘I ran for self’	*ɲɪŋágɔllɪɪ
nz-e-ɲégí	‘I insulted self’	*ɲeŋégí
leka nz-e-ng’óódere	‘let me write to self’	*leka ɲeng’óódere
nz-ɪ-manyi	‘I knew self’	*nyɪmanyi
nz-ɪ-móríkɪrɪɪ	‘I lit up for self’	*ɲɪmóríkɪrɪɪ

This indicates that a root-initial nasal does not trigger GL, indeed all examples of GL apply to root-initial consonants followed by nasal in the next syllable.

1.4. Unchanged consonants

There is no change in the consonants /b d g j/ after /N/ (except for deletion of /g/ by GL if the following syllable contains a nasal). No lexical adjectives begin with /b/, but there are adjectives with /d, g, j/.

<u>Lexical A</u>

eng’oomb-ɪɪnjima	‘whole cow’
é¦ngókó ¦índáá¦máánó	‘bad chicken’
í¦ngóró¦ví índáá¦máánó	‘bad pig’
zí¦ngókó ¦zíndáá¦mánó	‘bad chickens’
ɪmbára ɪndáá¦máá¦nó	‘bad scar’
ɪmbá¦dá íngéri	‘smart hawk’
é¦ngókó ¦íngéri	‘smart chicken’
éngóómbé éngéri	‘smart cow’
zimbúrí ¦zíngéri	‘smart goats’

ǹgóró꜒vé ꜒í꜒ndí	‘small pig’
zíngóró꜒vé zíndí	‘small pigs’
éng’óómbé índí	‘small cow’
zindévé꜒ zíndí	‘small chair’
ímbá꜒rá índí	‘small scar’
é꜒ng’édú ꜒n-ííndí	‘the joint is small’
mó꜒yáá꜒yí mógéri	‘smart boy’
váá꜒ná vágéri	‘smart children’
é꜒ngókó ꜒íngéri	‘smart chicken’
zí꜒ngókó ꜒zíngéri	‘smart chickens’
éngóómbé éngéri	‘smart cow’
zimbúrí ꜒zíngéri	‘smart goats’
váándó vágúru	‘hard-working people’
rishaamgoma riguru	‘hard-working gecko’
amagútú maguru	‘hard-working elders’
enzogu ɪngʊrʊ	‘hard-working elephant’
zinzogu zingʊrʊ	‘hard-working elephants’
eng’oombe ɪnguru	‘hard-working cow’
zing’oombe zinguru	‘hard-working cows’
móóndó mó꜒gáásó	‘very-good person’
ímbwá í꜒ngáásó	‘very-good dog’
aváándó vá꜒gáásó	‘very-good persons’
mwáá꜒ná mdá꜒máánó	‘bad child’
aváándó vádáá꜒máánó	‘bad people’
víí꜒há vádáá꜒máánó	‘bad brides’
ng’óómbééndáá꜒máánó	‘bad cow’
zíng’óómbé zíndáá꜒máánó	‘bad cows’
é꜒ngókó ꜒índáá꜒máánó	‘bad chicken’
zí꜒ngókó ꜒zíndáá꜒máánó	‘bad chickens’
éng’óómbé índáá꜒máánó	‘bad cow’
ǹgóró꜒vé ꜒í꜒ndí	‘small pig’
zíngóró꜒vé zíndí	‘small pig’
rogéémbé ródí	‘small razor’
endé꜒vé índí	‘small chair’
zindévé꜒ zíndí	‘small chair’
rógééndó ródíŋu	‘hard journey’
kítuungú꜒rú kí꜒dínyu	‘hard onion’
ḿbánó módínyu	‘hard knife’
íḿbánó mídínyu	‘hard knives’

aváándó vádínyu	‘hard people’
mábwóóní madínyu	‘hard potatoes’
ɪbáákúúrí ɪndínyu	‘hard bowl’
zibáákúúrí zindínyu	‘hard bowls’
vóserá vódínyu	‘hard porridge’

kígúútí kídiidíídi	‘small field’
zíngóró!vé zíndiidíídi	‘small pig’
ɪngʊgí !í!ndíídíídi	‘small baboon’
kɪbá!gá kí!díídíídi	‘small cat’
vibá!gá ví!díídíídi	‘small cats’
eng’óómbé índiidíídi	‘small cow’

Deverbal A

zindéve zí!mbááng’é	‘arranged chairs’
ɪnyóʊ́mb-ɪɪmbó!móré	‘demolished house’
ɪɲáá!ɲ-éé!ndóóɲé	‘tomato made into small pieces’
ɪmbw-é!éngóné	‘sleeping dog’

zingóza zíndeeké	‘cooked vegetables’
má!gónyá má!dééké	‘cooked bananas’
íɲáméé!ndééké	‘cooked meat’
íɲámá í!ndééké	‘cooked meat’
éngókó endeeke	‘cooked chicken’
zíngókó zindeeke	‘cooked chickens’
mitó mí!dééké	‘cooked mito’
ɲáméé!ndééké	‘cooked meat’

N-to-A

ɪbós-í!índáka	‘poor beer’
eng’óómb-ííndíríjɪ	‘Tiriki cow’
eng’óómb-íí!ngʊ́ʊ́gá	‘grandfather cow’
ɪmbʊ́!r-íí!mbáábá	‘father goat’
ʊnyʊ́ʊ́!mb-íí!njʊ́ʊ́mbe	‘MP house’

ɪɲama endoto	‘infant animal’
mwááraabu mdoto	‘infant Arab’
kísíí!mbííkírá kedoto	‘infant whydah’
endévé endoto	‘soft chair’
zindévé zindoto	‘soft chairs’

N Cl 11-10

rʊbááho	zimbááho	‘lumber’
rʊdáambi	zindáambi	‘wick’
ʊró!dááng’á	zí!ndááng’á	‘cattle-herding stick’
rʊgáda	zingáda	‘pipe’

rʊjʊ	zinjʊ	'clay bowl'

1s SP perfective

mbomori	'I destroyed'
kobomori	'we destroyed'
ndeechi	'I cooked'
odeechi	'2s cooked'
ngáí	'I forbade'
kʊgáí	'we forbade'
ajíbí	'he answered'
njíbí	'I answered'
ngagórízi	'I sold $them_{-6}$'
ngʊgórízi	'I sold it_{-3}'
njigórízi	'I sold $them_{-4}$'
ngítung'amiɲi	'I inverted it_{-9}'

1s SP subjunct

reka ngórí	'let me buy'
reka ngagórízi	'let me sell it-6'
reka ngʊgórízi	'let me sell it-3'
geɲékáá ˈnzáázááme	'I should taste'

1s SP progressive

ngagómíraa	'I am touching it_{-6}'
ngʊgʊmíraa	'I am touching it_{-3}'
nzáázaamaa	'I am tasting'
nzíírɪllaa	'I am continuing'
nzéengeellaa	'I am staring at'
vazéengeellaa	'they are staring at'
nzókáa	'I am pouring'
ngómíraa	'I am catching'
ngávóranyaa	'I am doling out'
njííbaa	'I am answering'
ndeekáa	'I am cooking'
ndooráa	'I am picking up'
mbórókaa	'I am flying'

1s OP

vaambáángɪrɪɪ	'they arranged for me'
vaandéékere	'they cooked for me'
vaanjíbí	'they answered me'
vaanzʊkírɪɪ	'they poured for me'
aanzʊkíraa	'he's pouring for me'
vaanzéé ˈngéélláa	'they are staring at me'
vaanzáá ˈzáámíráa	'they are tasting for me'

nduyá ‘hit me’
ngavólla ‘divide for me’

2. Nasal deletion

Nasals delete in two contexts: immediately before a nasal, and before a fricative. Nouns in lexical cl. 9-10 whose root begin with a nasal or a fricative are consistent with the general rule that a nasal deletes before a nasal or a fricative, but such nouns do not proving compelling evidence for the rule, since not all 9-10 nouns select the class prefix /N/ (e.g. *ɪ-góóˈfyá* ‘hat’, *e-béde* ‘ring’, *ɪ-tííga* ‘giraffe’). One might reasonably expect one of the nouns *ɪ-máári* ‘wealth’, *e-mééri* ‘ship’, *e-mééza* ‘table’, *e-ng’édu* ‘joint’, *ɪ-sá* ‘time’, *ɪ-sííndu* ‘quail’, *í-súgúdi* ‘drum (conga)’ to have the class prefix /N/ underlyingly, but in light of the existence of a lexically determined Ø class allomorph in cl. 9-10, there is no obvious reason for claiming that some specific noun in this set has the prefix /N/.

Nevertheless, there is an independent diagnostic that suggests that only a few nouns whose stem begins with a nasal or *s* lack a nasal prefix, and others (the majority) do underlyingly have that prefix, which is phonologically deleted. The evidence, discussed in 10, especially 10.8, pertains to vowel lengthening related to NC sequences. The stems /swééta/, /mééri/ and /méésa/ do not undergo the vowel lengthening process attested in similar-looking /sóóka/, /nyóómba/ and /ng’oombe/.

n-íˈsóóka ‘with a sheet’
n-íˈswééta ‘with a sweater’
kíˈr-émééri ‘each ship’
kíˈr-íínyóómba ‘each house’
koméésa ‘on a table’
koong’oombe ‘on a cow’

In cases without the segmental ambiguity, i.e. in the case of surface stop-initial nouns, lengthening occurs provided that the noun takes an overt nasal prefix (subject to additional conditions, related to the selection of the augment). It is therefore assumed that the cl. 9-10 nasal prefix does delete before noun-stems beginning with nasals or /s/. Data from nouns in cl. 11-10, verbs and adjectives (including denominal derivatives), which do not have such Ø allomorphy, provide strong evidence for nasal deletion.

2.1. Pre-nasal deletion

When /N/ precedes a stem-initial nasal, /N/ deletes. Surface nasal + nasal, including geminates, do arise from reduction of other prefixes such as /mʊ, rʊ, ri/. Lexical nouns illustrating this pattern are hard to come by. Only two nouns in cl. 11-10 are known whose stem begins with a nasal.

N Cl 11-10

rómémo	‘flame’	zimémo
rʊmɪllo	‘gullet’	

Lexical Adj

lígéémbé línéne	‘big hoe’
mórímí mónéne	‘big farmer’
rohá|ngáywá |rónéne	‘big cave’
éng’óómbé énéne	‘big cow’
ebé|dé énéne	‘big ring’
ɪɲóómbá |énéne	‘big house’
ímbúkú |énéne	‘big mole’
ɪnavó|dó énéne	‘big basket’
ɪngógí| énéne	‘big baboon’
zííngó zinéne	‘big firewood’
zinavó|dó zínéne	‘big baskets’
zí|ngókó |zínéne	‘big chickens’
índá énéne	‘big stomach’
í|ngókó |ínéne	‘big chicken’
zímbágayó |zínéne	‘big hooves’
índóvátíró énéne	‘big sole’
í|mbóógó ɪnéne	‘big buffalo’
mágóké mámwaaḿ	‘black ashes’
kígó kí|mwáám	‘black wasp’
zíngúbó zí|mwáámó	‘black cloth’
kahá|wá í|mwáámó	‘black coffee’
ɪbárási í|mwááḿ	‘black horse’
í|njúúgíí |mwáámó	‘black peanut’
mórímí ḿ|mwáámó	‘black farmer’
mwóó|gó ḿ|mwááḿ	‘black cassava’
emó|ní mwaaḿ	‘black eye’
ɪbáá|kúúlí mwaaḿ	‘black bowl’
ɪdárá|já ímwaaḿ	‘black bridge’
ńgó í|mwáámó	‘black leopard’
zibáákóórá zímwaaḿ	‘black walking stick’
zíngó zí|mwáámó	‘black leopard’
ɪgéé|ngéére ɪmwaamɔ	‘black bell’
ɪzí|ngókó |ízí|mwááḿ	‘black chickens’
ɪbáá|kúúrí |ímwáámó	‘black bowl’
emóní |émósi	‘left eye’
éng’óómb-éémósɪ	‘left cow’
ɪnyóó|mb-éémósɪ	‘left house’
ɔgɔtó |gómósɪ	‘left ear’
mkó|nó ḿmósi	‘left hand’
gɔtó |gómósi	‘left ear’
kérééngé kémósi	‘left foot’
índóvgíró émósi	‘left heel’

vírééngé vímósi	‘left feet’
ísúgúdí ínífu	‘nice sugudi’
nyúúmbá ínífu	‘nice house’
zinyúúmbá ˈzínífu	‘nice houses’
zíˈngóróˈví zínífu	‘nice pigs’
eng’óómb-ééng’élle	‘slim cow’
zimbúˈrí zíng’élle	‘slim goats’
íˈmbítí ˈéng’élle	‘slim hyena’
zíng’óómbé zíng’élle	‘slim cows’
íɲámá ínúru	‘sweet meat’
íˈnjúúg éénórɒ	‘sweet peanut’
ichái ınóru	‘sweet tea’
ríˈgómyá rinuru	‘sweet banana’
vwóóˈkí vónórɒ	‘sweet honey’
ríchúúˈngá nnúru	‘sweet orange’
mkááˈdó mnórɒ	‘sweet avocado’
ichái ınóru	‘sweet tea’
íbóˈsá ínórɒ	‘sweet busa’
ínzóní íˈnyááró	‘wilted clotting plant’
zínzóní zíˈnyááró	‘wilted clotting plants’
ılyáˈówá ríˈnyááró	‘wilted flower’
lyáˈówá líˈnyááró	‘wilted flower’
ḿndó móˈnyááró	‘wilted person’
váándó váˈnyááró	‘wilted persons’
zíɲááˈɲá zíˈnyááró	‘wilted tomatos’
zíngúzá zíˈnyááró	‘wilted vegetable’
chááˈmégéré kínyííngı	‘much mushroom’
mavúrúrí mányííngı	‘much husk trash’
vihóóˈtíllá vínyííngi	‘many ants’
ifwééˈzá nyííngı	‘much silver’
zíˈndógóˈnyí zínyííngı	‘many ants’
zínávóˈdó zínyííngı	‘many baskets’
zíng’óómbé zínyííngı	‘many cows’
zisúˈrí zínyííngı	‘many bedbugs’
vakááˈná váng’áfu	‘thin girls’
ḿndó móng’áfu	‘thin person’
kísóóˈngórá kíng’áfu	‘thin rabbit’
éng’óómbé éng’áfu	‘thin cow’

<u>Deverbal Adj</u>

íɲámá éɲóru	‘seasoned meat’
é!ndéékéˌ	‘cooked$_{-9}$’
íɲááɲéˌ	‘chewed$_{-9}$’
é!ɲóóréˌ	‘found$_{-9}$’
ímáɲeˌ	‘known$_{-9}$’
enógeˌ	‘plucked$_{-9}$’
ınáveˌ	‘sewn$_{-9}$’
emére	‘malted$_{-9}$’

N-to-A

eng’óómb-íí!náándí	‘Nandi cow’
zing’óómb-ízíí!náándí	‘Nandi cows’
ınyóó!mb-éé!ndéréva	‘driver house’
ınyóómb-ıımáá!sái	‘Maasai house’
zinyóómb-ízimáá!sái	‘Maasai houses’
zingóómb-ízímáá!sái	‘Maasai cow’
engóómb-ímáá!sái	‘Maasai cows’

1s SP perfective

nwíı	‘I drank’
ng’óódi	‘I wrote’
móónyi	‘I gossiped’

1s SP subjunct

reka méɲé	‘let me reside’
reka mórómé	‘let me speak’
reka nyí	‘let me defecate’
reka ɲágórí	‘let me run’
reka ɲóré	‘let me strip’

1s SP progressive

malízaa	‘I am finishing’
minígaa	‘I am stirring’
ɲaaɲáa	‘I am eating’
ɲaráa	‘I am able’
ng’úsáa	‘I am pulling’
ɲóóraa	‘I am finding’
nweezáa	‘I am drinking’
mórómaa	‘I am speaking’
mínágaa	‘I am stirring’
nweezáa	‘I am drinking’
ɲagóráa	‘I am running’
ng’ósáa	‘I am pulling’

1s OP

variimáɲá	‘they will know me’
vaamányí	‘they knew me’
vaaɲóóri	‘they have found me’
naamórómere	‘he will speak to me’
aráámoromera	‘he will speak to me’
oomórómere	‘speak to me!’
kóóng’oodera	‘to write to me’

2.2. Deletion before fricatives

Deletion of /N/ before a fricative is exceptionless, factoring in the previous complication discussed in 1.1.1 that sometimes the fricatives /sh, f/ harden to [by, bw] – such hardening is never found with /s/.[8] This section focuses on deletion before /s/, including a few previous examples of deletion before /f/ and /sh/.

Lexical Adj

ɪmbwá ɪsáákʊra	‘old dog’
ɪngóróvé ɪsáákʊrʊ	‘old pig’
ɪbáákóó'rí ɪsáákʊrʊ	‘old bowl’
írííngá ísáá'kóró	‘old sickle’
zíngógí zísíro	‘stupid baboons’
í'ngóróvé ísíro	‘stupid pig’
ímbwá ɪsírʊ	‘stupid dog’
ímbá'dá ísírʊ	‘stupid hawk’

Deverbal Adj

esóó'góó'n-íífái'díké	‘profitable market’
íɲám-ííshée	‘ground meat’

N-to-A

ambéér-amafá'ráánza	‘French milk’
eng’óómb-íífá'ráánza	‘French cow’

N Cl 11-10

ros’eéng’eenge	‘barbed wire’

1s SP perfective

fóógoyi	‘I got crippled’
faani	‘I fanned’
shíɪ, shée	‘I ground’
shɪri	‘I drove’
séchi	‘I laughed’

[8] Hardening may be the only option, in the case of lexical noun and adjective stems.

séégeri	'I limped'

<u>1s SP subjunct</u>

reka shí	'let me grind'
réká shéévé	'let me dance'

<u>1s SP progressive</u>

faanáa	'I am fanning a fire'
shʊʊháa	'I am getting warm'
shéézaa	'I am grinding'
sʊʊráa	'I am refusing'
sigámáa	'I am kneeling'
sékáa	'I am laughing'
sáámbaa	'I am roasting'
suuváa	'I am throwing out'

<u>1s OP</u>

aafútí	'he fired me'
ʊʊshóóhizi	'you warmed me'
seembélla	'weed for me!'
aashíírɪɪ	'he ground for me'
ʊʊfáidɪkɪrɪɪ	'you profited for me'
kʊ́ʊ́suuvɪra	'to throw out for me'
kʊ́ʊ́sʊgaanyɪra	'to mix for me'

3. Nasal Place Assimilation

Underlyingly-present nasal plus consonant sequences are always homorganic (assuming that the nasal is not deleted). This fact has been exemplified repeated in previous data.[9]

énzógú ímbí	'bad elephant'
é!ngókó í!mbívíívɪ	'bad chicken'
zing'oombe zimbeereri	'sad cows'
ɪnávó!dó ímbyá	'new basket'
zííndá !zíndávó	'white lice'
eŋeengero ɪnditʊ	'heavy beer pot'
í!ngóró!vé índáhi	'good pig'
kéróó!rí kítíindi	'pugnacious heifer'
é!ngókó í!njááfʊ	'dirty chicken'
engó!f-índáámbɪ	'long umbilical cord'
zígéengéré zínzéré	'empty bells'
ɪmbára ɪnzákanyó	'red scar'

[9] Recall that orthographic *n* before *k, g* is always phonetic [ŋ].

endéve ɪngóɾʊ ‘old chair’
íngógí ˈíngé ‘small baboon’
zingó zingómeɾʊ ‘fat leopards’

Deverbal Adj
endéˈvé ímbʊ́ˈníchí ‘broken chair’
zingúzá zímbákʊ ‘scorched vegetables’
ɪɾííˈng-ííˈmbááné ‘given sickle’
ɪnyííˈngú índásu ‘thrown cooking pot’
zíɲám-ízíˈndógé ‘bewitched animals’
ɪnyʊ́ʊ́ˈmb-énzéyé ‘swept house’
endévé ˈíngáˈrágé ‘chopped chair’
ɪsááˈvúúní endéllechi ‘slippery soap’

N-to-A
éngʼóómbé éndógoori ‘Logoori cow’
engʼóómb-ííˈmbááyá ‘Haya cows’
ɪmbítí ɪngari ‘female hyena’
éngʼóómbéé ndíga ‘widow cow’

N Cl 11-10
ólléra ízíndéra ‘umbilical cord’
oɾovega izimbega ‘direction’
ʊɾóˈfʊ́ʊ́ngʊ́ ɪzíˈmbʊ́ʊ́ngʊ́ ‘key’
ɾóˈhímá zíˈmbímá ‘spleen’
ʊɾókwí ɪzíngwí ‘firewood’
ʊɾʊtávati ɪzindávati ‘thorny plant’
ɾʊbáánga zimbáánga ‘panga’

1s SP perfective
mbógɪɪlɪɪ ‘I accept’
mbákaraangɪɪ ‘I fried for them$_{-2}$’
mbaɾóɾí ‘I saw there$_{-16}$’
ndéévi ‘I got drunk’
nzavɪɾi ‘I buried’
akaavi ‘he searched’ ngaavi ‘I searched’

1s SP subjunct
naambégé ‘I will shave’
reka mbééngé ‘let me look’
reka ndoɾéete ‘let me bring it$_{-11}$’
naa ndéété ‘I will bring’
naanzeɾémé ‘I will float indef’
naanzisyááge ‘I will split wood’
reka njéérízí ‘let me greet’
reka ngáávé ‘let me search’

1s SP progressive

mbohóólàa	'I am untying'
mbaangáa	'I am arranging'
mbyóóhízáa	'I am warming'
ndíráa	'I am crying'
ndohéénzaa	'I'm looking at it$_{-11}$'
nzaháa	'I am plucking'
nzaraa	'I am spreading'
ngaráángáa	'I am frying'
ngaaváa	'I am searching'

1s OP

mbógólla	'take for me!'
vaambéénzi	'they looked at me'
vaandájí	'they promised me'
kóónzigɔlla	'to open for me'
navaanzítɪ	'they will kill me'
vaandéévi	'they asked me'
reka vaanjóolle	'let them draw for me'
vaambáángɪrɪɪ	'they arranged for me'
vaandéékere	'they cooked for me'
vaanjíbí	'they answered me'

It is impossible to determine what underlying place of articulation (if any) the relevant prefixes have, since whenever such a prefix is followed by a vowel, some consonant is inserted (usually *y*, sometimes *d* in the case of the subject prefix N- before the tense prefix -a-).

4. Initial y

There is an alternation between *y* and Ø in verb inflections. Apart from the previously discussed combined effects of place assimilation and Ganda Law where /N+y/ become [ɲ], creating the appearance of y-deletion, the alternation comes from direct *y*-insertion in appropriate environments. Such insertion affects all vowel-initial roots, and certain prefixes. The generalization is that *y* is always inserted before a root-initial vowel when it comes after a nasal, or when it is word-initial, and is optionally or obligatorily inserted after certain long vowels. We first consider the distinction between y-initial versus Ø-initial roots (where *y* can be inserted in certain contexts), then in 4.2 we look at y-insertion. No prefixes underlyingly contain /y/, but the cl. 1 subject, reflexive, and 1s OP prefix exhibit y~Ø alternations, discussed in 4.3.

4.1. The root-initial contrast

The first issue in analysing y/Ø-initial roots is diagnosing the underlying form of the root, which is rather easy to do.

4.1.1. y-initial roots

The infinitive is the most obvious context for detecting the distinction between Ø-initial and *y*-initial roots, e.g. *kw-áata* 'to perform surgery' vs. *kʊ-yava* 'to bury' (cf. *yata* 'perform surgery!', *yava* 'bury!').[10] Underlying /y/ is always present, subject to hardening or the deletion effect of GL discussed above.

a. Infinitive

kʊyaanza	'love'
kʊyaara	'sue'
kʊyava	'dig'
koyeeka	'sag'
kʊyiinga	'be foolish'
kʊyɪɪngʊka	'melt'
kʊyɪɪnzɪra	'work'
koyoboya	'speak indistinctly'
koyoga	'talk'
koyoombooka	'be all over the place'
koyooya	'scoop'
kʊyʊʊmba	'be overgrown'
kʊyʊ́ʊ́yʊʊma	'run slowly'

Underlying /y/ is similarly preserved after vowel-final object prefixes

b. OP

mʊyeengére	'brew for him!'
koyeengére	'brew for us!'
vayeengére	'brew for them!'
gayooyé	'scoop it-6!'
myavíírí	'bury him!'
kʊkóyeengera	'to brew for us'
kʊváyoomboolla	'to pour on them'

All tense prefixes are V-final, and /y/ is preserved after all tense prefixes.

c. Tense prefix

/kʊ/	
vaakʊyɪɪnzɪra	'we have worked'

[10] The contrast is not very robust lexically: y-initial roots generally are followed by a long vowel, but there is a decent contrast before NC, e.g. *kʊyʊʊmba* "to be overgrown" vs. *kwʊ́ʊ́mbaka* "to build", *kʊyɪɪnzɪra* "to work" vs. *kwɪɪmba* "to sing", *koyeenga* "to brew" vs. *kweenga* "to ripen". Virtually all examples are L verbs.

kwaakʊyava	‘we have dug’
kwaakoyeenga	‘we have brewed’
chaakʊyɪɪngʊka	‘it has melted’
kwaakoyoomboora	‘we have over-poured’
chaakʊyʊʊmba	‘it has overgrown’

/ra/

varayɪɪnzɪra	‘they will work’
arayaanza	‘he will love’
kʊrayaara	‘we will sue’
ɪrayeeka	‘it will sag’
varayava	‘they will dig’
ʊrayoga	‘you will talk’
*ʊrooga	

/aaka/

ndáakayavɪra	‘I buried’
ndáákayéénga	‘I’ve done the brewing part’
ndáákayooya	‘I’ve done the scooping part’
ndáákayóóyʊʊma	‘I’ve done the slow running part’

/ri/

áríyógá	‘he may talk’
kʊ́ríyává	‘we may dig’
kʊ́ríyéénga	‘we may brew’
kʊriyóómboora	‘we may overpour’
kʊriyʊʊyʊʊma	‘we may run slowly’
varíyíínzɪra	‘they will work’

/ka/

kayavé	‘now dig!’
kayeengé	‘now brew!’
kayɪɪnzírɪ	‘now work!’
kayiingí	‘now be foolish!’
kayʊʊyó!ómí	‘now run slowly!’

/ta/

tayáá!nzá mbá	‘don’t love!’
tayavá !mbá	‘don’t dig!’
tayógá !mbá	‘don’t talk!’
tayóó!yá mbá	‘don’t scoop!’

/kɪ/

akeyéénga	‘he is still brewing’
vakɪyáára	‘they are still suing’
kokeyóboya	‘we are still mumbling’

kɔ́kíyává	‘we are still digging’
ɔkɪyíínzɪra	‘you are still working’
ḿkéyógá	‘2p are still talking’
vákíyóyɔ́ɔ́má	‘they are still running slowly’

Likewise, initial /y/ is retained after a vowel-final subject prefix

d. SP

ayééchi	‘he bent (to side)’
ayɔ́ɔ́mbooree	‘he over-poured’
ayágáyagi	‘he glistened’
oyójí	‘2s talked’
na vayíínzírɪ	‘they will work’
maa kɔyáárέ	‘we will sue’
maa kɔyííngí	‘we will be foolish’
kɔ́yíínzírí	‘let’s work’
reka koyéengé	‘let’s brew’
reka kɔyávé	‘let’s dig’
reka koyɔ́ɔ́yé	‘let’s scoop’
oyógáa	‘you are talking’
ayáváa	‘he is digging’
mɔyáára	‘2p are suing’
kɔyɔ́ɔ́mbaa	‘we are overgrown’
vayéengaa	‘they are brewing’
ayávíraa	‘he is burying’
mɔyíínzɪraa	‘you plural are working’
mɔyííngaa	‘2p are foolish’
mɔyooyɔ́ɔ́máa	‘2p are running slowly’
maní vá!yáára	‘then they sued’
mani kó!yéénga	‘then we brewed’
man-ɔ́ɔ́!yíínzɪra	‘then you worked’
man-ɔ́ɔ́!yóbóya	‘then you mumbled’
man-ɔ́ɔ́!yógá	‘they you talked’
mani vá!yógá	‘then they talked’
mani váyɔɔyɔ́ɔ́ma	‘then they ran slowly’
maní kó!yógá	‘then we talked’
manɪ vá!yáára	‘then they sued’
man-áá!yávíra	‘then he dug’
man-éé!yééka	‘then it sagged’
manɪ vá!yíínzɪra	‘then they worked’
manéé !nzɔ́ɔ́ya	‘then I scooped’

man-óó!yóóya	‘they you scooped’
man-óó!yéénga	‘they you brewed’

4.1.2. Ø-initial roots

In contrast, in comparable contexts, vowel-initial roots merge their initial vowel with a preceding vowel, via glide formation or vowel deletion (section 8).

a. Infinitive

kwáádɪka	‘burst’
kwaambʊka	‘cross’
kweeŋa	‘want’
kwéérema	‘float’
kwíígiza	‘teach’
kwɪɪmba	‘sing’
kwóónoonya	‘mess up’
kwóógɪha	‘be sharp’
kwóʊmbaka	‘build’
kwʊʊnga	‘join’

b. OP

kʊkwíígʊlla	‘to open for us’
kʊvíígʊlla	‘to open for them$_{-2}$’
akwééŋaa	‘he is wanting you’
chaatánye	‘smash it$_{-7}$!’
arichiíta	‘kill it$_{-7}$!’
navaríitɪ	‘they will kill it$_{-5}$’
ngɪcheeyá	‘I am still sweeping it$_{-7}$’

c. Tense prefix

/kʊ/

kwaakweeya	‘we have swept’
vaakʊyɪɪnzɪra	‘we have worked’
yaakwíita	‘he has killed’
yaakwóʊma	‘he has gotten dry’
yaakwááta	‘he has performed surgery’
yaakwíígiza	‘he has taught’

/ra/

mʊróómbaka	‘2p will build’
aróʊma	‘he will be dry’
ndííta	‘I will kill’
ndeenya	‘I will look for’
ndiigʊra	‘I will open’
ndáaha	‘I will pluck’

ndiizuliza	‘I will remember’
ʊríɪmba	‘you will sing’
keróóneka	‘it will be spoiled’
ndeeya	‘I will sweep’
aríígiza	‘he will teach’

/aaka/

váakeeya	‘they swept’
váakííroka	‘they fled’
váá'kíita	‘they killed’
váá'kíígiza	‘they taught’
yaakeeya	‘he swept’
ndáachiíguta	‘I am now satisfied’
ndáachíita	‘I killed’
ndáakaáta	‘I did surgery’
ndáakaátanya	‘I smashed’
ndáakíígiza	‘I taught’
ndáachííguta	‘I satisfied’
ndáakeenya	‘I looked for’

/ri/

aryʊʊmbáká	‘he may build’
aryeerémá	‘he may float’
variita	‘they may kill’
aryíímɪlla	‘he may lead’
ʊriigʊra	‘you may open’
varyaatá	‘they may perform surgery’
varieyá	‘they may sweep’
varieŋá	‘they may want’

/ka/

kaahé	‘now pluck!’
kaané	‘now moo!’
keeŋé	‘now want!’
keerémé	‘now float!’
kiigí'zí	‘now teach!’
kiigʊ́'rí	‘now open!’
kʊʊngá'ányí	‘now join!’
kʊʊmbá'ké	‘now build!’

/ta/

taata dáave	‘don’t surgery’
taara dáave	‘don’t spread’
teeyá 'dáave	‘don’t sweep’
tiita dáave	‘don’t kill’
teeréma dáave	‘don’t float’

taambóka dáave	'don't cross'
tiigiza dáave	'don't teach'
tiiroka dáave	'don't flee'
taavora dáave	'don't take off line'
tiigóra dáave	'don't open'
tiizóriza dáave	'don't remember'

/ke/

achiigóra	'he is still opening'
vachiita	'they are still killing'
vachaata	'they are still doing surgery'

d. SP

Subjunctive

ná wíígórí	'you will open'
ná víígórí	'they will open'
ná mwíígórí	'2p will open'
na veerémé	'they will float'
nɪ vaambókí	'they will ford'
na chaadíkɪ	'it will be smashed'
na viikáré	'they will sit'
na viigízí	'they will teach'
na viigízáne	'they will teach e.o'
na viigízí	'they will teach'
na vaavókánye	'they will branch off'

leka kwaambókɪ	'let's cross'
leka kwoongáanye	'let's join'
geeneká'á kwééyé	'we need to sweep'
geeneká'á víígízí	'they need to teach'
geeneká'á mwáámbóki	'2p need to build'

Progressive

kwaaháa	'we are plucking'
kweerémáa	'we are floating'
mwaarámáa	'2p are spread open'
mwiigóraa	'2p are opening'
vaambókaa	'they're fording'
veeŋáa	'they want'
vɪɪgízáa	'they are teaching'
viigóraa	'they are opening'
voombákáa	'they are building'
weeŋáa	'you are wanting'
wiigóraa	'you are opening'
wɪɪmbáa	'you are singing'

Consecutive

maní ví!ígóra	‘then they opened’
maní kwí!ígóra	‘then we opened’
maní vá!ávórá	‘then they took off the line’
mání wé!éyá	‘then you swept’
mání mwé!éyá	‘then 2p swept’
mani vaáta	‘then they did surgery’
mani kwííta	‘then we killed’

Recent perfective verbs also exemplify these patterns of vowel fusion between a pronominal prefix and a Ø-initial verbs. As noted in Q, there are two variants of this tense, one with a short subject prefix vowel and a special tone patterns (H verbs become toneless, L verbs have H on the first two moras of the stem), and the other, glossed with ‘have’,[11] with a lengthened subject prefix vowel and the basic lexical tone pattern of the verb root: e.g. *adeechi* ‘he cooked’, *aadéechi* ‘he has cooked’. Both variants exist for V-initial stems, though because of vowel fusion eliminating the vowel of the subject prefix, the distinctive lengthening of the subject prefix is lacking. For independent tonal reasons, the melodic tone pattern of L verbs, which is normally on the first two moras of the stem, only appears on the second stem mora.[12]

kwaambóchi	‘we crossed’	/kʊámbóchi/
kweenyí	‘we wanted’	/koényí/
kwiigállɪɪ	‘we prohibited’	/kʊígállɪɪ/
kwiirúúri	‘we winnowed’	/kʊírúúri/
mwiigállɪɪ	‘2p prohibited hod’	/mɪ-ígállɪɪ/
mwiirúúrɪ	‘2p winnowed’	/mʊ-írúúrɪ/
viigállɪɪ	‘they prohibited hod’	/va-ígállɪɪ/
viigóri	‘they opened’	/va-ígóri/
wiigóri	‘you opened’	/ʊ-ígóri/
kwaagaani	‘we met’	/kʊ-agaani/
kwaai	‘we grazed’	/kʊ-ayi/
kwaavʊri	‘we took down’	/kʊ-avʊri/
kwɪɪmbi	‘we sang’	/kʊ-ɪmbi/
kwiirʊchi	‘we fled’	/kʊ-irʊchi/
kwiiti	‘we killed’	/kʊ-iti/
mwaagaani	‘2p met’	/mʊ-agaani/
mwaayi	‘2p grazed’	/mʊ-aayi/
vaagaani	‘they met’	/va-agaani/
vaayi	‘they grazed’	/va-ayi/
viingɪri	‘they entered’	/va-ingɪri/
wiirʊchi	‘you fled’	/ʊ-irʊchi/

[11] As discussed in chapter Q, this form focuses on the fact that the task is now complete.

[12] The righthand column gives the form which is predicted to surface, were there no merger of V+V.

The general pattern for hodiernal 'have' perfectives, with C-initial roots, is that the subject prefix is lengthened (and the stem exhibits the lexical tone pattern). However, there is no lengthening of the subject prefix before a Ø-initial root. Instead, H tone is assigned to the merged syllable, neutralizing the distinction between H and L roots. See chapter X for further analysis.

/H/

yáádɪchi	'it has burst'
vááti	'they have done surgery'
vááraminyi	'they have exposed'
víírʊchi	'they have fled'
víígizi	'they have taught'
kwʊ́ʊ́mbachi	'we have built'
kwíivi	'we have stolen'
wíiti	'you have killed'

/L/

váámbʊchi	'they have crossed'
víívɪllɪ	'they have forgotten'
vʊ́ʊ́ngaanyɪɪ	'they have joined'
víígallɪɪ	'they have obstructed'
váámbakani	'they have refused'
kwáámbʊchi	'we have crossed'
kwíɪmbi	'we have sung'
kwéeyi	'we have swept'

4.1.3. The y/Ø contrast in nominal inflection

There are relatively few noun roots and no lexical adjective roots which begin with *y*, but there many vowel-initial roots. Y-initial noun roots are as follows.

ʊmʊ́ꜜyááyɪ	'boy'
ʊmʊyaga	'sickness sp.'
ɪkɪyái	'grass torch'
ʊmʊ́yéke	'sand'
ɪkɪyuundi	'Little Ruddy Waxbill'
ʊvʊ́yúúsi	'corn silk'

Such noun stems are invariant in shape, since they never take the nasal-final prefixes for cl. 9-10. There are no cl. 11 nouns with initial [y].[13]

Examples of V-initial nouns can generally be easily detected from the shape of the class prefix, for example *ch* versus *kɪ*, *mw* versus *mʊ* (e.g. *ʊmw-áámi* 'chief', *ɪry-úuva*

[13] Ndanyi reports *uluyaali* "sling wire or rope made of steel, barbed wire etc.", *uluyali* "good reputation, fame, well known for good deeds etc.", which I have been unable to replicate.

'sun', *ɪch-eeyo* 'broom'). Again, because of the nature of noun morphology, such stems are always invariant: the root cannot be root-initial nor can it be preceded by a cl. 9-10 prefix.[14]

Alternations do arise in denominal and deverbal adjective inflection. One such context is via the N-to-A derivation process, whereby a V-initial noun root can be preceded by both nasal-final cl. 9-10 and other V-final class prefixes:

íngáví ínzí¦vórí	'parental luck'
ɪmbw-í¦ínzí¦dákó	'Idako dog'
ɪnyóómb-ɪɪnzí¦súká	'Isukha house'
ɪnyóómb-ɪɪnzó¦mbáchí	'a builder house'
ɪnyóómb-ɪɪŋó¦mbáchí	'a builder house'
ɪmbwá ɪnzana	'child (young) dog'

Lexical adjectives likewise illustrate interaction between prefix nasal or vowel and a Ø-initial root, but as with lexical nouns, no lexical adjective roots begin with /y/.

orogeendó ɒrwéére	'empty journey'
ɪnávó¦dó énzéré	'empty basket'
ɒvwoova vwííngɪ	'many mushroom'
ɪzigó¦góóng-í¦zínyíngí	'many backbones'
rɒdáá¦mbí rwáá¦kányó	'red wick'
émbóóngó ínzá¦kányó	'red buffalo'
kɪráátó chó¦ómó	'dry shoe'
zimbw-í¦zíŋómó	'dry dogs'
zinyíing-ɪziŋangɒ	'light pots'
oroséé¦ng'éé¦ng-órwóógɪ	'sharp barbed wire'
zínzígá ¦zínzógí	'sharp horns'
ɒmwáá¦n ómwíímbi	'short child'
ɪmbádá ¦ínímbí	'short hawk'

In deverbal adjectives, both Ø-initial and y-initial roots are posible (since there is a contrast in verbs).

/y/	
amarwá ¦máyéengé	'brewed alcohol'
eŋéé¦ngé	'brewed'
kɪfóó¦y-íkíyá¦vírí	'buried rabbit'

[14] There are some vowel-initial nouns in cl. 1a such as *éditon* 'Editon', discussed later in this section

engóómb-íínzá¦vírí	‘buried cow’
enzéére	‘sagging (house)’
eng’oomb-ınzó¦gé	‘talking cow’

/Ø/

ınyóómb-ıınyí¦ngírí	‘entered house’
zinyóómb-ızinyí¦ngírí	‘entered houses’
zíng’óómbé zínzí¦víllí	‘forgotten cows’
aváánd-ávíí¦víllí	‘forgotten people’
ıjáá¦g-ínzí¦zórí	‘full jug’
kekóómb-ıchíí¦zórí	‘full cop’
é¦ngó¦k-íínzítı	‘killed chicken’
kıfóó¦y-íchíí¦tí	‘killed rabbit’
ınyóómb-ınzé¦yé	‘swept house’
ıchííkóóní ché¦éyé	‘swept kitchen’
mʊgér-ómwáá¦mbóki	‘crossed river’
ınzír-íjná¦mbóki	‘crossed path’

4.1.4. Pre-NC vowel length and the y/Ø contrast

Another diagnostic of initial /y/ versus /Ø/ involves the prefix N- before a root of the initial shape (y)V(V)NC. There is no vowel length contrast in vowel-initial roots, but there is one in consonant-initial roots (*kokeera* ‘to age (of female)’, *kokera* ‘to milk’). Vowels are regularly long within a root before NC.[15] When a vocalic prefix precedes a V-initial root, vowel fusion always results in a surface long vowel, so underlying length is not diagnosed in that context. Since the 1sg SP and OP /N/ do not have vowels, they do not cause such lengthening of a following root vowel. This gives rise to a surface contrast between long and short vowels before NC, since /N+VNC/ surfaces as [ɲVNC] with a short vowel, but /N+yVNC/ surfaces as [ɲVVNC].[16] This indicates that underlying /y/ is present when pre-NC vowel lengthening applies (section 10) in a y-initial root, but *y* has not yet been inserted before a vowel-initial root, and the general limit on root-initial vowels (which must be short) limits the application of pre-NC lengthening in that context. In short: [NC-VNC] diagnoses /VNC/ and [NC-VVNC] diagnoses /yVVNC/.

<u>Progressive: 1s SP</u>

ámbaaya	nzámbáayaa	‘I am swinging’
ımba	ɲımbáa	‘I am singing’

[15] There may be exceptions, for some speakers, in relatively long stems: [ro]*kʊgángayayiza* ‘to guess at something’, [ro]*kʊhıngıkana* ‘to be almost full’. As noted in X, vowel length is not particularly salient, the further one goes to the left of a word.

[16] Or, with *nz* instead of *ɲ*, given optional application of GL.

ɔ́mbaka	ɲɔ́mbákáa	'I am building'
ʊnga	nzɔ́ngáa	'I am joining'
yeenga	ɲééngaa	'I am brewing'
yɪɪngʊka	ɲííngʊkaa	'I am melting'
yóómboora	ɲóómbooraa	'I am over-pouring'

Subjunctive: 1s SP

ambagɪlla	leka ɲámbágíllɪ	'let me stretch'
ɪmba	leka ɲímbí	'let me sing'
íngɪra	leka nyíngírí	'let me enter'
ʊnga	reka ɲɔ́ngí	'let me join'
yɪɪnzɪra	leka ɲíínzírí	'let me work'
yóómboora	reka nóómbóore	'let me over-pour'

Perfective: 1s SP

nɪmbɪhi	'I was short'
nyingɪrii	'I entered'
nzʊmbachi	'I built'
ɲáánzi	'I loved'
ɲíínzɪri	'I worked'
nóómboori	'I over-poured'
ɲɔ́ɔ́mbi	'I was overgrown'

Perfective: 1s SP

ambʊkɪra	vaanzámbʊ́kɪrɪɪ	'they crossed for me'
ɪmbɪra	vaaɲímbɪrɪɪ	'they sang for me'
yeengera	vaaɲééngeree	'they brewed for me'
yóómbolla	vaaɲóómbollee	'they over-poured for me'

4.2. Insertion of y before roots

Vowel-initial morphemes are subject to insertion of *y* in a number of contexts, which in roots neutralizes the distinction between y-initial and V-initial roots. Insertion takes place root-initially, as well as before certain prefixes (cl. 1 SP, and reflexive and 1s OP).

4.2.1. Word-initially

There are two contexts where root-initial vowels receive epenthetic *y* at the beginning of a word: in the imperative, and in certain demonstratives.

a. Imperatives

First, y-insertion takes place when the root is word-initial, in the imperative.[17]

yanigɪra		‘go up!’
yizʊriza		‘remember!’
yigʊra		‘open!’
yaya	kwaaya	‘graze!’
yeŋa	kweeŋa	‘want!’
yita	kwíita	‘kill!’
yerémá	kwéérema	‘float!’
yádɪka	kwáádɪka	‘burst!’
yígiza	kwíígiza	‘teach!’
yónoonya	kwóónoonya	‘mess up!’
yógɪha	kwóógɪha	‘be sharp!’
yʊma	kwóʊma	‘be dry!’
yɪmba	kwíɪmba	‘sing!’
yingírá		‘enter’
yʊmbáká		‘build’
yaramíŋá		‘open!’
yambagɪlla		‘stretch!’
yambakana		‘refuse!’
yambʊka	kwaambʊka	‘ford!’
yʊmbaka	kwóómbaka	‘build!’
yʊnga	kwʊʊnga	‘join!’
yɪmba	kwɪɪmba	‘sing!’

Although syllable-merger generally precludes y-insertion within a word (**kʊyáta* ‘to do surgery’, **kwaakʊyáta* ‘we did surgery’) except after a long vowel as discussed above, certain imperative forms are a potential exception. In the immediate and negative imperatives, where an apparent proclitic (*ka-*, *ta-*) precedes the root, vowel merger is possible but *y*-insertion is as well.[18]

kiigízɪ	kayigízɪ	‘now teach!’
keeyé	kayeyé	‘sweep now!’
kaahé	kayahé	‘now pluck!’
keevé	kayevé	‘now put up a fence!’
kiigí	kayigí	‘now learn!’

[17] Additionally, a root-initial vowel is short before NC, even when *y* is inserted.

[18] There are also data where epenthesis is rejected, and still other cases where epenthesis is judged to be marginal. This suggests possible directions of current language change, but we will not attempt to resolve this matter here.

kayʊmbáke	kʊʊmbáke	'now build!'
teeyá daave	*tayeya daave	'don't sweep!'
taambʊ́ka dáave	ʔtayámbʊ́ka dáave	'don't cross!'
toonoonya dáave	tayonoonya dáave	'don't mess up!'
tʊʊmbaka mbá	tayʊmbaka mbá	'don't build!'
tɪɪmba mbá	tayɪmba mbá	'don't sing!'
taavʊra mbá	tayavʊra mbá	'don't take!'
teeyá ǃmbá	tayéyá ǃmbá	'don't sweep!'
tiita mbá	taita mbá	'don't kill!'

b. Demonstratives

Demonstratives based on the pattern yV-AGR and yV-AGR-o exhibit an alternation between [yV] and [V]. In citation forms, the demonstrative has initial [y], and when preceded by the noun it may have *y*, or *y* may be lacking.

<u>y present</u>

yava	'these$_{-2}$'
váándʊ yava	'these people'
yɪgʊ	'this$_{-3}$'
m̀báno yɪgʊ	'this knife'
yavo	'those$_{-2}$'
váándʊ yavo	'those people'
yago	'those$_{-6}$'
amaté yago	'that saliva'
yɪrwo	'that$_{-11}$'
ʊrwáánda yɪrwo	'that rock'
yɪgwo	'that$_{-3}$'
mʊrí^{ǃ}tú yígwo	'that forest'
yaho	'that$_{-16}$'
haméésa yaho	'at that table'

When *y* is lacking, syllable fusion usually takes place.[19]

<u>y lacking</u>

mʊrʊ́j-ɪɪmwo	'in that clay bowl'
avávʊ́^{ǃ}gʊ́s-áava	'these Bukusus'
embʊ́ʊ́ng-eeyo	'that buffalo'
gʊtw-íɪgʊ	'this ear'
ɪkígw-íɪkɪ	'this wasp'

[19] There are some tokens like *amakʊ́dʊ̆aga* 'these tortoises' where V1 is retained rather than deleted, but generally such vowel sequences are reduced by elimination of the first vowel.

ʊrwáánd-ɪɪrwo	‘that rock’
msáár-ɪɪgʊ	‘this tree’
vadót-aavo	‘those infants’
amat-áago	‘this saliva’
koséémbéll-ɪɪkwo	‘that weeding’

The optional alternation between V#yV and merged VV arises in various other syntactic concatenations of word plus demonstrative.

kórí yɪcho	kʊr-íícho	‘like that$_{-7}$’
kórí yava	kʊr-áava	‘like these$_{-2}$’
sá yáva	s-ááva	‘like these$_{-2}$’
sa yícho	s-ɪɪcho	‘like that$_{-7}$’
sá yírʊ	síírʊ	‘like this$_{-11}$’
sa yírwo	síírwo	‘like that$_{-11}$’
ná ˈyágó	náˈágó	‘with that$_{-6}$’
ná yívʊ	níˈívó	‘with this$_{-14}$’
amárwá manúˈrú yágo	amárwá manúˈrw-áago	‘that sweet beer’
aváána vatááˈmbí yáva	aváána vatááˈmb-áava	‘these tall children’
ɪmisáár-ɪmitááˈmbí yíji	ɪmisáár-ɪmitááˈmb-íɪji	‘these tall trees’
nɪ yavo	n-aavo	‘it’s those$_{-2}$’
nɪ yɪyɪ	n-ɪɪyɪ	‘it’s these’
nɪ yago	n-aago	‘it’s that$_{-6}$’
yaakónwá yago	yaakónw-áago	‘he has drunk that$_{-6}$’
yááˈyáánzá yágó	yááˈyáánz-áágó	‘he likes those$_{-6}$’
maakókóónné yavo	maakókóɔn-áavo	‘we will help those$_{-2}$’
yaakʊgʊr-ɪɪzyo		‘he has bought those$_{-10}$’
áríkákáraangɪ yɪyɪ		‘he will fry this$_{-9}$’

Initial *y* is obligatory in the citation form of these demonstratives

yɪgʊ	‘this$_{-3}$’	*ɪgʊ
yava	‘these$_{-2}$’	*ava
yago	‘that$_{-6}$’	*ago
yɪkɪ	‘this$_{-7}$’	*ɪkɪ

Demonstratives formed from the stems *-ra* ‘far distal’ and *-no* ‘proximal’ place the agreement morpheme before the stem: the agreement morpheme for cl. 9 is /ɪ/. This gives rise to another context for *y*-insertion, which is obligatory in citation forms, and optional (otherwise exhibiting vowel-merger), phrasally.

yɪra	*ɪra	‘that$_{-9}$’
eng’óómbe yɪra	eng’óómbɪɪra	‘that cow’
yɪnʊ	*ɪnʊ	‘this$_{-9}$’
eng’óómbe yɪnʊ	eng’óómb-ɪɪnʊ	‘this cow’

Both sets of y~Ø alternation can be explained under the assumption that the pre-agreement morpheme in the case of *yɪgʊ, yɪgwo* is /ɪ/, and the cl. 9 agreement is likewise /ɪ/ (which it generally is, see ch. X), thus illustrating y-insertion. *y* in cl. 9 forms does not always alternate with Ø, in particular, there is no alternation if *y* is the result of applying Glide Formation to /i/ before another vowel, hence *eng'óómbe ya Marova* from /eng'oombe i-a Marova/.

Epenthetic *y* is obligatory before *ii* which results from lengthening the agreement prefix /i/ before the stem *ndi*, i.e. *eng'óó*ꜜ*mbé yííndí* 'another cow' ← /eng'óóꜜmbé í-ndí/; **eng'óó*ꜜ*mb-ííndí*. This is a kind of arbitrary fact, since there is fusion with *ʊʊndɪ*, cf. *ʊmwáá*ꜜ*n-á ʊ́ʊ́ndí, ʊmwáá*ꜜ*n-ʊ́ʊ́ndí* 'another child'.[20]

c. Non-insertion

There are nevertheless contexts where vowels can stand at the beginning of a word. The most notable is when the initial vowel is in a prefix, specifically the augment or a verbal subject prefix.

akoonyi	'he helped'
ʊkaraanji	'you fried'
aadéechi	'he has cooked'
oong'oodi	'you have written'
ɪkɪgʊʊnda	'it$_{-9}$ is still rotting'
ʊmwáana	'child'
amárwá	'alcohol'
éꜜngókó	'chicken'

There are also vowel-initial nouns which take no class prefix and do not have an inserted glide.

íídi	'eid'
ááfya	'health'
óófiisi	'office'[21]
amíítu	'brother'
ofisá	'officer'
abáchi	'abachi'
ísé	'father'
amwáávo	'brother'
oonzére	(PN)
ambání	(PN)
afãándí	(PN)

[20] Since imperative verbs are generally utterance initial, the interaction between vowel merger and y-insertion cannot easily be determined for imperatives. A preposed object can come before an imperative, e.g. *ŋɲʊ́ʊ́mba yeya* 'sweep the house', but such constructions are not common. A latent pause cannot be ruled out: such few examples are consistent with non-application of vowel merger in the case of imperatives, but do admit to an alternative explanation as well.

[21] This noun is attested in some tokens with an augment, viz. *eófisi*.

éditon (PN)

Another exception is that the class 1 form of the /ɪ-AGR/ demonstrative, as well as the AGR-no and AGR-ra demonstratives of that class, do not undergo y-insertion even though they are vowel initial.

ʊyʊ	*yʊyʊ	'this$_{-1}$'
oyo	*yoyo	'that$_{-1}$'
ʊra	*yʊra	'that$_{-1}$'
ʊno	*yʊno	'this$_{-1}$'

mʊ́ʊ́ndʊ ʊyʊ	'this person'
mkéé$^{!}$-rʊ́ʊ́yʊ	'this woman'
mshaarʊ́ʊ́yo	'that cousin'
mgéni oyo	'that guest'
mkáá$^{!}$ná ʊ́no	'this girl'
mʊdʊ́t-ʊʊra	'that infant'
ʊ́ʊ́ndɪ	'another'

4.2.2. Post-nasal insertion

We also surmise that *y* is inserted after a nasal, since V-initial and *y*-initial roots behave the same post-nasally, as discussed in 4.1.

/y/
Perf SP

ɲáánzi	'I loved'
nzáví	'I dug'

Prog SP

ɲíínzɪraa	'I am working'
nzógáa	'I am talking'
nzóóyaa	'I am scooping'

OP

vaanzáári	'they sued me'
arɪkáánzɪmɪllɪ	'he will lead me'
kʊ́ʊ́ɲaanza	'to love me'
ʊtaanyíínzɪlla	'don't work for me!'
kʊ́ʊ́nzavɪlla	'to dig for me'

/Ø/
Perf SP

nzigizi	'I taught'
nzeremi	'I floated'
nzíti	'I killed'
nzati	'I did surgery'

nzaambɒchi	'I forded'
nzínɒchi	'I left work'

Prog SP

nzeréémaa	'I am floating'
nzámbɔ́kaa	'I am crossing'
nzɪgízáa	'I am teaching'

OP

yáánzigiza	'he taught me'
aaɲényí	'he wanted me'
yáánzeremera	'he floated for me'

4.2.3. Insertion after certain prefix vowels

The glide *y* is also inserted after the tense prefix *-aa-* when the prefix comes before a vowel-initial root. This insertion is obligatory when the verb is hesternal perfective, and optional in the past habitual and remote (if *y* is not inserted, syllable merger processes take place).[22] The following examples are hesternal perfective.

kwááyáámbɔ́chí	'we crossed'
kwaayasyáájí	'we split wood'
kwaayigɔ́rí	'we opened'
kwaayinyáminyɪrani	'we bent for each other'
kwaayoómbóo	'we spilled'
ndáá!yáti	'I have done surgery'
ndáá!yónoonyi	'I have messed up'
ndaayatányíɪ	'I broke'
ndaayerémí	'I floated'
ndaayízúlizi	'I remembered'
vaayeeyí	'they swept'
vaayenyí	'they wanted'
vaayíhí	'they uprooted'
vaayitání	'they killed e.o.'
vaayónóónyí	'they messed up'
waayinámi	'you bent (tr.)'
waayɔ́mbáchí	'you built'
yaayámbɔ́chí	'he crossed'
yaayíínz̩i	'he worked'
yaayɔ́ngáányí	'he joined'

Likewise there is insertion of *y* after the remote past prefix *-aa-*, but such insertion is optional (may be disprefered), and if there is no insertion, vowel fusion deletes the prefix vowel.

[22] Insertion before [i] can be hard to detect since [yi] generally is realized as [i].

véérema	'they floated'	vááyérema	'they floated'
ndéérema	'I floated'	ndááyérema	'I floated'
kwaaígʊra	'we opened'	kwíígʊra	'we opened'
ndááyáta	'I did surgery'	ndááta	'I did surgery'
vééya	'they swept'	vááyéya	'they swept'
wíímba	'you sang'	waayímba	'you sang'
yóóma	'he was dry'	yaayóma	'he was dry'
vóónoonya	'they messed up'	vaayónoonya	'they messed up'
yóóngaanya	'he joined'	yááyóngaanya	'he joined'
yííngɪra	'he entered'	yááyíngɪra	'he entered'
kwíímba	'we sang'	kwááyímba	'we sang'
vááyámbakana	'they refused'	váámbakana	'they refused'

The past habitual has the same pattern of optional merger versus epenthesis:

kwééyaa	'we used to sweep'	kwaayéyaa	'we used to sweep'
vóónoonyaa	'they used to mess up'	vaayónoonyaa	'they used to mess up'
yáámbʊkaa	'he used to cross'	yaayámbʊkaa	'he used to cross'
yííngɪraa	'he used to enter'	yááyíngɪraa	'he used to enter'
kwóómbakaa	'we used to build'	kwááyómbakaa	'we used to build'
géengaa	'they$_{-6}$ used to ripen'	gááyéngaa	'they$_{-6}$ used to ripen'
vááyámbʊkaa	'they used to cross'	váámbʊkaa	'they used to cross'
vyááyámbʊkaa	'they$_{-8}$ used to cross'	vyáámbʊkaa	'they$_{-8}$ used to cross'
yóómbakaa	'he used to build'	yááyómbakaa	'he used to build'

There is also root-initial y-insertion after the reflexive prefix /ɪ/. This is illustrated below in various contexts when a V-final prefix precedes the reflexive, where the two syllables merge into one with a long vowel.

manɪ yíí!yáta	'and then he did surgery on himself'
maní víí!yámbókɪra	'and then they crossed for themselves'
maní vé!éyéŋá	'and then they wanted themselves'
na yɪɪyáte	'he will do surgery on himself'
aryɪɪyáta	'he will do surgery on himself'
aryɪɪyálla	'he will spread a bed for himself'
yííyati	'he did surgery on himself'
yiiyímbɪrɪ	'he sang for himself'
yííyallɪɪ	'he spread a bed for himself'
yɪɪyáti	'he surgeried himself'
yííyigizi	'he taught himself'
yéé!yéŋá	'he wanted himself'
yííyɪrʊllɪɪ	'he winnowed for himself'
vɪɪyámbókɪɪ	'they crossed for themselves'
vɪɪyómiinii	'they dried themselves'
wɪɪyáti	'you surgeried yourself'

arííyɔmiza	'he will dry himself'
arííyɪɪmbɪra	'he will sing for himself'
arééyeŋa	'he will want himself'
arakííyivɪllɪ	'he will forget himself'
arakííyigizɪ	'he will teach himself'
varákííyambɔkɪrɪ	'they may cross for themselves'
varákééyenye	'they may want themselves'
achɪɪyáta	'he is still surgerying himself'
ɔchɪɪyó'mízá	'you are still drying yourself'
ɔcheeyó'nóónyá	'you are still messing up on yourself'
ɔchɪɪyígiza	'you are still teaching yourself'
kayíívɪ'llí	'now forget yourself!'
keeyó'nóónyírí	'now mess up for yourself!'
kɪɪyɪ'mbírí	'now sing for yourself!'
kɪɪyá'té	'now do surgery on yourself!'
kɪɪyá'té	'now do surgery on yourself!'

Additional examples clarify that y-insertion after the reflexive is not tied to the length of the merged syllable, since there is insertion when the reflexive is word-initial (in the imperative) and when the preceding subject prefix is 1s.

<u>1s</u>

nzíyigizi	'I have taught self'
nzɪyáti	'I surgeried self'
nzeyeyéraa	'I am sweeping for self'
maa nzeyeyére	'I will sweep for self'
maa nzɪyítɪ	'I will kill self'

<u>Imperative</u>

yɪyírílɪ	'forget yourself!'
yɪyití	'kill yourself!'
yɪyivírɪ	'steal from yourself!'
yɪyí'gízí	'teach yourself!'
yɪyírɔllɪ	'winnow for yourself!'

4.3. Insertion of y before prefixes

Within the domain of prefixes, there is a similar appearance of *y* before a prefix vowel, found before the cl. 1 subject prefix /a-/, the 1s OP /N/, and reflexive /ɪ/. These are treated separately since the triggering conditions are distinct.

4.3.1. Subject prefix /a/

The SP /a/ is entirely replaced with [y] whenever it stands before a vowel, which could be the vowel of an immediately following reflexive prefix, the tense prefix *-a-*, or the vowel of a verb root. Surface *y* from /a/ always causes lengthening of the following vowel, al-

though in the case of the tense prefix(es) with initial *aa*, it is impossible to determine the underlying length of that vowel. The evidence discussed in this section only involves /a/ as the trigger, but facts regarding the cl. 9 prefix /ɪ-/ before the root 'come', covered in 12.3, indicate that pre-SP *y* is not limited to the cl. 1 SP /a/. In light of those further data, the proposed analysis is that *y* is inserted before a prevocalic SP /a/, whereupon regular vowel hiatus-resolving rules eliminate the first vowel and lengthen the second vowel.

a. Reflexive

mani yí'ídɔ́ya	'then he hit himself'
mani yé'édéékeraa	'then he cooked for himself'
genéká'á yíívárízɪ	'he should cook for himself'
geeneká'á yɪɪsííngɪ	'he should wash himself'
geeneká'á yɪɪsáave	'he should wash himself'
yeedéé'kéráá	'he is cooking for himself'
yɪɪká'ráá	'he is cutting himself'
yɪɪchóó'ráá	'he is drawing himself'
yɪɪyó'mbákíráá	'he is building for himself'
yeeyéyéra	'he is sweeping for himself'
yeedéékeree	'he cooked for himself'
yɪɪnwíɪ	'he drank himself'
yɪɪrási	'he threw himself'
yíísaalizi	'he has injured himself'
yíírɪmɪrɪɪ	'he has plowed for himself'
yíí'yíígízí ɔ́mwééne	'he has taught himself'

b. Tense Prefix

<u>aakʊ</u>

yaakwíita	'he has killed'
yaakwɔ́ʊma	'he has gotten dry'
yaakwááta	'he has performed surgery'
yaakwíígiza	'he has taught'
yaakɔ́ɔ́sinikiza	'he has annoyed me'
yaakɔ́háána	'he has given'
yaakɔ́kɔ́ɔŋa	'he has helped'
yaakɔ́káava	'he has searched'
yaakɔ́déeka	'he has cooked'
yaakwááta	'he has performed surgery'
yaakomoroma	'he has spoken'

<u>aaka</u>

yaakeeya	'he swept'
yaakagʊra	'he just bought'
yaakayɪɪnzɪra	'he worked'
yaakamoroma	'he spoke'
yaakagwa	'he fell'

yáákákwééyera	‘he swept for us’
yaakávávarizɪra	‘he counted for them’

Hesternal Perfective -aa-

yáá˥kósinikizi	‘he has annoyed us’
yáádééki	‘he cooked’
yáárími	‘he farmed’
yaayári	‘he spread a bed hest’
yaayámbɔ́chí	‘he crossed’
yaayɔ́ngáányí	‘he joined’
yaayɔmí	‘he was dry’

Remote -aa-

yáámóroma	‘he spoke’
yáágwa	‘he fell’
yáákáraanga	‘he fried’
yáaŋágɔra	‘he ran’
yáámóroma	‘he spoke’
yáaháándiika	‘he wrote’
yáánwa	‘he drank’
yáákɔ́nagɔlla	‘he ran for us’

Past Habitual -aa-

yáádéékaa	‘he used to cook’
yáánwéézaa	‘he used to drink’
yáávégaa	‘he used to shave’
yáashéézaa	‘he used to grind’
yáátáágaa	‘he used to plant’
yáátáágaa	‘he used to plant’

c. Root

Consecutive

man-áá˥rímá	‘then he plowed’
man-áá˥káráángá	‘then he fried’
manɪ yá˥áhá	‘then he plucked’
manɪ yá˥átá	‘then he surgery’
maní yé˥éyá	‘then he swept’
manɪ yí˥ítá	‘then he killed’
maní yííta	‘then he killed’
manɪ yɔ́ɔ́˥ngáánya	‘then he joined’

Hodiernal perf

yiigɔ́ri	‘he opened’
yeerémí	‘he floated’
yeenyí	‘he wanted’
yíígizi	‘he has taught’

yáádɪchi	‘it has burst’
yɪɪnámi	‘he bent’
yeerémí	‘he floated’
yeeí	‘he swept’
yeenyí	‘he wanted’
yaagaani	‘he met’
yaahí	‘he wanted’
yɪɪmbi	‘he sang’
yiiti	‘he killed’
yiihí	‘he extracted’
yiishí	‘he extracted’
yʊʊmbachi	‘he built’
yoonoonyi	‘he messed up’
yʊʊmi	‘he was dry’
yʊ́ʊ́shi	‘he has scattered’
yííyaambi	‘he has farted’
yíímɪllɪɪ	‘he has led’
yíítyaamʊri	‘he has sneezed’
yʊ́ʊshi	‘he has scattered’
yʊ́ʊ́gɪshi	‘he has gotten sharp’

Crastinal

na yeerémé	‘he will float’
na yɪɪzúlizi	‘he will pour’

Progressive

yiigʊ́raa	‘he is opening’
yaambʊ́ka	‘he is fording’
yeeŋáa	‘he wants’
yiitáa	‘he’s killing’
yaatáa	‘he’s performing surgery’
yeerémáa	‘he’s floating’
yiitʊ́llaa	‘he’s pouring’
yeeyá	‘he’s sweeping’
yeenyá	‘he’s searching’
yeerémaa	‘he’s floating’
yʊʊháa	‘he is scattering’
yʊʊmáa	‘he is becoming dry’
yiiyáámbáa	‘he is farting’
yɪɪmílaa	‘he is leading’
yɪɪtyá!mʊ́ráa	‘he is sneezing’

As is the case with all other vowel-final prefixes followed by vowel-initial morpheme, the following vowel is lengthened, unlike the cases of y-insertion covered below, so it may be best to analyze this as a change of /a/ to [y] rather than as insertion of [y] or direct allomorphy.

4.3.2. Reflexive

The reflexive prefix is also preceded by epenthetic *y*, either when it stands after the prefix -aa-, or word-initially. As noted previously, the tense prefix *-aa-* also conditions *y*-insertion immediately before the root (subject to tense-specific optionality versus obligatoriness). There are three contexts where the prefix *-aa-* precedes the reflexive: in the remote past, the past habitual, and the hesternal perfective. Y-insertion is optional in the former two contexts but obligatory in the latter. This same pattern of optional vs. obligatory application will also be seen before the 1s OP, and was observed previous in terms of the interaction between vowel-initial roots and fusion versus y-epenthesis involving the prefix *-aa-*. In other words, there is a unified process of *y*-insertion after *-aa-*, with tense-specific conditions on obligatoriness.

a. After -aa-

Non-insertion is possible in the remote past and past habitual: the surface result is that the prefix -aa- merges syllabically with the reflexive prefix, yielding [ɪɪ] or [ee].

<u>Remote Past</u>

kwéérora	'we saw ourselves'
víí'chéériza	'they greeted themselves'
víí'jíbá	'they answered themselves'
víí'síínga	'they bathed themselves'
víírɒma	'they bit themselves'
wéé'kóóna	'you helped yourself'
yéé'végá	'he shaved himself'
yíí'chóóra	'he drew himself'
yíí'háándiikɪra	'he wrote to himself'
yíí'mígá	'he strangled himself'
yíí'sánɒra	'he combed himself'

<u>Past Habitual</u>

yííyɪɪmbɪraa	'he used to sing for himself'
yéévegaa	'he used to shave himself'
véé'mórómeraa	'they used to speak to themselves'
kwéé'déékeraa	'we used to cook for ourselves'
kwéé'kóóŋaa	'we used to help ourselves'
kwíírɒmaa	'we used to bite ourselves'
mwéévegaa	'2p used to shave yourselves'
mwíí'rúúmbaa	'we used to push ourselves'
mwíívakaa	'2p used to smear yourselves'

In these same tenses, it is also possible to insert *y* between *aa* and the reflexive /ɪ/.

<u>Remote Past</u>

kwááyérora	'we saw selves'

wááyéˈkóóŋa	‘you helped self’
yaayéhonya	‘he healed self’
yááyíˈsíísa	‘he rubbed self’
yaayímiga	‘he strangled self’
yaayéˈvégá	‘he shaved self’

Past Habitual

kwaayéˈdéékeraa	‘we used to cook for selves’
kwaayéˈkóóŋaa	‘we used to help selves’
kwaayírɒmaa	‘we used to bite selves’
yaayévegaa	‘he used to shave self’
vááyéˈmórómeraa	‘they used to speak to self’
yaayíyɪɪmbɪraa	‘he used to sing for self’
mwaayévegaa	‘2p used to shave selves’
mwaayíˈrúúmbaa	‘we used to push selves’
mwaayívakaa	‘2p used to smear selves’

The only optional available for the hesternal perfective is y-insertion.

Hest perf

yaayɪsínyí	‘he annoyed self’
yaayetéévi	‘he asked self’
yaayɪsánɒri	‘he combed self’
yaayeŋóóˈrí	‘he found self’
yaayehééˈnzí	‘he looked for self’
yaayɪtómi	‘he sent self’
yaayeséchí	‘he laughed at self’
*yeeteevi	(as hodiernal perfective)
waayɪbádɒ́ri	‘you whipped self’

b. Word-initially

The following data exemplify insertion in word-initial insertion, which arises in the imperative. As noted in 4.2.1, word-initial epenthesis is obligatory.

yedeekére		‘cook for yourself!’
yɪsáángaalle		‘be happy for yourself!’
yevegé		‘shave yourself!’
yekooŋé	*ekooŋé	‘help self!’
yɪkáráˈángíˈrí	*ɪkáráˈángíˈrí	‘fry for yourself!’

Y-epenthesis in consecutive syllables arises in the reflexive imperative of a vowel initial stem.

yɪyáˈté	/ɪ-áˈté/	‘surgery yourself!’
yɪyɒgíˈhízí	/ɪ-ɒgíˈhízí/	‘sharpen yourself!’
yɪyambɒ́ˈkírí	/ɪ-ambɒ́ˈkírí/	‘cross for yourself!’

yɪyitɪ́	/ɪ-itɪ́/	'kill yourself!'
yɪyɪ́ˈrányírí	/ɪ-ɪ́ˈrányírí/	'return for yourself!'
yɪyɪ́ˈgízí	/ɪ-ɪ́ˈgízí/	'teach yourself!'
yɪyírílɪ	/ɪ-írílɪ/	'forget yourself!'
yɪyóngááˈnyírí	/ɪ-óngááˈnyírí/	'join for yourself!'

c. Before lexical reflexives

Some verbs which lexically contain a reflexive prefix, as diagnosed from tonal evidence and imperative-allomorphy, which can be preceded by a productive reflexive. In that case, *y* is generally inserted between the two reflexive prefixes.

kwíízʊʊmiŋa	'to praise'
yɪzʊʊmíŋɪ	'praise!'
mayɪɪzʊ́ʊ́miŋɪ	'he will praise'
yaakwííyɪzʊʊmiŋa	'he has praised himself'
nzɪyízʊʊmiŋɪɪ	'I praised myself'
nzíiˈzʊ́ʊ́míŋáa	'I am praising self'

4.3.3. 1s OP

The 1s OP receives an epenthetic syllable *yi*, which can be understood as the combined effect of inserting *i* plus insertion of *y* between vowels. Insertion of *i* occurs if and only if *y* insertion takes place. *y*-insertion and *i*-insertion before the 1s OP takes place exclusively after *-aa-*, and is subject to the same obligatory / optional distinction found before roots and the reflexive. We find an alternation between VV-yiN versus VV-N, where aa-yiN is optionally available after -aa-, but in the hesternal perfective, aa-yiN is obligatory. The nasal deletes before fricatives and nasals, so N is not always realized.

<u>Remote past: insertion</u>

vááyíndora	'they saw me rem'
vááyíngaraangɪra	'they fried for me'
wááyíˈngíínga	'you protected me'
wááyíˈngʊ́ʊ́na	'you helped me'
yáiˈsíísa	'he rubbed me'
yaímiga	'he strangled me'
yáyíˈndákʊ́ʊ́ra	'he released me'
yayíˈsíníkiza	'he annoyed me'

<u>Remote past: non-insertion</u>

mwáángɪrʊng'anya	'2p inverted me'
vááˈnʊ́má	'they bit me'
váándora	'they saw me rem'
wááˈngíínga	'you protected me'
wááˈngʊ́ʊ́na	'you helped me'
yááˈmbégá	'he shaved me'
yááˈsíísa	'he rubbed me'

Past habitual: insertion

mwáíˈngóóɲaa	‘2p used to help me’
vááyíˈmórómeraa	‘they used to speak to me’
vayíˈmbáándɪkɪraa	‘they used to write for me’
yaaíˈɲéɲáa	‘he used to want me’
yaayíɲʊmizaa	‘he used to dry me’
yaíˈndéékeraa	‘he used to cook for me’
yáímbegaa	‘he used to shave me’

Past habitual: non-insertion

mwááˈngóóɲaa	‘2p used to help me’
vááˈmbáándɪkɪraa	‘they used to write for me’
vááˈmórómeraa	‘they used to speak to me’
yááˈndéékeraa	‘he used to cook for me’
yááˈɲéɲáa	‘he used to want me’
yáámbegaa	‘he used to shave me’
yááɲɪɪmbɪraa	‘he used to sing for me’
yááɲʊmizaa	‘he used to dry me’

Hesternal Perfective: obligatory insertion

vaayindééˈkéréé	‘they cooked for me’
waayindééˈkéréé	‘you cooked for me’
vaaisáˈnórí	‘they combed me’
yaaiɲóóˈrí	‘he found me’
yaaindʊ́mi	‘he sent me’
waayindééˈkérée	‘you cooked for me’
vaainzéˈréméréé	‘they floated for me’
*waandééˈkéréé	‘you cooked for me’
*yaambeenzi	

(cf: oondééˈkéréé ‘you cooked for me (hodiernal)’, vaandééˈkéréé ‘they cooked for me (hodiernal))’

In contrast to the behavior of the reflexive prefix, the 1s OP does not allow y(i) insertion initially, in the imperative.

ngʊríˈzírá	‘sell to me!’
nzigólla	‘open for me!’
nzitá	‘kill me!’
ngoonyá	‘help me!’
ndɪvólla	‘answer me!’
nzɪgíza	‘teach me!’
nguumbéˈélá	‘hug me!’
nzambáˈkáné	‘refuse me!’
ngarááˈngírá	‘fry for me!’
nzʊʊngóka	‘go around me!’

ndakʊ́ˡórá ‘join up with me!’

5. Inter-consonantal Vowel Deletions

There are a number of processes deleting a vowel between consonants, most of which apply between homorganic consonants, and one of which applies to /mʊ+C/ without reference to the place of articulation of the following consonant.

5.1. rV-reduction

The noun prefix for cl. 5 is /ri-/, and that for cl. 11 is /rʊ-/. These prefixes very often merge with following /r/ into [ll]. Additionally, some speakers generalize this reduction to applying before /t,d,n,ch,j,ɲ/. The reduction of /rVr/ to [ll] is widespread, but speakers differ as to the likelihood that they will also produce unreduced [rVr]. Reduction of /rVr/ is usual but not uniformly mandatory. There is an apparent difference between such sequences involving a prefix (which reduce most frequently), versus within a stem (where reduction is less regular). All speakers which we have worked with have some form of rVr-reduction.

Reduction before other cocoronal consonants, on the other hand, is less wide spread: it has not been found, for certain speakers.[23] This may reflect elicitation circumstances, as noted in X. BK appears to maximally apply reduction in this context, EM and RK do so somewhat less frequently, and RL does infrequently.

5.1.1. rV-reduction before /r/

The most frequently attested case of rVr reduction is when applied to a prefix before root-initial /r/.[24]

a. Reduction of a prefix

Prefixal contexts exhibiting rVr-reduction include:

Noun cl 5, 11 prefix before	noun or adjective root with initial /r/
	wh-mod stems -ri, riha
	distal demonstrative -ra
OP cl. 5, 11 before r-initial root	
SP cl. 5, 11 before r-intial root, OP or tense prefix	
remote fut ri before r-initial root or OP	

Noun

[23] For example we have not found such examples from SY, PM or EK, but interactions with those speakers were limited and conducted remotely.

[24] Irregular reduction in the numeral *-rara* ‘1’ is even more widespread – almost universal – but this alternation exists in just one stem.

Reduction of the noun class prefixes /ri, rʊ/ is virtually obligatory before roots beginning with /r/. A few tokens lacking reduction have been encountered:

rireesi	‘cloud’
ʊrʊriga	‘jug mouth’
ʊrʊrɪmʊ	‘grass sp.’
rórími	‘tongue’
rʊró!góóngó	‘backbone’
rirago	‘law’

Generally, the noun prefixes /ri, rʊ/ reduce before r-initial stems.

ɪlláánde	maráánde	‘climbing plant’
ɪlleesi	mareesi	‘cloud’
ɪlliína	mariína	‘hole’
ɪí!lóótó	má!lóótó	‘dream’
ɪllova	marova	‘earth’
ɪllóómbɪ		‘fog’
ʊlléra		‘umbilical cord’
ʊllɪga		‘jug mouth’
ʊĺlími	karími	‘tongue’
ʊĺló	ovoró	‘finger millet’
ʊllóóngo		‘white clay’

There is one monosyllabic noun stem in cl. 5 with initial /r/, *ɪrii-re* ‘cloud’ (cf. *ama-re* ‘clouds’), and this noun does not ever undergo reduction. The reason for this is that the vowel of the cl. 5 prefix lengthens before a monosyllabic root (and not the fact of the root being monosylllabic, cf. *ʊĺló*).

Adjective

A number of adjective stems begin with /r/, and likewise trigger reduction of /ri, rʊ/.

ríbwóó!ní lláhi	mábwóó!ní máráhi	‘good potato’
rínyónyí lláhi		‘good bird’
róókó !lláhi		‘good firewood’
llímí !lláhi		‘good tongue’
rinonyi llʊrʊ	manonyi marʊrʊ	‘fierce bird’
líívá lluru		‘fierce behavior’
nnaagaani lluru		‘fierce f.s’
roheni lluru		‘fierce lightening’
rídó!fáári riritʊ		‘heavy brick’
rwá!ásyá llitu	rwá!ásyá llitu	‘heavy kindling’
llova llitu		‘heavy soil’

kɪdété ˈkírʊ́ʊ́ngɪ		‘straight finger’
ddúˈréérέ llʊ́ʊ́ngi		‘straight megaphone’
rógéémbé llʊ́ʊ́ngi		‘straight razor’
lyáˈʊ́wá ˈllávʊ	máˈʊ́wá ˈmárávʊ	‘white flower’
roséˈng’éengé ˈllávʊ		‘white wire’
lifwééˈdéré ˈllávʊ		‘white termite’
mróˈgóórí mʊ́ˈráámbá		‘whole Logoori’
ddááˈnjí llaambá		‘whole drum’
rʊ́fʊ́ʊ́ngʊ́ Íˈláámbá		‘whole key’

Such reduction also affects deverbal and denominal adjectives.

líívé llína	‘friendly kite’	mʊrɪna	‘friend’
rʊfʊ́ˈnʊ́ lláˈkʊ́ʊ́ré	‘released tether’	kʊrakʊʊra	‘to release’

Modifiers with secondary agreement

One likewise encounters reduction in the cl. 5 and 11 forms of the r-initial wh-modifiers and the far distal demonstrative *-ra*.

-ri ‘how much’

márwá gari	‘how much beer’
vwóóngo vʊri	‘how much brain’
kemέˈréméénde kɪri	‘how much candy’
rίˈgómyá lli	‘how much banana’
rógúúchí lli	‘how much dust’
rívóyʊ lli	‘how much egg’
rohéní lli	‘how much lightening’
rʊbááho lli	‘how much lumber’
rígóké llí	‘how much ash’
lláˈgóórí ˈllí	‘how much Logoori (language)’

-riha ‘which’

séέˈngé ʊ́ríhá	‘which aunt’
magáˈrábá gariha	‘which bean leaves’
ridáˈrááˈmʊ́ llíhá	‘which drum’
rivóyʊ lliha	‘which egg’
ligéémbe lliha	‘which hoe’
rʊ́fʊʊngʊ́ lliha	‘which key’
rwóóva lliha	‘which mushroom’
rogéémbe lliha	‘which razor’

-ra distal demonstratives

ryáá!ndá ríryá	‘that rem ember’
rinyó!nyí ríryá	‘that rem. bird’
rógá!gá róryá	‘that rem. fence’
rógéé!mbé róryá	‘that rem. razor’
lléé!sí llyá	‘that rem. cloud’
ríké!ré llyá	‘that rem. frog’
irívó!yó llyá	‘that rem. egg’
oróhé!ní llyá	‘that rem. lightening’

Verbs

In verbs, the cl. 5, 11 OPs reduce before root-initial /r/; the tense prefix /ri/ reduces before the cl. 5, 11 OPs and root-initial /r/; the cl. 5, 11 SPs reduce before the cl. 5, 11 OPs, root-initial /r/, and the tense prefixes /ri/ and /ra/. There appears to be a lesser tendency to spontaneously reduce within the prefixal donain of verbs.[25]

OP+Root

kólluungiriza		‘to straighten it$_{-5}$’
kólleeta		‘to bring it$_{-5,11}$’
allééti		‘he brought it$_{-5}$’
kullééti		‘we brought it$_{-11}$’
kullinda	kurórinda	‘to guard it$_{-11}$’
allííndi	arurííndi	‘he watched it$_{-11}$’
valláji		‘they promised it$_{-11}$’
vallori		‘they saw it$_{-5}$’
kóllóóndi		‘we followed it$_{-11,5}$’
kulláánji		‘we called it$_{-5}$’
allíi		‘he ate it$_{-5}$’
indef. future ri+root		
ariríínda	allíínda	‘he will guard’
allímá		‘he will plow’
arirega	allega	‘he will defeat’
varirakóóra	vallakóóra	‘they will release’
indef. future ri+OP		
allidééka		‘he will cook it$_{-5}$’
kurirugóríza	kullugóríza	‘we will sell it$_{-11}$’

SP+Root

[25] This may be due to the infrequency of relevant combinations, such as object prefixes referring to non-humans combining with relevant verb roots, whereas in nouns, the rule applies to the most basic form of words in the relevant classes whose root begins with /r/.

llíɪndi	rʊríɪndi	'it$_{-11}$ watched'
lláánji	riráánji	'it$_{-5}$ called'
llɪɪ		'it$_{-11}$ ate'

SP + OP

rirʊgwíírɪɪ	llʊgwíírɪɪ	'it$_{-5}$ fell on it$_{-11}$'
lligwíírɪɪ		'it$_{-11}$ fell on it$_{-5}$'

SP + indef. future ri

ririrórá	llirora	'it$_{-5}$ may see'
lláágʊrʊka		'it$_{-5}$ will fall'

SP + OP + Root

rirʊróóndi	rillóóndi	'it$_{-5}$ followed it$_{-11}$'

b. Stem-internal

Application of reduction strictly within a root is difficult to motivate, and should be separated into cases involving the first syllable, versus those involving later syllables. There is a single candidate for root-initial reduction: *mʊ-llʊ* 'fire' (*mi-llʊ*) 'fires'. This root might be assumed to be /llʊ/, or it might be /rVrʊ/. Evidence for the analysis /rɪrʊ/ is that speaker PM produces *mʊrɪrʊ*. There are, however, a number of roots beginning with /rVr/ e.g. *ʊmʊ́-rʊ́ri* 'whistle', *ama-rʊ́re* 'chicken respiratory disease', *ɪkɪ-rɪ́ri* 'violin', *amá*$^{!}$*-ríró* 'eye-corner crust', *kʊ-rʊ́ra* 'to sour (of milk)', *kʊ-rʊ́ra* 'to be bitter', *kʊ-rɪ́ra* 'to cry', *ko-rʊ́ra* 'to see', which in my experience never reduce. In the case of *ama-rʊ́re, kʊ-rʊ́ra, ko-rʊ́ra*, the lack of reduction could be explained by reference to the vowel of the first syllable, since the vowel to be deleted is always underlyingly /i/ or /ʊ/.[26] Instead, it seems that the stem /llʊ/ is a historical exception, and reduction does not affect root vowels.

There are also a few roots which appear to have non-initial /ll/.[27] Noun and adjective examples are seen below.

ridelle	'ant sp'
ɪkɪsílli	'cricket'
risólluuni	'velum'
ívóllɪ	'bedroom'
líkóllo	'phlegm'
óró$^{!}$mílló	'gullet'
amaandekella	'inconsistency'

[26] There are no prefixes of the shape /ru, rɪ/, so a simple description of the class of deletable vowels could be that only the high vowels can delete. Reduction of /rara/ '1' to [lla] is a separate and exceptional process, dealt with below.

[27] Insofar as most roots are of the form CV(N)C and the applied extension /ɪr/ can be added broadly, sometimes with no obvious contribution to meaning, combined with the existence of verb-to-noun derivation, it is also possible that these are underlyingly e.g. /ɪkɪsír-ɪr-ɪ/.

mɔ́ng'élle ‘slim (cl. 1)’

I have not encountered any tokens of these words with [rVr], although Ndanyi reports *ikidelere, ikisilili, ilisululuuni, uvulili* as possible forms. Likewise, some verbs always have *ll* in spontaneous offerings.

kʊhɔ́lla	‘to hear’
kʊsaalla	‘to be ill’
kwiitʊlla	‘to pour’
kʊhʊʊndʊʊlla	‘to stare’

Nevertheless, speakers may accept variants with a vowel when prompted.

kʊhɔ́rɪra	‘to hear’
kʊsaarɪra	‘to be ill’
kwiitʊrɪra	‘to pour’

There are not many such examples in the data, all of which attest the vowel [ɪ], though in principle an alternation [ʊ]~Ø would be consistent with stem-internal [ll] deriving from /rVr/. There appears to be no roots *-hʊr-, -saar-* from which these verbs might be plausibly derived, using an affix *-ʊr-* or *-ɪr-*.[28]

There are clear cases of reduction applying to r+Vr, especially involving the applied suffix /ɪr/.

koseembera	‘to weed’	koseembella	‘to weed for’
kʊchóora	‘to draw’	kʊváchoolla	‘to draw for them’
kʊŋágʊra	‘to run’	kʊváŋagʊlla	‘to run for him’
kʊsháágara	‘to sharpen’	kʊ́ʊ́mbyaagalla	‘to sharpen for me’
kʊbómora	‘to destroy’	áámbomollee	‘he has demolished for me’

In lieu of an extensive survey of stem-internal position involving many speakers, we will leave it at the conclusion that rV-reduction is subject to some lexicalization within the stem.

c. The stem /rara/

The stem of *rara* ‘1; some’ can undergo reduction to *lla*, as long as it is preceded by a surface vowel. This means reduction is possible in classes other than 9, 10, 5 and 11.

mwáána mʊlla	‘1 child’	1
váámi valla	‘some chiefs’	2
mwóógo mʊlla	‘1 cassava’	3
m̀bɪrɪ milla	‘some bodies’	4
magéémbe malla	‘some hoes’	6

[28] There is an unrelated root *saar* ‘pray to God’.

kedéte kɪlla	'1 finger'	7
viguuti villa	'some fields'	8
vwóóma vɔlla	'1 fork-hoe'	14
rígómyá llara	'1 banana'	5
ttígɪnyu llara	'1 heel'	5
ɪngʊgí ndara	'1 baboon'	9
ɪnyuundu ndara	'1 hammer'	9
zimbéde zindara	'some rings'	10
zing'oombe zindara	'some cows'	10
rókó llara	'1 firewood'	11
rogeembe llara	'1 razor'	11
rʊfʊʊngó llara	'1 key'	11

Non-reduction is attested after a surface V-final prefix, though rarely for many speakers

vosera vɔrara	'1 porridge'
mɔrítu mɔrara	'1 forest'
ɔmʊʊndʊ mɔrara	'1 person'
kísíma kɪrara	'1 well'
ómbánó mɔrara	'1 knife'
rʊháángaywá rɔrara	'1 cave'

The alternation *ll ~ rar* is otherwise not found in the language.

5.1.2. rV-reduction before other consonants

Reduction of /r{i,u}r/ to [ll] is nearly obligatory and found with all speakers. A number of speakers also exhibit reduction of /ri/ and /rɔ/, frequently before /t,d,n/, and sometimes before the palatals /j, ch, ɲ/,[29] which creates geminate consonants. I have observed this with EM, BK, ML, RL, RK. Such reduction is not systematic and does not approach obligatoriness, as in the case of /r{i,u}r/. Such reduction is widely observed in adjectives and nouns (for those speakers with reduction).

<u>Nouns</u>

ttígɪnyu	litígɪnyu	'heel'
ittímu	ritímu	'spear'
ttávati	rɔtávati	'thorny plant'
ddáanji	ridáanji	'drum (storage)'
ɪddíiji	ridíiji	'wall'
iddíkʊ	ridíkʊ	'day'
iddirísha	ridirísha	'window'
ɪddá'fáárí	ridá'fáári	'brick'

[29] Stem-initial palatals are not frequent, so the impression of difference in frequency of attestation may be a by-product of the limited number of examples where the rule could apply. However, the noun 'rat' is reasonably well attested, but only 4 instances of [jjúungu] are attested compared to 80 examples of [rijúungu].

ɔddɔɔmi	ɔrɔdɔɔmi	'uncircumcized person'
ddáámbi	rɔdáámbi	'wick'
ɔddoto	rodoto	'infantness'
ddá!váryá	rɔdá!váryá	'clay paste'
ddéru	rodéru	'grain tray'
dduuri	rɔduuri	'protruding stomach'
ɪnnéke	rinéke	'herbal plant type'
ɪjjaambi	rijaambi	'mat'
jjuungu	rijuungu	'rat'
jjíí!kóró	rijíí!kóró	'crow'
ɪjjííko	rijííko	'(charcoal) stove'
ɪŋŋonyi	riŋonyi	'bird'

Adjectives

lifwéé!déré !ttáámbɪ	'long termite'
rófɔɔngó !ttáámbi	'long key'
rɔmílló !ttáámbi	'long gullet'
líísú !ttáámbɪ	'long hair'
líísú litáámbɪ	'long hair'

rigó!myá ddeeké	'cooked banana'
lisáánda ddoto	'infant(soft) nail'
Ílootó !ddáámaanú	'bad dream'
róvárú ddáámaanú	'bad rib'

Reduction in verbs is less common. One tense prefix, remote *ri*, is subject to reduction.

Verbs:
remote future -ri

acchaba	arichaba	'he will hit'
addóyá	aridóyá	'he will hit'
annává	arinává	'he will sew'
attaagá	aritaagá	'he will plant'
attema	aritema	'he will chop'
attúúma	aritúúma	'he will jump'

Object prefixes for cl. 5 and 11 also undergo reduction before roots with the relevant initial consonant.[30]

Infinitive

kɔ-rí-duya	kɔ-ɗ́-duya	'to hit it$_{-5}$'
kɔ-ró-duya	kɔ-ɗ́-duya	'to hit it$_{-11}$'

[30] In these examples, the noun class indicated in the gloss is that associated with the particular token, thus *aáddɔyi* was elicited as a variant of *aaríduyi* 'he has hit it$_{-5}$', although it would also be correct for *aaróduyi* 'he has hit it$_{-11}$'. Note that tone in reduced forms is marked on the first consonant, which is phonetically justified in the case of voiced consonants but a bit of an abstraction in thecase of geminate *t, ch*.

kʊ-rí-taaga	kʊ̌-t-taaga	‘to plant it$_{-5}$’
kʊ-ró-chaba	kʊ̌-c-chaba	‘to beat it$_{-11}$’
kʊ-ró-nava	kʊ-ń-nava	‘to sew it$_{-11}$’
kʊ-ró-ɲaga	kʊ-ɲ́-ɲaga	‘to snatch it$_{-11}$’

<u>perfective</u>

aaríduyi	‘he has hit it$_{-5}$’
aádduyi	‘he has hit it$_{-5}$’
korodéechi	‘we cooked it$_{-11}$’
kʊddéechi	‘we cooked it$_{-11}$’
kʊʊrídduyi	‘we have hit it$_{-5}$’
kʊʊ́ddduyi	‘we have hit it$_{-5}$’
kʊridúí	‘we hit it$_{-5}$’
kʊddúí	‘we hit it$_{-5}$’

<u>aka-past</u>

kwáákadduya	kwáákaríduya	‘we hit it$_{-5}$’
kwáá¦kádduʊʊhiza	kwáá¦káródʊʊhiza	‘we blunted it$_{-11}$’
kwáákaṅnava	kwáákarínava	‘we sewed it$_{-5}$’
kwáá¦kájjaaga	kwáá¦kárójaaga	‘we started it$_{-11}$’
kwáá¦kácchoora	kwáá¦káróchoora	‘we drew it$_{-11}$’
yáá¦káttweeka	yáá¦kárítweeka	‘he danced it$_{-5}$’

<u>remote</u>

yáá¦ddééka	yaaró¦dééka	‘he cooked it$_{-11}$’
yáá¦ddúyá	yáárí¦dúyá	‘he hit it$_{-5}$’

Reduction and gemination does not happen with any other consonants.[31]

*yaaggura	yáárí¦gʊ́rá	‘he bought it$_{-5}$’
*kwáá¦kássooma	kwáákarísooma	‘we read it$_{-5}$’
*assavi	arʊsavi	‘he borrowed it$_{-11}$’
*kwáákábbɪɪma	kwáákaríbɪɪma	‘we measured it$_{-5}$’

5.2. vV-reduction

The high vowels /i ʊ/ delete between instances of /v/. Unlike reduction before labials, this process only applies before /v/, and not labials in general.

<u>Adjectives</u>

ví¦fóryá ¦vváá¦mbálló	‘wide pan’
víráá¦tó vváá¦mbáálʊ́	‘wide shoe’
vwéé¦réfú vváá¦mbálló	‘wide sky’
vijá¦máɲʊ́ ¦vví	‘bad squirrels’

[31] There is, however, a reduction that affects /zi{s,z}/, discussed in 5.3.

vífúryá ˈvví	‘bad pan’
vírááˈtó vví	‘bad shoe’
vímʊʊná v(i)ˈví	‘bad squirrel’
vígó vví	‘bad wasp’
vwóóˈyá vví	‘bad fur’
vóséá vví	‘bad porridge’
vʊchíˈmá vví	‘bad ugali’
vóchíˈmá vví	‘bad ugali’
víˈtóóngóró ˈvvísi	‘raw onion’
vísóʊngórá ˈvvísi	‘raw rabbit’
víˈfwóóyó vvísɪ	‘uncooked rabbits’
vítʊʊngóóró ˈvvísɪ	‘raw onion’
ovosera vvísɪ	‘uncooked porridge’
ivíbáˈgá ívví	‘bad cats’
víbáˈgá ívví	‘bad cats’
víbáˈgá vví	‘bad cats’
vwóóma vvááˈmbáló	‘wide fork-hoe’
vikábó ˈvvááˈmbálú	‘wide baskets’
visírí ˈvví	‘bad hoes’
ʊvwóóˈkí vví	‘bad honey’
vibága vveereri	‘sad cats’
visúsu vveereri	‘sad butterfly’
Numerals	
ʊvwóóˈngó vvírí	‘2 brains’
vígóró ˈvvírí	‘2 hills’
vííndó ˈvvírí	‘2 things’
víbúrúbúrú ˈvvágá	‘3 butterflies’
vóséá vvágá	‘3 porridge’
Nouns	
vvára	‘countries’
vvéere	‘udders’
vváángo, viváángo	‘ugali spoons’
ívvwí, ívvwí	‘foxes’
ɪvvóni	‘reasons’
óvóví, óvví	‘badness’
ʊvváˈrízí	‘act of counting’
ʊvvééˈzégéré	‘act of belching’
ʊvvísɪ	‘act of hiding (tr.)’
Verbs	
ʊvwéérefó vvee hára	‘the sky is there’
kʊvvéˈdékízáa	‘we are bending them$_{-8}$’
kʊvvogora	‘to take it$_{-14}$’

kʊ́vvaaza	'to carve them$_{-8}$'
kʊ́vvoora	'to tell it$_{-14}$'

5.3. Reduction of zi-

The cl. 10 prefix /zi-/ is subject to reduction before *s, z, sh*, resulting in a long fricative. This reduction is optional and generally infrequent, except that it applies frequently in the word *ɪsséendi*, 'money', alternatively *ɪzíséendi*.

ɪzisééndi	ɪsséendi	'money'
ɪzí!sóná	í!ssóná	'mosquitoes'
ɪzisííndaano	ɪssííndaano	'needles'
ɪzísóni	ɪssóni	'shame'
ɪzisooti	ɪssooti	'vultures'
ɪzisugudi	ɪssugudi	'congas'
ɪzísúzɪ	ɪssúzɪ	'fishes'
ɪzizooroori	ɪzizooroori	'taps'
akɪziséká	akɪsséká	'he is still laughing at them'
akɪzisóróra	akɪssóróra	'he is still collecting them'
akɪzisháá!gárá	akɪsshá!gárá	'he is still sharpening it'
akɪzishééva	akɪsshééva	'he is still dancing them'
akɪzishíra	akɪsshíra	'he is still driving them'
akɪzizéé!ngééllá	akɪzzéé!ngééllá	'he is still staring at them'

5.4. Reduction of mV-

The high vowels /i, ʊ/ in prefixes are also subject to deletion, in two broad contexts: before labials both vowels delete, and elsewhere only /ʊ/ deletes. In the resulting NC cluster, the nasal is syllabic and bears tone.

5.4.1. Reduction before labials

The syllables /mʊ, mi/ usually reduce to *m̩* before /v, b, m, p, f/. When this happens, /v/ hardens to [b], but other consonants are not affected. Because of that difference in consonant interactions, /v/ will be treated separately. When such a prefix reduces before /v/, *v* becomes *b*.[32]

a. Reduction before /v/

[32] Nouns in cl. 3-4 would not have an alternation in the initial consonant, outside of diminutives and augmentatives where it is possible to posit a non-neutralizing "historical consonant reversion" strategy. However, mV reduction is not obligatory even though it is most often applied, especially in cl. 4, so tokens do exist without the effect of reduction and post-nasal hardening.

The hallmark of reduction before /v/ is that derived *m̩v* becomes [m̩b];[33] otherwise there is no difference between reduction before /v/ versus before /p,b,f,m/. Reduction is nearly obligatory in the case of /mʊ/, but in the case of /mi/, reduced and unreduced forms are in free variation.

Lexical Adj	
mwáá˥ná ḿbí	'bad child'
máá˥má ḿbí	'bad mother'
ḿgóóngó ḿbí	'bad back'
ḿbírí mbí	'bad body'
ḿbírí ʸmbí ~ ḿbírí mívií	'bad bodies'
mgá˥dí ḿbí	'bad bread'
migá˥dí ʸḿbí ~ migá˥dí míví	'bad breads'
ʊmʊrímí ˥ómbí	'bad farm'
ḿndó ḿbɪɪvíívɪ	'bad person'
ʊmʊrímí ómbɪɪvíívɪ	'bad farm'
guugá ḿ˥báá˥mbálló	'wide grandfather'
mwóó˥gó ḿbáá˥mbállú	'wide cassava'
mígóóndá ʸmbáá˥mbállú	'wide farms'
ḿgízí ḿbáá˥mbállú	'wide homestead'
mígízí ʸḿbáá˥mbállú	'wide homesteads'
ʊmbano m̀báá˥mbáló	'wide knife'
ɪmbano miváá˥mbáló	'wide knives'
mgádí ˥ḿbísɪ	'raw bread'
migádí ˥ḿbísɪ	'raw breads'
migádi m̀bísi	'raw breads'
ʊmwóógó ˥ḿbísɪ	'raw cassava'
imyóógó ˥ímbísɪ	'raw cassavas'
vageni vaveereri	'sad guests'
mgeni mbeereri	'sad guest'

Agent nominalization

ʊm̀bógɪɪlli	'one who agrees'
ʊm̀barizi	'one who counts'
ʊm̀béeri	'one who forgives'
ʊm̀béji	'one who shaves'
ʊm̀bóshi	'one who ties'

Deverbal Adj

[33] There are a few tokens where hardening does not apply to the output of reduction, but none at all involving /N-v/, indicating that ordering of reductions and hardening may be variable.

mkáána mbó!hóóllé	‘untied girl’
vakáána vavó!hóóllé	‘untied girls’
aváána vavá!rízé	‘counted children’
ʊmwáána ʊmbá!rízé	‘counted child’

N Cl 1, 3-4

m̀boku	‘blind person’	vavoku	‘blind people’
ḿbó!gósó	‘Bukusu’	vavó!gósó	‘Bukusus’
ʊm̀béji	‘shaver’	avávéji	‘shavers’
ʊm̀bíni	‘dancer’	avavíni	‘dancers’
ʊmbóshi	‘tier’	avávóshi	‘tiers’
ʊm̀bɪri	‘body’	ɪm̀bɪri ~ ɪmivɪrɪ	‘bodies’
ʊm̀bano	‘knife’	ɪm̀bano ~ ɪmivano	‘knives’
ʊm̀baango	‘ugali stick’	ɪm̀baango ~ ɪmivaango	‘ugali sticks’
ʊm̀baayo	‘contest’	kʊvaaya	‘to play’

ʊm̀bano	‘knife’
ʊm̀vano	‘knife’
ɪm̀vano	‘knives’
ɪm̀bano	‘knives’
ʊmʊvano	‘knife’

mʊvaga	m̀vaga		‘in a python’
m̀víbíí!ráǿnɪ	m̀bíbíí!ráǿnɪ		‘in plates’
m̀vóshɪ	m̀bóshɪ		‘in flour’
m̀véémbe	m̀béémbe		‘in grass’
m̀viváánda	m̀biváánda	mʊvváánda	‘in valleys’
ḿbíkóbo			‘in tins’
m̀byááyɪrʊ			‘in pastures’
m̀vʊlli	m̀bʊlli		‘in a bedroom’

Verbs:

OP + v-initial root

vam̀bógɪɪrizi		‘they made him agree’
vaambáá!zíráa		‘they are carving for him’
vaam̀váá!zíráa		‘they are carving for him’
vam̀béé!zégéráa	vam̀véé!zégéráa	‘they are belching for him’
varaḿbariza	varaḿvariza	‘they will count 2p’
vááḿbohoolla		‘they untied 2p’

SP + v-initial root

mmbéji[34]		'2p have shaved'
m̀m̀varizi	m̀m̀barizi	'2p have counted'
m̀m̀bógʊri	m̀m̀vógʊri	'2p have received'
mmbádeekeree		'2p have cooked for them'
m̀bógɪllɪ		'2p agreed'
m̀bárízi	m̀várízi	'2p counted'
m̀báángaa		'2p are arranging'
m̀bʊgʊri		'2p received'
m̀vegáa	m̀begáa	'2p are shaving'

SP + cl 2, 8, 14 OP

m̀vírórí	m̀bírórí	'2p saw them$_{-8}$'
mvodéékhi	mbodéékhi	'2p cooked it$_{-14}$'
m̀vigórí	m̀bigórí	'2p bought them$_{-8}$'
m̀vorórí	m̀borórí	'2p saw it$_{-14}$'

b. Reduction before /p,b,f,m/

Before other labials, reduction of /mʊ/ and /mi/ takes place optionally (and most often, there is reduction), with no effect on the following consonant.

Nouns

ʊmfá'ráánza	'Frenchman'
mfʊ́ʊ́ndi	'craftsman'
ʊmʊfʊʊyi	'laundry guy'
ʊḿféneesi	'jackfruit'
ɪḿféneesi ~ ɪḿféneesi	'jackfruits'
ʊmmósi	'left hand'
ɪmmósi ~ ɪmmósi	'left hands'
ʊmféréji	'water tap'
ɪmféréji ~ ɪmiféréji	'water taps'
ʊ́mpííra	'ball'
ímpííra ~ ímpííra	'balls'

ʊm̀badʊri	'whipper'	avabadʊri	'whippers'[35]
ʊmburuchi	'flier'	avaburuchi	'fliers'
ʊmbómori	'destroyer'	avabómori	'destroyers'
ʊmmanyi	'one who knows'		

[34] Lengthening of the (reduced) subject prefix is governed by the particular tense construction: a syllabic SP have a long vowel in the completion-focused perfective.

[35] There are apparently no nouns lexically in cl. 1 or 3 which have underlying /b/, so examples have to come from deverbal nominalizations.

ʊmfʊ́ʊ́nyi	‘one who smells’

Locative /mʊ/

mmásáándʊ́gʊ	‘in boxes’
mmʊ́kʊ́no	‘in a hand’
m̀mééri	‘in a ship’
m̀mʊ́ni	‘in an eye’
m̀márwá	‘in beer’
m̀márwá	‘in beer’
mmareesi	‘in clouds’
m̀mísáára	‘among trees’

Note that reduction also takes place before [mb] in class 9 (the initial cluster does not inhibit reduction), and can apply to two consecutive prefixes of the form /mʊ/ (in the second case, reduction may be via the rule specific to /ʊ/)

m̀mbʊ́ra	‘in rain’
m̀m̀píira	‘in a ball’
m̀m̀bɪrɪ	‘in a body’
m̀m̀lyaango	‘in a door’
m̀m̀sáára	‘in a tree’

Verbs

vaakʊm̀futa	‘they fired him’
vam̀mórómeree	‘they spoke to him’
kʊm̀foora	‘to beat him’
yaakam̀badʊra	‘he whipped him’
yáám̀maŋa	‘he knows him’
m-ʊʊm̀mígɪ	‘you will strangle him’
kʊm̀páátaana	‘to hire him’

c. Lexical reduction

There is also a lexically governed reduction of cl. 6 /ma-/ to [m̀] before /v/ in cl. 6. This is widely attested in /amavéere/ ‘milk’, /amavére/ ‘millet’ where reduction is widely attested alongside non-reduction.

am̀béere	am̀béere	‘milk’
am̀bére	am̀bére	‘millet’

Similar (optional) reduction is attested in the corpus in *amaváha ~ am̀báha* ‘feathers’, *amavóyʊ ~ am̀bóyʊ* ‘eggs’, but not as frequently. The forms *am̀bega* ‘shoulders’, *am̀bururi* ‘dry branches’ have been accepted once but never offered (alongside normal *amavega, amavururi*), and **am’be* is not accepted over *amave* as the plural of *iri-ve* ‘hawk’, likewise **am’bívi* for *amavívi* ‘garden rubbish’. The noun *ɪrivógoyi* ‘green amaranthus’ is generally in the singular, but a plural was elicited once, where both *am’bógoyi*

and *amavógoyi* were offered. No examples of reduction of /ma/ before /v/ or /b/ of an adjective are attested.

5.4.2. General mu-reduction

The vowel /ʊ/ deletes optionally in prefixes of the form /mʊ/. Whether or not a prefix undergoes reduction depends primarily on the phonological context. A more controlled sociolinguistic investigation is necessary to give the full details of the trends regarding deletion vs. retention of the vowel in /mʊ/ prefixes. The broadest generalization regarding deletion is that /ʊ/ in any prefix /mʊ/ optionally deletes. Thus /mʊgádi/ 'bread' may be realized as [m'gádi] or [mʊgádi]; 'boss' can appears as [m'koongo] or [mʊkoongo].

There are some apparent categorial restrictions on mu-reduction. One is that the rule never applies before /y/, thus /mʊ́ˡyááyɪ/ 'boy' is only attested as [mʊ́ˡyááyɪ].[36] Although roots beginning with /y/ are not common, the database contains 196 tokens of /mʊ+y/, which is enough that some token of deletion before /y/ should be attested, if deletion were allowed in that context. The rule also does not apply before geminate *ll* contained within the stem. This identifies two lexical items: [mʊllo] 'fire' and [mʊlla] 'one (cl 1; 3)' are attested. Reduction is well attested before geminate *ll* which includes a prefix plus stem (see below). In contrast, deletion is possible before stem-initial clusters /sk/ in [ḿˡskáári] 'officer' and /nd/ in [ḿˡndéréva] 'driver', [m̀ndʊ] 'person'. In the case of the latter cluster, there is a difference between speakers BK and EM, that EM does not delete the prefix vowel but does lengthen it before NC – [mʊ́ʊ́ˡndéréva] and [mʊʊndʊ]. This can be explained on the grounds that mʊ-reduction only affects short /ʊ/, and the speakers differ in whether pre-NC lengthening applies before or after mʊ-reduction

Mu-reduction applies to the nominal prefixes for classes 1, 3, 18, the verbal 2pl SP and the verbal cl. 1 OP which all have the shape /mʊ/. To determine what factors might affect applicability of deletion, over 2,300 relevant examples were examined, gathered from EM and BK in the course of the initial 16 months of elicitation.[37] Such examples are nouns and adjectives in cl. 1 or cl. 3. Since before a vowel, hiatus-reduction processes apply, we look only at these prefixes before a consonant-initial stem. We exclude /y/ and /ll/ which never allow deletion, as well as initial /nd/ where there is a speaker difference in whether the prefix vowel is deleted – additionally, there are only two stems which begin with /nd/, and none that begin with /ng, nj/. Since there already exists rules specifically reducing /mʊ/ and /i/ before labials, examples of labial as following consonant are also excluded.

The two speakers do not differ in their overall rate of deletion, which is about 50% of the time. We divide stem-initial consonants into three phonological groups – voiced obstruents, voiceless obstruents, and sonorants (including *h*), and observe the following asymmetry in deletion trends

Following C	Frequency of deletion
d, j, g, z	53%

[36] It is (presently) unknown whether reduction is possible before /w/, since initial /w/ is almost entirely non-existent.

[37] That subset was assembled at of the end of 2015.

t, c, k, s, ʃ	86%
n, ɲ, ŋ, r, h	28%[38]

In other words, *ʊ* usually deletes before voiceless obstruents and usually does not delete before sonorants, with no preference for deletion or retantion before voiced obstruents.

With the cl. 16 locative prefix /mʊ/, it is difficult to obtain a large set of examples covering all of the possible following consonants, since the locative prefix precedes the lexical class prefix, which limits the possible following syllables to /ri/, /kɪ/, /ka/, /tʊ/ and /gʊ/, plus a few others from cl. 9 nouns which do not take the class prefix /N/ (e.g. [ɪkáháwa] 'coffee'). The examples below show that deletion is possible with the locative prefix.

ḿkíráato	'in a shoe'
m̀ryaango	'in a door'
m̀káháwa	'in coffee'
mgeengere	'in a bell'
mʊrʊjʊ	'in a clay bowl'
mkekóómbe	'in a cup'
mʊgeengere	'in a bell'
mójóʊmbɪ	'in salt'

Since the possibilities for following consonant after the locative prefix are quite restricted, conjectures about different rates of deletion depending on the type of following consonant will be avoided. It is noteworthy that geminate [ll] is relatively easy to derive in the singulars of nouns in cl. 5, 11 before r-initial stems, and mu-reduction before such cases of derived *ll* is attested, unlike the situation with the numeral 'one' and the stem *-llo* 'fire'

móllóómbɪ	'in fog'
ḿ!llóótó	'in a dream'
mllova	'in earth'

This suggests that overall word-size may be relevant in determing likelihood of mu-reduction before *ll*.[39]

5.5. Interaction between vowel deletion and consonantal rules

The examples above indicate that when vowels delete in the context r__r, *rr* is then changed to *ll*, e.g. *kʊrórɪɪnda ~ kʊĺlɪɪnda* 'to watch it-11': indeed, the only context where *rr → ll* arguably applies is to the output of a vowel reduction.

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[38] Deletion before /h/ occurs 18% of the time, which is not significantly different from the rate of deletion before liquids and nasals.

[39] Specifically, reduction before geminates cannot create a monosyllable. However, rediction *can* create a monosyllable, see *ḿdí* 'small(1,3)', *ḿké* 'small, few (1,3)', *ḿtí* 'scared (1)', *mtwí* 'head'.

In the case of deletion of /ʊ/ after *m* (or lexical deletion of /a/) the resulting CC sequence is only subject to a single further modification, that /mVv/ becomes [m̀b], and otherwise, rules affecting NC do not apply, either in the case of the general optional u-deletion rule (*mʊ-koongo* ~ *m-koongo* 'boss', **m-goongo*; *ʊmʊrítʊ* ~ *ʊmrítʊ*, **ʊmdítʊ*), nor in the case of pre-labial reduction /mV-C/ → [mC] (/mʊ-féneesi/ → [m̀féneesi] 'jack-fruit' (**m̀bwéneesi*), /ʊmʊmósɪ/ → *ʊmmósi* 'left hand' (**ʊmósi*), /ʊmʊpáángo/ → [ʊm̀páángo] 'plan' (**ʊm̀báángo*).

Hardening of /v/ usually but does not always apply to the output of mu-reduction.

mʊ́ˈyááyi m̀veereri ~ mʊ́ˈyááyi m̀beereri	'sad boy'
ʊ́ḿvírí mógári	'big body'
ḿvírí ~ ḿbírí	'in 2'

This suggests that ordering between mu-reduction and hardening is not entirely fixed. Ordering of reduction relative to vowel harmony is discussed in section 6.1.7.

6. Vowel Harmony

There are three clearly phonological vowel harmony rules in Logoori, one regressively lowering /ɪ, ʊ/ to [e,o] if the next syllable contains [e,o]; one progressively lowering /ɪ/ to [e] if the preceding syllable contains [e,o]; one progressively raising final /e/ to [ɪ] after [i u ɪ ʊ] or alternatively lowering /ɪ/ after [e o a]. The allophonic process tensing the mid vowels *e,o* to [e̱ o̱] before [i,u] or derived [e̱ o̱] is discussed in chapter X. Since there is no contrast, the facts surrounding this latter process are not clear, and will not be discussed beyond the level noted in that chapter.

6.1. Regressive Lowering

Certain prefixes with the vowels /ɪ ʊ/ change that vowel to [e o] when the following syllable contains [e o]. Prefixes with /i/ do not change, and no prefix contains /u/. Not all prefixes with /ɪ ʊ/ change: if the preceding consonant is nasal, there is no lowering. Certain consonants block harmony – *ch, j, f, sh, f* block – as do post-consonantal glides in [Cy, Cw] sequences, though [w,y] as sole onset consonant do not block parmony. Finally, this lowering harmony is optional. Speakers differ in the extent to which they actually apply lowering, and optionality may be influenced by context. For example, EM typically applies harmony, but occasionally does not apply the rule. The frequency of non-application is greatest when the triggering vowel is a prefix vowel rather than the root vowel (e.g. *akɪgedééka* 'he is still cooking it' is a more-common example of the type where harmony does not apply).[40] There is also variation in whether *f* blocks harmony.

6.1.1. Prefixes which harmonize

[40] No prefix contains underlying /e o/, so an equivalent generalization can be expressed in terms of whether the trigger is underlyingly a mid vowel.

Harmonizing prefixes fall into 5 morphological categories: nominal agreement, proclitics, secondary nominal agreement, verbal pronoun prefixes and tense prefixes.

a. Nouns and adjectives

The nominal prefixes for classes 7 (/kɪ/), 11 (/rʊ/), 13 (/tʊ/), 14 (/vʊ/), 15, 17 (/kʊ/) and 20 (/gʊ/) are all subject to lowering. Since most examples of cl. 17 precede another class prefix, cl. 17 is predominantly documented in prefix combinations, in 6.1.6. Though these subsections give simple examples of harmony from stem to prefix, examples here will also include ones with the augment, which harmonizes, since for many speakers the augment is usually present before a noun class prefix. This subsection includes locative noun class prefixes, which harmonize but which in certain ways might be treated as a proclitic preceding the noun. There is evidence suggesting that locative proclitics on class-marked nouns do not harmonize, and that apparent lowering in examples like *kó!njéénó* reflect lowering of the augment, in /kʊ-í!njéénó/ – see 6.1.4.

Nouns

Cl. 7			
ɪkɪduuri	‘bird enclosure’	ekedeende	‘swamp’
ɪkí!dííndí	‘drum’	éké!mérwá	‘plant’
ɪkí!sáásó	‘splinter’	éké!róóká	‘toilet paper plant’
ɪkí!tóónda	‘planting mound’	ekebóóko	‘whip’
ɪkɪbága	‘cat’	ekedéte	‘finger’
Cl. 11			
ʊróváha	‘wing’	orodéru	‘grain tray’
ʊróto	‘frog’	orodoto	‘childishness’
ʊrʊtávati	‘thorny plant’	orogeembe	‘razor’
ʊrʊguza	‘vegetable’	orovóni	‘jealousy’
ʊró!hímá	‘spleen’	oró!góóngó	‘depression in earth’
Cl. 13			
ʊtó!mbóró	‘monitors$_{-dim}$’	otóbéde	‘rings$_{-dim}$’
ʊtʊbáánga	‘pangas$_{-dim}$’	otó!dógá	‘cars$_{-dim}$’
ótógága	‘fences$_{-dim}$’	otogoye	‘ropes$_{-dim}$’
ʊtóhí	‘slaps$_{-dim}$’	otómbégo	‘seeds for planting$_{-dim}$’
ʊtʊjʊ	‘clay bowls$_{-dim}$’	otómémo	‘flames$_{-dim}$’
Cl. 14			
ʊvʊhɪɪnda	‘riches’	ovógére	‘leoprosy’
ʊvókóro	‘old age’	ovógó!yáánó	‘confusion’
ʊvóráhi	‘goodness’	ovosera	‘porridge’
ʊvʊsóóngʊ	‘poison, venom’	ovodóshi	‘mud’
ʊvótá!jíiri	‘riches’	ovogono	‘bedroom’
Cl. 17 locative (‘on’)			
kó!ngóróve	‘pig’	kó!njéénó	‘tapeworm’

kɒbárwa	‘letter’	komboongo	‘buffalo’
kɒndáma	‘cheek’	konderema	‘veg’
kɒngiri	‘warthog’	kopééji	‘page’
kɒnzɪra	‘path’	kosooti	‘vulture’

Infinitive cl. 15

kɒkína	‘to play’	kotéma	‘to chop’
kɒsínyaara	‘to sneer’	koreka	‘to leave’
kɒduya	‘to hit’	kodéeka	‘to cook’
kɒkáraanga	‘to fry’	komoroma	‘to talk’

Cl. 20

ɒgó!dógónyi	‘ant$_{\text{-aug}}$’	ogódéve	‘chair$_{\text{-aug}}$’
ɒgó!njóɒgɒ	‘peanut$_{\text{-aug}}$’	ogokoongo	‘boss$_{\text{-aug}}$’
ógóbága	‘cat$_{\text{-aug}}$’	ogombeva	‘mouse$_{\text{-aug}}$’
ɒgógáta	‘headpad$_{\text{-aug}}$’	ogó!ngókó	‘chicken$_{\text{-aug}}$’

<u>Adjectives</u>

ekenéne	‘big$_{\text{-7}}$’
ekedoto	‘soft$_{\text{-7}}$’
ɪkɪguru	‘hard-working$_{\text{-7}}$’
ɪkɪhííndɪra	‘aged$_{\text{-7}}$’
ɪkɪnífu	‘nice$_{\text{-7}}$’
oronéne	‘big$_{\text{-11}}$’
orodoto	‘soft$_{\text{-11}}$’
ɒrɒguru	‘hard-working$_{\text{-11}}$’
ɒrɒhííndɪra	‘aged$_{\text{-11}}$’
ɒrɒnífu	‘nice$_{\text{-11}}$’
otonéne	‘big$_{\text{-13}}$’
otodoto	‘soft$_{\text{-13}}$’
ɒtɒguru	‘hard-working$_{\text{-13}}$’
ɒtɒhííndɪra	‘aged$_{\text{-13}}$’
ɒtɒnífu	‘nice$_{\text{-13}}$’
ovonéne	‘big$_{\text{-14}}$’
ovodoto	‘soft$_{\text{-14}}$’
ɒvɒguru	‘hard-working$_{\text{-14}}$’
ɒvɒhííndɪra	‘aged$_{\text{-14}}$’
ɒvɒnífu	‘nice$_{\text{-14}}$’
okonéne	‘big$_{\text{-17}}$’
ɒkó!dí	‘small$_{\text{-17}}$’
ogonéne	‘big$_{\text{-20}}$’

ogoveereeri ‘sad$_{-20}$’
ʊgʊdíɲu ‘hard$_{-20}$’
ʊgʊhííndɪra ‘aged$_{-20}$’
ʊgʊtííndi ‘pugnacious$_{-20}$’

b. Secondary nominal agreement

Secondary class-agreement prefixes mostly attach to vowel-initial stems. The only consonant-initial root selecting such prefixes which has a mid vowel in the initial syllable is the numeral *-ne* ‘four’, which cannot appear in most of the classes that exempify prefix harmony, which are singular classes. However, we find harmony in *tóné* ‘four$_{-13}$’, *vóné* ‘four$_{-14}$’ and *kóné* ‘four$_{-17}$’. Before other stems, these prefixes have the vowel [ʊ]: [tʊvírí] ‘two$_{-13}$’, *vʊrihá* ‘which$_{-14}$’, *kʊtáánó* ‘five$_{-17}$’.

The augment morpheme is also subject to lowering harmony, as the previously examples have demonstrated, where the augment is [ɪ ʊ] in case the class prefix has [ɪ ʊ] and [e o] with the class prefix has [e o]. Additionally, the augment in cl. 9 harmonizes with the first vowel of the noun root, since there is no noun class prefix vowel.

é$^{!}$ngókó ‘chicken’
ebéde ‘ring’
ebóósta ‘post office’
egeengere ‘bell’

í$^{!}$ɲáámbʊ́ ‘chameleon’
í$^{!}$ngógí ‘baboon’
í$^{!}$nzúune ‘clotting plant’
ɪbáá$^{!}$kúúri ‘bowl’
ɪbúsa ‘beer (maize)’

c. OP, SP

The 2s and relative 3s subject prefixes /ʊ/, 1p subject /kʊ/, as well as those for cl. 3, 20 (/gʊ/), 7 (/kɪ/), 9 (/ɪ/), 11 (/rʊ/), 13 (/tʊ/), 14 (/vʊ/), 15, 17 (/kʊ/)

orórwí ‘2s were seen’
orórwí ‘cl.1 who was seen’
korórwí ‘we were seen’
gorórwí ‘cl.3 was seen’
gorórwí ‘cl.20 was seen’
kerórwí ‘cl.7 was seen’
erórwí ‘cl.9 was seen’
rorórwí ‘cl.11 was seen’
torórwí ‘cl.13 were seen’
vorórwí ‘cl.14 was seen’
korórwí ‘cl.15, 17 was seen’

ʊkarwi ‘2s were cut’

kʊkʊbwi	‘1p were beaten’
gʊkʊbwi	‘cl. 3 was beaten’
gʊkʊbwi	‘cl. 20 was beaten’
kɪkʊbwi	‘cl. 7 was beaten’
ɪkʊbwi	‘cl. 9 was beaten’
rʊkʊbwi	‘cl. 11 was beaten’
tʊkʊbwi	‘cl. 13 were beaten’
vʊkʊbwi	‘cl. 14 was beaten’
kʊkʊbwi	‘cl. 17 was beaten’

Within the object prefixes, the same prefixes as object prefixes undergo lowering, with the exception that the cl. 1 OP is always /mʊ/ which does not harmonize, and with the inclusion of the reflexive prefix /ɪ/ which does harmonize.

arakórora	‘he will see 1p’
arakórora	‘he will see 2s’
aréérora	‘he will see himself’
aragórora	‘he will see cl.3’
arakérora	‘he will see cl.7’
aragérora	‘he will see cl.9’
ararórora	‘he will see cl.11’
aratórora	‘he will see cl. 13’
aravórora	‘he will see cl. 14’
arakórora	‘he will see cl. 15’
arakórora	‘he will see cl. 17’
aragórora	‘he will see cl. 20’

arakóhʊlla	‘he will hear 1p’
arakóhʊlla	‘he will hear 2s’
arííhʊlla	‘he will hear himself’
aragóhʊlla	‘he will hear cl.3’
arakíhʊlla	‘he will hear cl.7’
aragíhʊlla	‘he will hear cl.9’
araróhʊlla	‘he will hear cl.11’
aratóhʊlla	‘he will hear cl. 13’
aravóhʊlla	‘he will hear cl. 14’
arakóhʊlla	‘he will hear cl. 15’
arakóhʊlla	‘he will hear cl. 17’
aragóhʊlla	‘he will hear cl. 20’

Tense prefixes

Two tense prefixes have the required phonological structure to undergo lowering harmony: the past *-aakʊ-* and perstitive *-kɪ-*.

yaakʊrɪma	‘he plowed’
yaakʊvariza	‘he counted’

kwaakɔríinga	'we folded'
kwaakodéeka	'we cooked'
vaakovéga	'they shaved'
vaakomooŋa	' they gossiped'
ngɪbííma	'I am still measuring'
akɪkɪna	'he is still playing'
kɔkɪvaka	'we are still smearing'
ngɪkúúta	'I am still scraping'
ngehoomá	'I am still massaging'
akeng'óóda	'he is still writing'
vakegéénda	'they are still walking'
mɔkegéɲá	'2p are still wondering'

d. Demonstratives

Demonstratives do not generally present the requisite phonological structure to exemplify lowering harmony. However, two forms of the distal demonstrative with the suffix *-o* do exemplify lowering. The cl. 1 form *oyo* has the prefix /ʊ/ plus the demonstrative /AGR-o/, realized as [yo] in cl. 1; similarly the cl. 9 form *yeyo* has the prefix /yɪ/ plus /AGR-o/ [yo]. Compare *oyo, yeyo* with the proximal demonstrative without /-o/, *ʊyʊ, yɪyɪ*.

6.1.2. Prefixes which do not harmonize

The prefixes of the shape /mɔ/ (cl. 1 and 3, nominal; cl. 17) and those with the vowel /i/ (nominal cl. 4 /mi/, non-nominal cl. 4 /ji/, cl. 10 /zi/ and cl. 5 /ri/) do not undergo lowering.[41]

a. Nouns and adjectives

ʊmóháamba	'prisoner'
ʊmɔko	'brother in law'
ʊmɔdéérwa	'child without siblings'
ʊmɔkoongo	'boss'
ʊmɔdáka	'pauper'
ʊmɔtere	'jute mallow'
ʊmɔkóóŋe	'sugar cane'
ʊmɔreembe	'peace'
ʊmɔgera	'river'
ʊmɔgizi	'homestead'
ʊmɔgoye	'rope'
ʊmɔjoombo	'earthworm'

[41] The copula /nɪ/ does not undergo lowering, e.g. /nɪ-rodéeji/ does not become *[nerodéeji]. This may be because all preceding nasals block lowering, and not just *m*, or it may be because the copula is not a prefix, it is a proclitic, and is outside the domain of vowel harmony.

ʊmíˈtééndé	‘plant (sp.)’
ɪmikóno	‘hands’
ɪmirítu	‘forests’
ɪmító	‘Crotalaria’
ɪríkóvi	‘pea’
ɪríísé	‘thatching grass’
rídóŋe	‘ball of ugali’
rigego	‘molar’
rííkó	‘body dirt’
ɪridoongoro	‘necklace’
ɪrivógoyi	‘sp. vegetable’
ɪvihírɪmɪtɪ	‘hawks’
ɪvigóhe	‘eyelashes’
ɪviségese	‘roof peaks’
ɪvidéte	‘finger’
ɪvíˈkóókó	‘evil spell’
ɪzíˈmbááré	‘beer starter’
ɪzindege	‘airplane’
ɪzipééji	‘page’
ɪzíˈnjéénó	‘tapeworm’
ɪzimboongo	‘buffalo’
ɪzimbúrú	‘monitor’
ɪzisooti	‘vulture’
ɪzing’édu	‘joint’
ɪzíˈmbógá	‘amaranthus’
ɪzíˈndóóró	‘sleep’
ʊmʊnéne	‘big$_{-1,3}$’
ʊmʊdoto	‘soft$_{-1,3}$’
ʊmʊguru	‘hard-working$_{-1}$’
ʊmʊkóro	‘old$_{-3}$’
ʊmʊhííndɪra	‘aged$_{-1,3}$’
ɪminéne	‘big$_{-4}$’
ɪmidoto	‘soft$_{-4}$’
ɪminífu	‘nice$_{-4}$’
ɪmikóro	‘old$_{-4}$’
ɪrinéne	‘big$_{-5}$’
ɪridoto	‘soft$_{-5}$’
ɪrinífu	‘nice$_{-5}$’
ɪrikóro	‘old$_{-5}$’

ɪvinéne	‘big$_{-8}$’
ɪvidoto	‘soft$_{-8}$’
ɪvinífu	‘nice$_{-8}$’
ɪvikóɾʊ	‘old$_{-8}$’
ɪzinéne	‘big$_{-10}$’
ɪzindoto	‘soft$_{-10}$’
ɪzinífu	‘nice$_{-10}$’
ɪzingóɾʊ	‘old$_{-10}$’
mʊbéde	‘in a ring’
mʊkereenge	‘in a leg’

b. Secondary nominal agreement

The one stem selecting secondary nominal agreement that has a mid vowel, /-né/ ‘four’, does not condition harmony in the case of *jíné* ‘four$_{-4}$’, *zíné* ‘four$_{-11}$’, *mɔ́né* ‘four$_{-18}$’, where the prefix vowel is /i/ or the preceding consonant is /m/.

c. OP, SP

The cl. 1 OP and subject and object prefixes for 2p /mʊ/, cl. 4 /ji/, cl. 5 /ri/, cl. 8 /vi/, cl. 10 /zi/ and cl. 16 /mʊ/ do not lower.

mʊɾórwí	‘2p were seen’
jiɾórwí	‘cl. 4 were seen’
riɾórwí	‘cl. 5 was seen’
viɾórwí	‘cl. 8 were seen’
ziɾórwí	‘cl. 10 were seen’
mʊɾórwí	‘cl. 16 was seen’
yaakʊmɔ́ɾora	‘he saw 2p, cl. 1, cl. 16’
yaakʊjíɾora	‘he saw cl. 4’
yaakʊɾíɾora	‘he saw cl. 5’
yaakʊvíɾora	‘he saw cl. 8’
yaakʊzíɾora	‘he saw cl. 10’

d. Tense prefixes

One tense prefix, the indefinite future /ri/, has a non-harmonizing high vowel.

ndiɾímá	‘I may plow’
kʊɾiváɾíza	‘we may count’
aɾideeká	‘he may cook’
aɾivega	‘he may shave’
vaakomooŋa	‘they gossiped’

ndigéénda ‘I may walk’
kɒring’óóda ‘we may write’

6.1.3. Blocking consonants

Certain consonants standing between the target and trigger vowels block regressive lowering: *ch, j, f, sh*. The most common historical source of these consonants are historically earlier **ky, *gy, *fw* and **sy,*hy*. There is also blockage in the case of loanwords.[42]

kɒchéére va	‘to late’
kɒchéériza	‘to greet’
kɒchéreva	‘to be late’
kɒchéka	‘to search for’[43]
kɒchoora	‘to draw’
kɒfoogoya	‘to be crippled’
kɒfooka	‘to boil over’
kɒfoora	‘to win’
kɒsheeva	‘to dance’
kɒshoora	‘to pull hard’
kɒshoora	‘to make serious error’
kɒshóova	‘to wail’

ɒgɒchóórooni	‘toilet$_{-aug}$’
ɒtɒféréji	‘water taps$_{-dim}$’
ɒtɒféneesi	‘jackfruits$_{-dim}$’
ɒgɒfwéé!déré	‘termite$_{-aug}$’
ɪkɪjéého	‘mirror’
í!njééné	‘tapeworm’
ɪjééra	‘jail’
ɒgɒjééshi	‘military person$_{-aug}$’
ɒtó!jérédi	‘leather strap$_{-dim}$’
ɪkísheegéri	‘sty’
ɪsho	‘shaper’
ɪshóongo	‘water pot’

Additionally, the glides *y, w* after a consonant always block lowering (including *sy* and *hy* from speakers who retain those sequences).

kɒdyeeŋa	‘to dance on the toes’
kɒkweesa	‘to pull’
kɒnywééka	‘to beat with a thin stick’
kɒsyéégera	‘to limp’
kɒsyééngeka	‘to be partially open’

[42] In the case of *sh*, some speakers retain a *Cy* source

[43] This stem derives from English ‘check’.

kʊhyoola, kʊsyoola	‘to make serious error’
ɪsweenene	‘insect sp.’
ɪswééta	‘sweater’

The verb *kʊsyeena ~ kʊsheena ~ koseena* ‘to step’ exhibits considerable variation, and some speakers (FA, RL) attest all three variants: harmony applies across *s*, but not *sy* or *sh*. Cases of glides derived by glide formation will be discussed in 8.2.1 in the context of interaction between processes.

6.1.4. Proclitics

Vowel harmony is fundamentally a word-internal rule, which raises the question of how clitics behave in relevant contexts. As seen in forms such as *kó!njéénéé* ‘on a tapeworm’, *kosooti* ‘on a vulture’ the locative prefix~clitic *kʊ* does appear to harmonize.

kó!njéénéé	‘on a tapeworm’
komboongo	‘on a buffalo’
kóvódóshi	‘on mud’
kokemoori	‘on a calf’
korodéru	‘on a tray’
kokeségese	‘on a roof peak’

Harmony applied to *kʊ-* is not obligatory and is frequently not applied, even for speakers who regularly harmonize (especially RL and EM).

kʊkekóómbe	‘on a cup’
kóvódóshi	‘on mud’
kʊkego	‘on the pen’

Harmony is especially infrequent in the case of proper names and class 1a nouns. The only relevant forms volunteered by EM do not apply harmony

kó!kóózá	‘on uncle’
kʊséénge	‘on aunt’
kʊndoori	‘on Ndoori’
kʊséréenge	‘on Serenge’
kʊdemeesi	‘on Demeesi’

Forms with harmony applying to the proclitic are accepted but not volunteered, and are judged to be peculiar.[44]

kóséénge	‘on aunt’
kó!kóózá	‘on uncle’
kondoori	‘on Ndoori’

[44] EM notes that this usage tends to suggest that the noun is a thing and not a person.

kodemeesi ‘on Demeesi’

The verbal enclitic *kʊ* ‘ever; experience’[45] can accidentally stand before a noun, but it never undergoes harmony with the following word.

yáá!rórá kʊ́ ndoori	‘he has ever seen Ndoori’
váá!kóɲá kʊ́ seréenge	‘they have ever helped Serenge’
kwáárora kʊ́ !kóózá	‘we have ever seen uncle’
*kwáárora kʊ́ !kóózá	
kwáárora kʊ́ booge	‘we have ever seen Booge’
*kwáárora kʊ́ booge	
ndori kʊ́ !séénge	‘I had the privilege of seeing aunt’

We may thus conclude that if a clitic harmonizes with the following word, it does so only when the phonological conditions for harmony are satisfied in a clitic-host pair, and does not apply in a random word collection where the first word is a clitic unrelated to the nominal phrase. This leaves us with the matter of preferences in the case of the locative proclitic, where *kʊ́!kóózá* ‘on uncle’ is dispreferred but *kokeségese* ‘on a roof peak’ is preferred. Since this is not a matter of strict grammaticality, it may be concluded that the relationship between a locative class prefix and the following noun is somewhat ambiguous, being either treated as a word-internal sequence (thus harmony applies) or as a phrasal sequence (harmony does not apply).

Another clitic which has the potential to harmonize is the copula *nɪ* (*nɪ ajentína* ‘it is Argentina’, *nɪ baabá* ‘it is father’), but this proclitic does not ever harmonize.

nɪ éditon	‘it’s Editon’
nɪ mboozó	‘it’s sibling’
nɪ ndeve kí	‘it’s what chair’
ní ródéeji	‘it’s Rodeji’
nɪ séénge	‘it’s aunts’
ní vóséra mbá	‘it’s not porridge’
nɪ mombáása	‘it’s Mombasa’
nɪ ndoori	‘it’s ndoori’
nɪ yé!éyé	‘it’s his’
nɪ yó!óyó	‘it’s yours’

There are two verbal proclitics which might harmonize. The first instance is found in the crastinal future, where we only find *nɪ*. But this prefix is underlyingly /na/, and [nɪ] only arises from optional dissimilation when the following SP vowel is [a] (see 12.6), so harmony cannot apply here (**ne koɲóóré* ‘we will find’, instead *na koɲóóré*).

The other verbal clitic, where the conditions for harmony are satisfied on the surface, is the subordinating clitic /nɪ/, which is found in conditional and consecutive constructions inter alia. This clitic has two realizations, one as an independent CV syllable and the other in reduced form as /ɪ/, reduction being discussed in 12.7. We will start with

[45] The semantic properties of this enclitic are not well understood.

the form attested in the consecutive construction with no reduction. Generally, the clitic vowel does not lower before the mid vowel of a verb.

ma ní kó!yógá	‘then we talked’
má ní kó!géénda	‘then we walked’
ma nɪ ké!ng’óódwa	‘then it was written’
ma níí !nzéyá	‘then I swept’
ma níí !ng’éénda	‘then I walked’
ma ní kógota	‘then we got lost’
ma níí! nóg-ízinguza	‘then I plucked leaves’
ma níí ngorórá	‘then I coughed’
ma níí ngedóóra	‘then I picked it’

Some (confirmed) tokens do exhibit harmony between the clitic and the verb, thus harmony may be dispreferred but it is possible.

ma néé! ndééká	‘and then I cooked’
ma néé !nzóóya	‘then I scooped’
ma néé mbega	‘then I shaved’
ma né kógota	‘then we got lost’

When *nɪ* is reduced to *ɪ* and merges syllabically with the preceding word, harmony generally applies.

m-éé kóvega	‘then we shaved’
m-éé kó!dééká	‘then we cooked’
kɒrav-ee kó!gééndi	‘if we walked’
kɒrikav-éé kó!gééndi	‘we will have walked’

When the following SP is a surface V (as in 2s /ʊ/, Cl. 1 /a/), the proclitic vowel deletes so there is no vowel to harmonize (e.g. *ma n-óóvega* ‘then you shaved’). However, if the Mstem following the SP is vowel initial, that SP is realized as a glide: as the following examples indicate, there is no lowering of the full or reduced form of the clitic *nɪ*.[46]

m-íí yé!éyá	‘then he swept’
m-íí wé!éyá	‘then you swept’
má ní wé!éɲá	‘then you wanted’

6.1.5. Optionality

Vowel harmony has a degree of optionality, both according to speaker and according to morphological context. There may be some normative pressure to apply regressive lower-

[46] Examples of harmony in this context are unattested, but this is a low-frequency construction, and direct elicitation of forms like ?m-éé wé!éyá has not proven to clearly indicate whether such forms are accepted.

ing. In written sources, the dominant pattern is that the rule applies. It applies regularly in the Ndanyi dictionary, appears to apply in Bible translations,[47] and also in Imbuga. On the other hand, in Godia there is harmony in the cl. 9 augment *e* but not in other prefixes (*eng'ombe* 'cow' versus *kimooli* 'calf', *vuveehi* 'lie', *kulola* 'to see', *vakuhera* 'they ended').

Every speaker that I have worked with attests regressive lowering in some number of tokens. Speakers RO, PM, and EM apply lowering over 95% of the time; BK, FA, RL and SY do so between 85% and 95% of the time, NM and ML lower about half of the time, and EK does only 18% of the time. There is also a speaker-dependent asymmetrical treatment of the cl. 9 augment, where some speakers harmonize /ɪ-/ more frequently and some do so less frequently. In the data (and considering contexts where harmony is phonologically applicable, not being blocked by known consonantal features), we find that SY and BK apply lowering somewhat less frequently in cl. 9 than elsewhere (around 30% and 14% less often, respectively), whereas RL applies lowering more often in cl. 9 compared to other contexts by about 25%, and NM, EK and ML apply lower around 70% more often.

Probability of Harmony, by speaker

	all types	cl. 9	non-9
SY	0.60	0.48	0.68
BK	0.93	0.84	0.97
RO	0.96	0.96	1
PM	0.97	0.97	0.97
EM	0.98	1	0.97
FA	0.92	0.98	0.90
RL	0.86	0.99	0.80
NM	0.68	0.93	0.59
EK	0.18	0.23	0.14
ML	0.57	0.82	0.45

Some tokens exemplifying non-lowering are as follows

kʊheera	'to inhale'
kʊroonda	'to follow'
kʊkóóŋa	'to help'
kóvéga	'to shave'
kóhéénza	'to search'
kóvóha	'to tie'
kʊtóómboka	'to protrude'
kógéeha	'to be scarce'
kʊvoroora	'to return dowry'

Another way in which application of lowering is not uniform across morphological contexts is that, given the available evidence, harmony always applies, for all speakers, in the

[47] This conclusion is based on non-systematic manual inspection and analysis of one New Testament and one full Bible translations. The problem is that there is orthographic variation in how [ʊ ɪ] are rendered: usually as <u, i> but sometimes as <o, e>.

demonstratives *eyo, oyo* ‘that (9,1)’, never **ɪyo, *ʊyo*, even for speakers like ML and EK who tend not to harmonize.

6.1.6. Sequences of harmonizing prefixes

Lowering can apply in a sequence of prefixes in the requisite context, but we have observed a weak tendency at least in verbs for lowering to apply only to the first prefix before the root. Patterns such as the following are not uncommon with multiple prefixes.

kóvódóshi	‘on mud’
kokemoori	‘on a calf’
korodéru	‘on a tray’
kokeségese	‘on a roof peak’
kokemóróma	‘we are still talking’
okezéengella	‘you are still staring’
ókórójí	‘you bewitched us’
okekorórá	‘you are still seeing us’

kokedeekáa	kʊkedeekáa	‘we are still cooking’
kokegodéékaa	kʊkɪgodéékaa	‘we are still cooking it$_{-20}$’
yaakʊké$^{!}$dééká	yaakʊkí$^{!}$dééká	‘he just cooked it$_{-7}$’

Any form with harmony skipping over a syllable is rejected.

*yaakokí$^{!}$dééká
*kokɪgʊdéékaa

6.1.7. Harmony and derived geminates

The pattern of sequences of harmonizable prefixes further reveals that harmony is blocked by a geminate consonant, which can be created by reduction of vVv and rVC sequences, as well as rV{t,d,n}. One simple demonstration of this is examples like *ɪlleesi* ‘cloud’, never **elleesi*, which is rejected as impossible. Likewise we find *ɪvveereri* ‘sad-8’, not **evveereri*. Insofar as the underlying forms of these words are /ɪrireesi/ and /ɪviveereri/, and *i* does not undergo harmony, we might assume that harmony simply applies prior to deletion of the prefix vowel and it is the fact that the deleted vowel is not a possible target that explains fails of harmony. Further data show that this is wrong, and derived geminates block harmony irrespective of the quality of the deleted vowel. Blockage is also found when the deleted prefix vowel is /ɪ, ʊ/, where the deleted vowel does harmonize.

<u>Geminate ll, nn, tt, dd</u>

ʊlleera	‘umbilical cord’
ó$^{!}$llóóngo	‘white clay’
ʊlló	‘finger millet’
kó$^{!}$llóóngó	‘on white clay’

kʊ́lleeta		‘to bring it$_{-5}$’
kʊ́llora		‘to see it$_{-11}$’
kʊllééti		‘we brought it$_{-11}$’
ó$^{!}$llóóndé		‘followed$_{-11}$’
ʊnnéne	oronéne	‘big$_{-11}$’
ʊddéé$^{!}$ngéllú	orodéé$^{!}$ngéllú	‘loose$_{-11}$’
ʊddoto	orodoto	‘childishness’
ód$^{!}$dééké	oró$^{!}$dééké	‘cooked$_{-11}$’
kʊ́ddeeka	kóródeeka	‘to cook it$_{-11}$’
kʊ́ddoora	koródoora	‘to pick it$_{-11}$ up’
ótterechi	orotérechi	‘slippery$_{-11}$’
kʊ́ttega	korótega	‘to trap it$_{-11}$’
kʊ́ttema	korótema	‘to chop it$_{-11}$’
kʊ́nnoga	korónoga	‘to pluck it$_{-11}$’
kʊ́ŋŋoora	koróŋoora	‘to find it$_{-11}$’

Geminate vv

óvvóhe	óvóvóhe	‘tied$_{-14}$’
ʊvveereri	ovoveereri	‘sad$_{-14}$’
óvvége	óvóvége	‘shaved$_{-14}$’
ʊvvé$^{!}$dékú	ovóvé$^{!}$dékú	‘bent$_{-14}$’

kʊ́vvega	kʊvívega	‘to shave them$_{-8}$’
kʊ́vvoha	kovóvoha	‘to tie it$_{-14}$’
kʊvvódong’ane	kovovódong’ane	‘let us go around it$_{-14}$’

Harmony also does not apply across a geminate formed from the cl. 10 prefix /zi/, but there is no prefix */zɪ, zʊ/ whose vowel can undergo harmony, thus we cannot establish that lack of harmony in these examples is due to the geminate rather than the height of the deleted vowel.

ɪsséendi	‘money’
ɪzzooroori	‘springs’
akɪsséká	‘he is still laughing at them$_{-10}$’
akɪzzéé$^{!}$ngéélá	‘he is still staring at them$_{-10}$’

6.2. Progressive Stem Lowering

Within the stem, and excluding the final vowel suffix, there is a progressive lowering rule where /ɪ/ become [e] after [e o]. This rule appears to be obligatory for all speakers. Its application is most obvious in the form of the applied suffix /ɪr/ which becomes [er] when the preceding vowel is mid.

kʊgaya	‘to prohibit’	kʊgayɪra	‘to prohibit for’
kʊchába	‘to beat’	kʊchábɪra	‘to beat for’
aragɪɪnga	‘he will lift’	aragɪɪngɪra	‘he will lift for’

váakaríinga	‘they folded ‘	váakaríingɪra	‘they folded for’
váábɔ́rɔka	‘they flew’	váábɔ́rɔkɪra	‘they flew for’
kɔdéeka	‘to cook’	kɔdéékera	‘to cook for’
vááchéreva	‘they were late’	vááchérevera	‘they were late on’
aramoroma	‘they will speak’	aramoromera	‘they will speak for’
yaakokóoŋa	‘he helped’	yaakokóoŋera	‘he helped for’

The causative suffix *-iz-* and the post-nasal variant *-iɲ-* do not alternate harmonically.

arigáyíza	‘he will make prohibit’
arakááviza	‘he will make search’
váábɔ́rɔkiza	‘they made fly’
kɔdéékiza	‘to make cook’
vacherevizi	‘they made late’
aramoromiɲa	‘they will make speak’

Clear alternating contexts for other stem-internal applications of harmony are harder to establish. As discussed in chapter X, the number of uncontroversial extensions in Logoori is small, and only the applied has the relevant phonological structure that clearly shows harmonic alternations. A question of interest is, in particular, whether /ʊ/ in an extension lowers to [o] when preceded by *e*, since in many Bantu language *e* does not condition lowering of /ʊ/. One potential context for testing applicability of lowering to /ʊ/ in this context would be the reversive suffix /ʊr/. This suffix is not productive in Logoori, but there are a number of stems exhibiting that form and meaning relationship.

kɔyavɔgɔra	‘to dig’
kɔyavɔgɔlla	‘to unbury’
kɔkúúnɪka	‘to cover’
kɔkúúnɔra	‘to uncover’
kɔríinga	‘to fold’
kɔríingɔlla	‘to unfold’
kɔsúunga	‘to hook’
kɔsúúngɔra	‘to unhook’
kɔbáang’a	‘to pack’
kɔbáang’ɔra	‘to unpack’
kɔviimba	‘to roof’
kɔviimbɔra	‘to unroof’
kɔsiita	‘to twist’
kɔsiitɔra	‘to untwist’

Of interest are two roots with mid vowels that have reversive pairs. One is seen in *kovóha* ‘to tie’, *kovóhoolla* ‘to untie’, with the apparent extension [ooll]. The second is *kotéga* ‘to set a trap’, *kɔtígɔra* ‘to unset a trap’. The former suggests that /ʊ/ may lower after /o/, and the latter suggests that there is no lowering after /e/, indeed /e/ raises to [ɪ].

Some Logoori verbs with the vowel pattern [ɪ…ʊ] seem to relate to [e…u] in other Luyia languages, for instance Logoori *gɪdɔrɔka* ‘leak’ (Bukusu *ket*(*urul*)*a* ‘pour

out'); Logoori *hínɔka* 'push up off a seat'; (Wanga *oxw-i-hena* 'draw self up, stand on tip-toe', Tiriki *henula* 'lift up on high, lift oneself up'); Logoori *sívɔka* 'germinate', Bukusu *seβuxa* 'shoot, send forth shoots', Tiriki *sevuxa* 'shoot, send forth shoots'.

Progressive lowering harmony seems to be a valid generalization about vowel coocurrence within potentially polysyllabic stems: [ɪ, ʊ] never follow [e,o]. [o] does appear after [o], but is not found after [e]

kʊbabɪra	'to get stained'
kʊrakʊʊra	'to release'
kʊhaavɪɪna	'to support a person having a problem'
kʊgáámʊʊra	'to to chew the cud'
kodegera	'to shiver'
kovedeka	'to bend'
kong'éreng'ana	'to be shiny'
kosérengeta	'to roll (as hills do)'
kwííŋura	'to serve food'
kwííruura	'to winnow'
kwíímbɪha	'to be short physically'
kwíínɔka	'to leave work'
kʊdiigɪra	'to limp with a crutch'
koyoboya	'to speak indistinctly'
komoromeŋa	'to speak senselessly'
konógera	'to bite small bits of food'
kobómora	'to demolish'
kohónonoka	'to escape danger'
kogoongoma	'to roll'
koyoombooka	'to be too big'
kʊsung'usa	'to shake tr.'
kʊrúguuta	'to write'
kʊkʊrʊʊra	'to drag forcibly'
kʊvúgʊra	'to take'
kʊkúúnɪka	'to cover'
kʊhʊʊrʊʊra	'to extract'
kʊhʊʊrʊʊka	'to take a break'

There are some verbs which appear to have the structure eCo, but which are likely lexicalized reflexives, thus /ɪ-CVC/.[48]

kw-éégoda	'to be bent'
kw-éérora	'to be a braggart'
kw-éékoreka	'to happen'

Compare *ko-goda* 'to turn', *ko-rora* 'to see', *ko-kóra* 'to do'.

[48] Such roots are discussed in the chapter on verb tone: the evidence is that these roots behave tonally like OP+stem combinations, not as unprefixed roots.

Not every instance of [e,o] after the first root syllable can be explained by applying lowering harmony to /ɪ, ʊ/: some instances of these vowels are lexical.

kʊdaangooya	'to stagger'
kʊsiingooya	'to be slow to act'
kʊgʊnyeera	'to look sad'
kʊkóómbeera	'to hug'
kʊfúúumbeella	'to make a fire burn'

There are a limited number of stems whose final consonants inhibit progressive lowering: *-chékech-* 'sieve', *-chóoch-* 'incite', *-téremk-* 'descend'. These are words borrowed from Swahili. The applied suffix following these stems is not subject to lowering.

kokóteremkɪra	'to descend for us'
n-aakóchóóchɪrɪ	'he will incite for us'
váákó'chékéchɪra	'they will sieve for us'

In the case of *-chékech-, -chóoch-* this is explained by the general fact that *ch* blocks harmony. In the case of *teremk*, the explanation is not entirely obvious. Because of the cluster *mk* (non-homorganic NC, no voicing, pre-consonantal tone-bearing nasal), we might reasonably explain the stem as coming from /teremʊka/, undergoing mu-reduction. There is little evidence of mu-reduction applying within the stem. There are verbs which might in principle undergo reduction but never do.

kʊsimʊgʊka	'to be revived'
kʊgámʊra	'to catch in the nick of time'
kʊtímuka	'to get untied (of an animal)'
kʊsamʊra	'to go to work'
kʊsiimʊka	'to start a journey'

However, the stem 'sneeze', which has many variant realizations, is attested with reduction in the tokens [em]*kʊtyámka* 'to sneeze', [nm]*kwíichaamra*, as well as *kwíisyaamʊra, kʊtyámʊka, kʊsyaamʊra*, so it is possible that /teremʊk/ becomes [teremk]. In light of the possibility that /ʊ/ does not lower after [e], the assumed underlying vowel /ʊ/ could explain lack of harmony across *mk* in this verb.

6.3. Progressive FV lowering

There is also progressive harmony between the prefinal vowel and the final suffix /e~ɪ/.[49] Three morphemes exhibit this alternation: the subjunctive suffix, the deverbal adjective suffix, and the imbricated variant of the perfective suffix. The basic harmonic patterns of these suffixes is the same, but there are differences in terms of optionality. The main challenge in analyzing the data is determining whether the suffix is /ɪ/ which im-

[49] It is very difficult to determine whether the process is raising or lowering, in light of the various conditions and options pertaining to this alternation. It will be conventionally referred to here as lowering.

plies one set of conditions for lowering, or /e/ implying a complementary set of conditions for raising.

6.3.1. Subjunctive -e/ɪ

When the preceding vowel is [e o], the subjunctive vowel is realized as [e].

m-aadééké	‘he will cook’
m-áándéékéré	‘I will cook for’
ma varóré	‘they will see’
na kʊchérévé	‘we will be late’
n-aagóné	‘he will sleep’
ma kovéézégére	‘we will belch’
nɪ vavóhóolle	‘they will untie’
n-aamórómere	‘he will speak for me’
kʊmaa kokóóɲé	‘we will help’
n-aachóóré	‘he will draw’
naa nzéengéelle	‘I will belch’
na kʊfóómbéelle	‘we will make a fire burn’
vaangúúmeelle	‘let them hug me’

After *ɪ ʊ i u*, the suffix appears as [ɪ].

ma vabábírí	‘they will get dirty’
ma varííndí	‘they will watch’
ma víímíllí	‘they will lead’
nɪ varímí	‘they will dig’
kʊmaa kʊtóóngámínyɪ	‘we will invert’
ma kɪgórízwí	‘it will be sold’
na vavítí	‘they will pass’
ma voonízí	‘they will make sin’
ma vadóóɲí	‘they will look sad’
maa kʊyóóyómɪ	‘we will run slowly’
na vaambókí	‘they will cross’
vamaa vasúgúmí	‘they will push’
vamaa viigútí	‘they will be satisfied’
na kʊtúúmí	‘we will jump’

The next question is whether [e] can ever appear directly after [i u ɪ ʊ]. There are only 3 out of about 1250 tokens with final [e] which have a high vowel in the preceding stem syllable: *arakiike* ‘he will descend’, *kʊrakáchééliize* ‘you will greet’ and *arakaraandiize* ‘he will announce’, all coming from the same speaker and all uttered within a one minute period. Such examples will be disregarded as errors. There are likewise only 5 examples out of about 1500 tokens of [ɪ] after mid vowels, 4 in a sequence from one speaker giving a paradigm *nɪ mdéékí* ‘2p will cook’, thus these too will be disregarded as errors. Forms with disharmony between the final and penult non-low vowels are consistently rejected by EM.

*maadeekɪº
*ma varorɪº
*ma vadʊʊŋé
*ma varííndé

Thus the pattern of harmony involving non-low vowels in the subjunctive is simple.[50]

The situation after [a] is less consistent, since both final vowels occur. One indication of the overall pattern for preceding [a] is the fact that 3/4 of the 500+ instances with penultimate [a] have final [e]. Examples are as follows.

kwaambá!káné	'refuse us!'
nɪ vaarámé	'they will be open'
nɪ vakwáate	'they will do surgery on us'
na vɪɪyáte	'they will do surgery on themselves'
kʊmaa kʊdéékáange	'we will be cooking'
n-aagárángatane	'he will fall and rolled over'
na kʊgárókáne	'we will part ways'
n-ʊʊháámbáane	'you will join up'
kʊmaa kʊháángáare	'we will argue'
kiiká!ré	'now sit!'
variká!ráángé	'they will fry'
arakákáraange	'he will fry'
ʊrakákáraange	'we will fry'
kʊrakaminage	'we will stir'
kaŋaaŋé	'now eat!'
rwá!ndíkánáve	'when I will sew'
reka ndágé	'let me promise'
varakaráse	'they will throw'
ma varóráné	'they will see e.o'
aráásaangaalle	'he will be happy for me'
ma vasávé	'they will beg'
varikatáángaaze	'they will announce'
kavagá!ré	'now spread out'
arákávódong'ane	'he will go around'
varóji vaaza vazáázáame	'the witches who will taste'

Examples of [ɪ] after [a] are as follows:

vamaa gagáállí	'they will stare'
kagɪganá!gání	'now think about it'
kajuukányɪ	'now stir!'
kasʊʊndó!rányí	'now overpour!'
ma vaminagɪº	'they will stir'

[50] There are additional examples, discussed at the end of this subsection, involving blocking consonants.

aráváallɪ	‘he will spread a bed for them’
arɪkísaambɒranyɪ	‘he will dismantle it’
n-aasáángaallɪ	‘he will be happy for me’
vamaa vasáámbɒ́ránɣɪ	‘they will dismantle’
kakáráángí	‘now fry’
arikáráangɪ	‘he will fry’
vamaa vakɒɣáanzɪ	‘they will love you’
na kɒjɔ́ɔ́kányí	‘we will mix’
kaatányɪ	‘now break!’

Across speakers, final [e] after [a] is the dominant pattern (it is the only pattern attested in 50 tokens from RL), and (except for RL) [e] occurs with roughly the same frequency across speakers.

Instances with final [ɪ] predominantly occur when the consonants intervening between the penult and final vowels are *ll, ny* or *ɲ*.

reka ngánágánɪ	‘let me think’
kɒmaa kwɒɒmbákí	‘we will build’
kakáráángí	‘now fry’
arikáráangɪ	‘he will fry’
kaambá!kání	‘now refuse!’
vamaa gagáállí	‘they will stare’
maa vatávállí	‘they will put on airs’
aráváallɪ	‘he will spread a bed for them’
vamaa víígállɪ	‘they will obstruct’
kɒrakágírɒng’anyɪ	‘we will turn upside down’
geeɲékáá ngánágányɪ	‘I should think’
kasɒgá!ányí	‘now mix!’
nɪvacháátanyɪ	‘they will split it’
arɪkísaambɒranyɪ	‘he will dismantle’
kɒmaa kwiigɔ́rɒng’anyɪ	‘we will turn around’
reka kɒɲááɲí	‘let’s eat’
kɒrikatémaanyɪ	‘we will chop up’
kɒrakagoyaanyɪ	‘we will dismantle’
kɒrakagavɒranyɪ	‘we will dole out’

Examples such as *reka ngánágánɪ, kɒmaa kwɒɒmbákí* help to clarify (but do not entirely decide) the analysis of this alternation. If the underlying suffix is /ɪ/, a regular rule lowers /ɪ/ to [e] after a mid vowel; then an optional rule likewise lowers /ɪ/ after [a]. Forms like *kɒmaa kwɒɒmbákí* reflect the option without lowering, and *reka nzɔ́mbáké* ‘let me build’ reflects the option of lowering. Alternatively, if the suffix is /e/, a regular rule raises /e/ to [ɪ] after a high vowel, and an optional rule dissimilatorily raises /e/ after [a], where the rule applies in *kɒmaa kwɒɒmbákí* and does not apply in *reka nzɔ́mbáké*.

The stronger tendency for a high vowel suffix after /ll/ probably relates to the source of that consonant, from /rɪr/ and /rɒr/. In the case of *vamaa viigállɪ* ‘they will block’, we could assume underlying /vaigárɪrɪ/ or /vaigárɪre/, perhaps /vaigárɒrɪ/ or

/vaigárʊre/ since the nature of the deleted vowel cannot be determined – the point being that whatever the final vowel is underlyingly, it would regularly raise after penult *ɪ* or *ʊ*. Given an ordering where progressive harmony precedes rVr-reduction (within the stem), we predict *vamaa viigállɪ*. The opposite order where reduction precedes progressive harmony predicts the also-attested variant *vamaa viigállé*.[51] The general pattern for EM is that, except for the token *vamaa gagáállí* 'they will stare', penult [a] induces the final mid vowel [e] across *ll*, whereas for ML, that consonant sequence usually induces [ɪ].

In the case of final *ny* (covering both [ny] and [ɲ]), there seems to be a regular generalization for speakers who have a clear phonetic difference that the final V is [e] when the nasal is [ɲ].[52] It may, however, also be [e] after [ny].

arákáɲááɲe	'he will eat'
ma vamaɲeº	'they will know'
kʊrikávóróganye	'we will take'
ma vagávóránye	'they will divide'
kasʊʊndó!ránýé	'now overpour!'
varikagávʊranye	'they will dole'

After [ny], [ɪ] may also be found.

kajuukányɪ	'now stir!'
kavʊrʊgányɪ	'now stir!'
kasʊgá!ányí	'now mix!'
kʊʊngá!ányí	'now join!'

Another factor making final [ɪ] more likely is when the final vowel is preceded by [VCan] within the stem. This includes both cases of the reciprocal extension, and other examples of [n], but interestingly never *n* as C_2 of the root.

kaambá!kání	'now refuse!'
kagɪganá!gání	'now think about it'
kahaambaní	'now join'
kakovodó!ng'ání	'now go around us'
kazeengé!llání	'now stare at e.o!'
kʊmaa kwíírání	'we will return'
kʊrakang'ereng'anɪ	'we will be shiny'
kʊrákííyʊʊnganɪ	'we will join up'
vamaa vazíllízánɪ	'they will make e.o. cold'

Compare analogous cases where the final vowel is [e].

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[51] It is possible that the tone difference is related, but note that *vamaa viigállɪ* comes from ML and *vamaa viigállé* comes from EM. In the former, the penult behaves as a bimoraic syllable and in the latter, it behaves like a monomoraic syllable.

[52] This identifies two verbs: *ɲaaɲ-* 'eat' and *maɲ-* 'know'.

kavodong'áne	'now go around!'
kavaganá'gáné	'now think of them!'
várákáávɔkane	'they will part ways'
reka mbááné	'let me give'
geeŋékáá ngóóngómáne	'I should roll'
kaané	'now moo!'
ma varorané	'they will see e.o'
ma viirané	'they will return'

In summary, there are three exceptional factors allowing [ɪ] after penult [a]: intervening *ll*, *ny*, or *n* when not C_2 of the stem.

There are cases which do not fall into one of these three categories, but there are relatively few such examples.

ma vaminagí	'they will stir'
kɔmaa kwɔɔmbákí	'we will build'
kakaraangí	'now fry'
vamaa vakɔyáanzɪ	'they will love you'
maa vanáví	'they will sew'

Another consonantal context governing non-harmony involves the reduced form of the causative when the stem ends in *n* or *ɲ*: harmony does not apply across [ny].[53]

mavóóné	'they will sin'
mavoonyí marova	'they will make Marova sin'
ma vamóóŋé	'they will gossip'
ma vamóónyí	'they will make gossip'
ma kɔhóné	'we will get well'
ma kɔvahónyɪ	'we will heal them'
ma koŋááŋé	'we will eat'
ma konyáányí	'we will feed'
ma varwááné	'they will fight'
ma varwaanyí marova	'they will make Marova fight'

The vowel is also [ɪ] when the passive /w/ intervenes between the final vowel and the penult.

maa varógwí	'they will be bewitched'
m-aaróóndwí	'he will be followed'
m-eehoombwí	'it will be calmed'
nakeyóóywí	'it will be scooped'
n-ooŋóórwí	'you will be found'
ní váchóórwí	'they will be drawn'

[53] Recall that [ɲ] and [ny] are not distinct for some speakers, which gives rise to surface cases of harmony across [ny].

na kedoorwɪᵒ	‘it will be picked up’
n-aahónywí	‘he will be healed’
na ketémwí	‘it will be chopped’
maa vasémwí	‘they will be insulted’
naa mbégwí	‘I will be shaved’
na kedéékwí	‘it will be cooked’
na váréétwí	‘they will be brought’
na vatéévwí	‘they will be asked’
maa varágwí	‘they will be promised’
n-aayáárwí	‘he will be sued’
na kɪbááng’wí	‘it will be arranged’

There is also no lowering of the final vowel after the roots *teremk, chooch, chekech* just as the applied suffix /ɪr/ does not lower after these roots, as discussed in 6.2 (palatals and moraic [m̀] block harmony)

To summarize the pattern of final-vowel harmony for the subjunctive suffix,[54] there is a general pattern where preceding [e o a] condition [e] and [i u ɪ ʊ] condition [ɪ]. There is a variable tendency for the final vowel to be [ɪ] after [a]; certain consonantal factors cause the final vowel to be [ɪ] even after [e o], which otherwise do not allow final [ɪ].

6.3.2. Adjective suffix

The deverbal adjective suffix /ɪ/ also participate in progressive harmony, where *a e o* condition [e] and *i u ɪ ʊ* condition [ɪ]. Examples of [e] after [e,o] are as follows.

avɑ́ɑ́nd-ávárέme	‘crippled people’
é!ndéέke	‘cooked$_{-9}$’
é!ɲóóré	‘found’
ekebó!móré	‘demolished’
ekegóte	‘lost’
ekerége	‘defeated’
eméésa endele	‘a smoothe table’
eméésa eséé!réézé	‘a smoothe table’
emére	‘malted’
éng’óómbé é!ngééndé	‘walking cow’
ɪkí!chóóré	‘drawn’
ɪnyó!mb-éé!nzéére	‘saggy house’
ʊmʊrím-ʊmséé!mbéllé	‘weeded field’
zing’óómbé zífőó!góyé	‘crippled cows’
zing’óómbé zínóó!nóóɲé	‘calmed cows’

If the preceding vowel is [a], the suffix is also [e].

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[54] This excludes the complication of the choice of vowels after monosyllabic roots like *-ry-* ‘eat’, discussed in 6.3.4.

amávéˈr-ámíiˈsháágé	‘beated millet’
éˈngókó ˈngárágé	‘a carved-up chicken’
íˈngááˈnó íngúúˈnámé	‘fermented wheat’
ɪkíˈráángé	‘called’
ɪkíˈsáámbé	‘burnt’
ɪkíˈtáágé	‘planted’
ɪmbóˈr-íímáˈɲíkáné	‘famous goat’
ɪmító ˈmíkáˈrágé	‘chopped mito’
ɪnáve	‘sewn’
kɪfóóˈy-íkíkáˈmáté	‘caught rabbit’
msááˈrá mwááté	‘split tree’
ovósérá vóvóˈrógányé	‘stirred porridge’
ʊmkíˈn-ʊ́mʊ́gáˈyé	‘forbidden game’
vitábu vibaangé	‘sorted books’
zíngúz-ízíháke	‘scorched vegetable’

Examples of [ɪ] after a penult high vowel are as follows.

kɪvʊ́nɪkɪ	‘broken$_{-7}$’
ɪkíˈmíízí	‘cast’
kɪfóóˈy-íkígʊ́ˈmírí	‘caught rabbit’
ízíngʊ́v-ízíˈníingí	‘folded clothes’
ɪkɪvísɪ	‘hidden’
ɪkɪhááˈníkí	‘hung up’
ɪchíˈítí	‘killed’
íkígúútí kírímɪ	‘plowed field’
ɪzíng’óómbé zíˈnííndí	‘protected cows’
ɪchʊ́ʊ́ˈgíhízí	‘sharpened’
ɪchííˈgízí	‘taught’
ɪndíˈgíɲí	‘tickled$_{-9}$’
ɪkíˈgúútí	‘defeated’
ɪríˈsúúngí	‘hung$_{-5}$’
ɪkɪsííˈsórí	‘chopped-off’
ɪnjáˈnórí	‘combed$_{-9}$’
eng’óómb-ísááˈnórí	‘combed cow’
amádúúma masááˈsógórí	‘scattered maize’
amagáánda amagáˈvórí	‘divided beans’
ɪkɪsááˈmbʊ́rí	‘demolished’
ɪkɪvʊ́ˈrógí	‘mixed’
ɪmbáˈrábáˈr-íɲáˈmbʊ́kí	‘crossed road’
ɪzíímbw-ízíndákʊʊrí	‘released dogs’
ímbónyɪ	‘stinking’
avááˈn-ávávʊ́ˈʊ́kí	‘woken children’

There are relatively few tokens (a total of 8) which do not conform to this pattern. Some cases of [e] after high vowel are as follows.

ámáɲónyí gábóɾoke	'flying birds'
ɪzíng'óómbé zíshíre	'driven cows'
avɑ́ándó vává'rízé	'counted people'
amá'gómyá magúú'ɲámíɲé	'fermented bananas'

There are even fewer (5) cases of [ɪ] after [a].

avɑ́ánd-ávámá'ɲíkání	'famous people'
amadírísha máng'é'réng'ání	'shiny windows'
amɑ́á'zí másóó'ndóránýí	'overpoured water'
ɪnyóómb-ɪɪnzó'mbákí	'a built house'
ɪkɪvá'gárí	'hung up'

No cases of [ɪ] are found after a penult mid vowel. The set of available -ɪ-adjectives is relatively small compared to the subjunctive inflectional vowel, so it is not assumed that there is a systematic difference in the treatment of these suffixes.

There are, however, consonantally related cases where mid vowels appear in the penult before a final syllable [ɪ]. This occurs in the previously-discussed roots *-chooch-*, *-teremk-* and *-chekech-*.

ʊmóónd ḿ'chóóchí	incited person
avɑ́ánd-ává'chóóchí	incited people
ʊmwɑ́án-ʊmté'rémkí	descended child
ʊm̀yék-ʊmó'chóóngí	sifted sand
ʊm̀yék-ʊmché'kéchí	screened sand

6.3.3. Imbricated perfectives

The final vowel of imbricated perfectives has essentially the same distribution as the subjunctive and adjective suffixes. Complications and variation in the formation of that allomorph obscure the significance of imbrication for harmony patterns.

As discussed in chapter Z, 'imbrication' is a set of stem-shape variants selected in perfective tenses, where certain stem shapes determine the choice of imbrication as opposed to suffixation of *-i* (e.g. *kʊtaanji* 'we began', *vaavóori* 'they said', *aahaanzʊʊchi* 'he has yelled'). The two main variants of imbrication are with a final (front) long vowel, and replacement of /r/ with [y] plus a front vowel affix.[55] With respect to the long vowel variant, when the preceding vowel is mid [e,o], the final vowel is mid [ee].

ɑ́ámboheree	'he has tied for me'
akodóóllee	'he picked up for us'

[55] Also recall that there is high speaker-determined variability. The discussion starts with the facts found for all speakers, then expands to contexts typifying certain speakers.

ndáaváseembellee	'I weeded for them'
ookóvegeree	'you have shaved for us'
rwá vakomórómee vwaangɔ	'when they spoke for us quickly'
rwándaakoyóó'mbóólléé	'when I overpoured on you'
vaaǹbó'mólléé	'they destroyed for him'
yaakóché'révéé	'he was late on us'
vakuumbeellee	'they hugged'

When the preceding vowel is any other vowel, the final vowel is [ɪɪ].

aafáánɪrɪɪ	'he fanned for me'
aagaallɪɪ	'he has stared'
aangɔ́llɪɪ	'he bought for me'
aagaallɪɪ	'he has stared'
aatavallɪɪ	'he has taken up all the space'
ɪɪzɪlɪɪ	'it became cold'
kɔhaambaanyɪɪ	'we combined'
kwaafɔ́rɔ́vánɪɪ	'we ate a lot'
kwaayímíllɪɪ	'we led'
ɲɪmíllɪɪ	'I led'
rwá kɔtakɔná'gíllíí	'when we didn't catch for you'
rwɔ́ɔ́kɔrakɔ́ɔ́llɪɪ	'when you released us'
váánzigallɪɪ	'they have obstructed me'
yɪɪgɔ́llɪɪ	'he bought for self'

Notice from [kwaafɔ́rɔ́vánɪɪ] that the vowel [a] does not apparently cause lowering. There a few tokens where the vowel preceding [ee] is [a].

avá'vóhóólánéé	'the ones who untied e.o'
vahohoolanee	'they untied for e.o'
ɔmsáá'rá gwáámbódóng'ánéé	'the tree that I went around for'

The majority of instances of penultimate *a* are followed by [ɪɪ] and [ee] only occurs in cases where [o] precedes within the stem. Since imbrication only arises under special circumstances, in particular with the kinds of preceding consonants that block harmony in the subjunctive, it is difficult to test how robust these examples are.

There is no lowering to mid in case of a post-consonantal glide, as arises in the case of passives and reduced causatives.

kwaadeekérwíɪ	'we were cooked for'
kwaanwéérwíɪ	'we were drunk for'
vageeherwɪɪ	'they are in short supply'
kwaadóóllwíɪ	'we were picked up for'
ayééngerwɪɪ	'he was brewed for'
avohoollwɪɪ	'he was untied'
kedeekellwɪɪ	'it was repeatedly cooked'

vavegerwɪɪ	‘they were shaved for’
kɪfaanwɪɪ	‘it was fanned’
gahénywíɪ	‘they were exposed’
chaatanywɪɪ	‘it was smashed’
kwaahonyíɪ	‘we healed tr.’
mʊhónyɪi	‘I healed him’
vaakohónyɪɪ	‘they healed us’
ahonyɪɪ	‘he healed tr.’
mhányíɪ	‘I made him close’
mgávʊ́ranyɪɪ	‘I made him dole out’
mgenyíɪ	‘I made him wonder’
mbahényíɪ	‘I made them expose teeth’
akoséényɪɪ	‘he made us step’
vakokóónyɪɪ	‘they made us help’
vakohóóɲoonyɪɪ	‘they made us calm a cow’
msónyíɪ	‘I made him point at’

The other pattern of imbrication is the replacement of final *r* with -(*y*)*ɪ*~-(*y*)*e*, with *e* appearing after non-high vowels, and *ɪ* coming after high vowels. Because of the phonological conditions on perfective allomorphy, this variant is available after /o, ʊ, a/. In that context, the final vowel is [e].

kʊvágáye	‘we hung up’
ságáe	‘I dug up’
kwaasaangaaé	‘we were excited’
rwáyaavágáye	‘when they spread out tr.’
kwaaháángáé	‘we argued’
akoroye	‘he coughed’
avachóóye	‘he drew them’
kobomóe	‘we destroyed’
koɲóóye	‘we found’
kovooye	‘we said’
ndaahómóe	‘I massaged’
ndooye	‘I picked up’
oyóómbooyé	‘the witch who over-poured’
rwá'yááyóvóe	‘when he babbled’
rwáánzovooye	‘when I babbled’

When preceded by [ʊ], the final vowel is [ɪ].

kʊsʊʊyɪ	‘we refused’
kʊvʊʊyɪ	‘we revealed’
kʊdóvʊ́ʊ́yɪ	‘we crushed’
kʊgávʊ́yɪ	‘we divided’
kʊɲagʊ́ɪ	‘we ran’

kʊsʊʊndʊɪ	‘we poured’
kʊsiisʊɪ	‘we chopped weeds’
kʊhínʊ́ɪ	‘we lifted up’
kʊʊsʊ́ʊyɪ	‘we have refused’
aɲagʊyɪ	‘he ran’
arákʊ́ʊ́yɪ	‘he released’
kwaaváámbʊ́í	‘we were open’
kwaayisámʊ́í	‘we sneezed’
kwaakɪtáándʊ́yí	‘we tore it’

6.3.4. Monosyllabic roots

The so-called monosyllabic roots such as *-ry-* ‘eat’, *-gw-* ‘fall’ which have no overt vowel present a challenge, in that alternating suffixes may select the variant with [ɪ] or the one with [e], depending on the suffix and the root. The pattern is sufficiently complicated and variable that it does not suffice to say that certain roots ‘act as if’ they have a mid vowel and others have a high vowel.[56]

The first context to consider is when the applied suffix is added. We observe that some roots take the suffix variant *-er-* and some take *-ɪr-* (with lengthening, which could be attributed to a covert root final vowel).

ch	ma rikʊchéere	‘it will rise for us’
f	ma vakʊfíɪrɪ	‘they will end on us’
ny	m-aakʊnyéere	‘he will defecate on us’
sy	maa ngʊshéere	‘I will grind for you’
t	ma vakotéere	‘they will bury for us’
gw	ma vamgwíɪllɪ	‘they will fall for him’
hi	maa kɪkʊshíɪrɪ	‘it will be cooked for you’
kw	maa ngʊkwíɪrɪ	‘I will pay dowry for you’
ry	vaandíírɪɪ	‘they ate for me’
ty	ma vakʊtíɪrɪ	‘they will fear for us’
Vz	maa mbazíɪrɪ	‘I will go for them’

Some roots behave variably, thus [ɪ] and [e] are both attested with the root *nw* ‘drink’.

nw	akʊnwéére	‘he drank for us’
nw	ma vavanwíɪrɪ	‘they will drink for them’

The passive extension *-w-* requires an extension *-ɪɪy-* in the perfective (*-eev-* for the verb ‘give’), which likewise varies between *-ɪɪy-* and *-eey-*. Appearance of [ee] in the final syl-

[56] In the earlier stages of elicitation, it was not appreciated how complex this problem was, so I simply have no relevant data from most speakers. In later versions of this chapter, I hope to have gathered sufficient data from EM that it is possible to at least state how his grammatical system operates.

lable is surprising in light of the fact that the passive otherwise seems to block vowel harmony.

nw	ɪnweeywee	'it was drunk'
t	ateeywe	'he was buried'
sh	gashééywe	'they were ground'
h	aheevwe	'he was given'
kw	zikwííywíí	'they were paid as dowry'
ty	atɪɪywɪɪ	'he was feared'
ry	ɪrɪɪywɪɪ	'it was eaten'

The causative extension likewise requires insertion of an extension immediately between it and the root: this suffix varies between *-ɪɪh-* and *-eeh-* (*r* may be required or allowed instead of *h*, with certain roots). Variation between *-ɪɪh-* and *-ɪɪr-* is seen in the following examples.

aanzíihizi	aanzíirizi	'he made me go'
aandíihizi	aandíirizi	'he made me eat'

Certain roots vary freely in the height of the extension's vowel

aanwíihizi	aanwééhizi	'he made me drink'
aashééhizi	aashíihizi	'he made me grind'

Otherwise, roots tends to divide lexically into those with a high vowel versus those with a mid vowel.

aanzíihizi	'he made me go'
aandíihizi	'he made me eat'
aashíihizi	'he made me be cooked'
aangwíihizi	'he made me fall'
aandíihizi	'he made me fear'
aangwíihizi	'he made me pay dowry'
arakókweehiza	'he will make us pay dowry'
agɔchééhizi	'he made it rise'
aandééhizi	'he made me bury'
aafééhizi	'he made me come to an end'
aanyééhizi	'he made me defecate'

The progressive extension *-ɪz-* which is added (exclusively) to the progressive forms of monosyllabic roots likewise varies in vowel quality, and again the vowel associated with 'drink' notably varies.[57]

[57] In this case, progressive forms of 'eat' are sufficiently attested that it is possible to say that *nweeza* is the more frequent variant.

ch	vɔcheezáa	‘it is rising’
f	vafeezáa	‘they are coming to an end’
kw	vakweezáa	‘they are paying dowry’
ny	vaníézaa	‘they are defecating’
sy	ashéézaa	‘he is grinding’
t	ateezáa	‘he is burying’
gw	ɔgwíízaa	‘you are falling’
hi	kɪhɪɪzáa	‘it is getting cooked’
ry	arɪɪzáa	‘he is eating’
ty	vatɪɪzáa, vatyɪɪzáa	‘they are fearing’
Vz	kɔzíízaa	‘we are going’
nw	anweezáa	‘he is drinking’
	nweezáa	‘I am drinking’
	yáánwíízaa	‘he was drinking’
	akɪnywɪɪzá	‘he is still drinking’

The subjunctive final vowel /ɪ/ also varies according to the root that it is attached to. The lexical patterns are not the same as with the previous extensions, the difference being that more roots are attested with a variable final vowel.

t	ma vaté	‘they will bury’
t	varikáá¦ndé	‘they will bury me’
h	ma vamhée	‘they will give him’
v	maa mbé ¦níkítábu	‘I will have a book’
zy	na kɔzyí	‘we will go’
ty	kɔmaa kɔtyí	‘we will fear’
sh	naa shí	‘I will grind’
	ma kɪshí	it will be cooked
gw	ma vagwí	‘they will fall’
ch	ma vɔché	‘it will dawn’
ch	na vɔchɪº	‘it will dawn’
f	na kɪfí	‘it will be finished’
f	nɪvafé	‘they will come to an end’
kw	ma vakwí	‘they will pay dowry’
kw	maa ngwí	‘I will pay dowry’
kw	maa ngwé	‘I will pay dowry’
nw	arákánwí	‘he will drink’
nw	kɔrákánwé	‘we will drink’
nw	arikanywí	‘he will drink’
nw	kɔrákánwé	‘we will drink’
ry	maa ndyí	‘I will eat’
ry	n-ɔɔryé	‘you will eat’

Vz	na kʊʊzí	‘we will come’
Vz	ma vaazé	‘they will come’

One final root is added here, though its analysis is not certain, namely the root ‘come’, which seems to have the abstract structure /Vz/. The root has no overt lexical vowel (see 12.3). In comparing [na kʊʊzí] and [ma vaazé], we see that the final vowel is determnied by the vowel of the SP, which is the preceding vowel. **RATS**

nɪ vá!ází	if they will come
naa nzízí	I will come
nɪ vaazé	they will come
na ʊʊzí	you will come
nɪ vaazé	they will come
na yɪɪzí	it will come 9
nɪ gaazeº	they will come 6
nɪ kaazeº	it will come 12
na tʊʊzí	they will come 13

<so the pattern is not consistent, also limited to two sessions from EM.

The adjectival final vowel suffix *-ɪ* also varies according to the preceding monosyllabic root. Because the *-ɪ* adjective form of monosyllabic roots is not highly natural, the corpus of examples is small, so I cannot at this point say that significance should be attributed to the apparent wider range of attestation for the *e* variant.

h	ʊmóóndó móhé	‘a given person’
t	ʊmbír-ó!mté	‘buried body’
gw	ʊmsáá!r-ómógwí	‘fallen tree’
ty	ʊmóónd-óm!tí	‘feared person’
ty	ʊmóóndó mótyí	‘feared person’
ty	?ʊmóóndó mótyé	
nw	amarwá manwí	‘drunk alcohol’
nw	amarwá manwé	‘drunk alcohol’
ry	ɪɲám-íí!ndyé	‘eaten meat’
ry	ɪɲám-íí!ndyí	
sh	íɲám-ííshée	‘ground meat’
sh	amá!dóó!má másyé	‘ground maize’
sh	?amaduuma mashɪ	

Finally, the final vowel of the perfective varies with monosyllabic roots. The most common and consistent final vowel choice for monosyllabic roots is [ɪɪ].[58]

aafíɪ	‘he has come to an end’
vafɪɪ, vafee	‘they ended’
aagwɪɪ	‘he has fallen’
vagwíɪ, *vagwée	‘they fell’

[58] Only the roots ‘drink; fall, grind’ are reasonably well-documented in the perfective.

aakwíɪ	‘he has paid dowry’
akwee, akwɪɪ	‘he paid dowry’
aníɪ (*anée)	‘he defecated’[59]
anyíɪ, anyée	‘he defecated’
kígwíɪ	‘it fell’
vazyíɪ, vazíɪ, *vazyée	‘they went’
rwá kʊtarɪɪ	‘when we didn’t eat’
vʊshɪɪ	‘it$_{-14}$ got warm’
kɪhɪɪ	‘it$_{-7}$ got warm’

Four roots seem to consistently select [ee] as the final vowel.

aatée	‘he has buried’	
aakohée	‘he gave to us’	
vʊʊchée	‘it has risen’	
kovee ní!ímbwá	‘we have a dog’	(/-v-/ ‘be’, na- ‘with’)

There is significant speaker variation in the choice of final vowels for the roots ‘drink’ and ‘grind’. EM overwhelmingly uses [ɪɪ] in the perfective of ‘grind’, and ML uses [ee]; FA uses [ee] in ‘drink’, EM overwhelmingly prefers [ɪɪ], and ML uses [ee] 2/3 of the time.

anwee	‘he drank’
kʊsyee	‘we ground’
kʊnwɪɪ	‘we drank’
ndaashíɪ	‘I ground’

The upshot of this is that the choice of following vowel after monosyllabic roots is variable. There are relatively few such roots, significant asymmetries in frequency of occurrence of the various roots, and unbalanced distribution of tokens across speakers, so it would be premature to make strong claims. The roots ‘give’ and ‘bury’ seem to be most strongly connected to [e] (there are no tokens of these roots selecting [ɪ]), and ‘eat’ and ‘fall’ are most strongly connected to [ɪ]. Further long-term investigations with multiple speakers may reveal subtle statistical patterns, but the present conclusion cannot be any stronger than that the height of an affixal vowel after monosyllabic roots is indeterminate. It is also important you note that for some verbs (‘grind; be cooked’; ‘fear; bury’) there is the potential that vowel choice may segmentally distinguish distinct verbs. For speaker EM, *kóshá* ‘to be cooked’ and *kʊsha* ‘to grind’ differ only in tone, but for other speakers (e.g. RL) they can be distinguished segmentally (*kʊhyá* ‘to be cooked’, *kʊsya* ‘to grind’, though optionally *kóshá* and *kʊsha*). The tendency of ‘grind’ to select [e] may be the result of speakers preferring less ambiguous forms over more ambiguous forms. This tendency may, however, be overcome by whatever factor dictates that the perfective suffix

[59] The glide *y* optionally deletes before the perfective ending [ɪɪ], though not [ee].

preferably has [ɪ]. Since the matter seems to come down to preferences rather than grammaticality, resolving this issue is beyond the scope of this work.[60]

6.3.5. Degree-1 final vowels

The vowels [i, u] can appear as final vowel suffixes: *-i* is the plural imperative, non-imbricated perfective, and agent-nominalization suffix, and *-u* is a deverbal adjective suffix. These vowels do not harmonize with the preceding vowel.

kaazí	'now come$_{-pl}$!'
kareetí	'now bring$_{-pl}$!'
kadeechí	'now cook$_{-pl}$!'
kasoomí	'now read$_{-pl}$!'
kabomorí	'now destroy$_{-pl}$!'
reetí	'bring$_{-pl}$!'
koonyí	'help$_{-pl}$!'
rɪɪndi	'wait$_{-pl}$!'
choori	'draw$_{-pl}$!'
ng'oodi	'write$_{-pl}$!'
yeyi	'sweep$_{-pl}$!'
aabaambi	'he dressed up'
aabómori	'he has demolished'
akwéényi	'he looked for us'
kookéri	'we have milked'
kwaakevéji	'we shaved it'
kwaang'óódi	'we wrote'
m̀m̀bóshi	'2p have tied'
m̀m̀bógʊri	'2p have received'
rwá ndaakechóóri	'when I drew it'
séchi	'I laughed'
ʊkweesi	'you pulled'
yaaróóndi	'he followed'
yéeyi	'he has swept'
ʊmʊdééchi	'one who cooks'
ʊm̀barizi	'one who counts'
ʊmwíívɪlli	'one who forgets'
ʊm̀béji	'one who shaves'
ʊm̀bóshi	'one who ties'
ɪrítéév-ɪrí'téévú	'asked question'

[60] Much of the data on the vowel associated with monosyllabic roots has come from EM: further work with speaker is needed to firm up the range of options for him, and much more work is necessary with other speakers to understand the range of variation attested in the language at large.

aǹbéér-amá¦fóókú	‘boiled over milk’
eng’óómb-éé¦mbóómú	‘calm cow’
ʊmgóy-ʊ́mbó¦hú	‘tied rope’
ʊmʊ́ʊ́ndʊ́ mʊ́¦róóndú	‘followed person’
ʊmdog-ʊ́mʊ́¦háándú	‘stuck car’
ɪbá¦rw-íí¦ndʊ́mú	‘sent letter’
ɪnyʊ́ʊ́mb-eeɲényu	‘wanted house’
ɪnyʊ́ʊ́¦mb-éé¦njóórú	‘drawn house’
íkítáánd-ícha¦árú	‘spread bed’

7. Palatalization

There are three palatalization processes in the language. The most general and uniform throughout the language changes derived *ky, gy* to *ch, j*: *ky* and *gy* will derive from /kɪ, gɪ/ before a vowel. A second is triggered by specific morphemes and applies variably according to individual, and this process changes *k, g, h* to *ch, j, sh* before *i*. The final process changes *hy* and *sy* to *sh*: this process seems consistent within speakers, but is speaker-dependent. Since there are no alternations motivating underlying /hy, sy/ for such speakers, this process is not covered here and instead is discussed in the phonetics chapter.

7.1. ky, gy

Contexts where *ky, gy* can be created by morpheme concatenation are as follows. First, the class 7 morpheme /kɪ/ when placed before a any vowel within the word always undergoes glide formation and thus palatalization. Likewise, the perstitive prefix /kɪ/ undregoes glide formation before vowel-initial roots and the reflexive OP. Finally, the cl. 9 OP /gɪ/ undergoes glide formation before vowel-initial morphemes.

7.1.1. Cl. 7

a. Nouns

ɪcheeyo	‘broom’
ɪchʊ́¦kʊ́ryá	‘food’
ɪcháage	‘grain store’
ɪchiitʊ	‘market’
ɪchááyɪrʊ	‘pasture for animals’
ɪchíiriiri	‘shadow’

<u>Adjectives</u>

ɪchéére	‘empty$_{-7}$’
ɪchʊ́ʊmʊ	‘dry$_{-7}$’
ɪcháá¦káɲʊ́	‘red$_{-7}$’
ɪchaangʊ	‘quick$_{-7}$’

Secondary nominal agreement

chóosi	'whole$_{-7}$'
chíítɔ	'ours$_{-7}$'
cháángé	'mine$_{-7}$'
cha Marova	'cl. 7 of Marova'
yɪcho	'that$_{-7}$'
cheené	'specific$_{-7}$'
chééne	'on its$_{-7}$ own'
chéé!ng'íné	'alone$_{-7}$'

OP-V

kɔcháaha	'to pluck it$_{-7}$'
kɔcháara	'to spread it$_{-7}$'
kɔcháávɔra	'to take down it$_{-7}$'
kɔchéeŋa	'to want it$_{-7}$'
kɔchíígɔra	'to open it$_{-7}$'
kɔchíoha	'to extract it$_{-7}$'
kɔchíɪmba	'to sing it$_{-7}$'
kɔchíízɔriza	'to fill it$_{-7}$'
kɔchóómbaka	'to build it$_{-7}$'
kɔchóɔnga	'to join it$_{-7}$'

SP

chaaní	'it$_{-7}$ mooed'
chaayí	'it$_{-7}$ grazed'
cheenywí	'it$_{-7}$ was wanted'
chɔɔgɪshi	'it$_{-7}$ became sharp'
chɔɔmi	'it$_{-7}$ became dry'
chaakízaa	'it$_{-7}$ is flashing'
chaambókaa	'it is crossing'
cheeywáa	'it$_{-7}$ is being swept'
kɪmaa cháásyáamɔrɪ	'it$_{-7}$ will sneeze'
reka chíírókí	'let it$_{-7}$ flee'
nɪ chíívórí	'it$_{-7}$ will give birth'
kɪmaa chóómbákwí	'it$_{-7}$ will be built'
chééroondi	'it$_{-7}$ followed itself'
chííduyi	'it$_{-7}$ hit itself'

chíítɪɪhizaa	'it$_{-7}$ is scaring itself'
mani chéérora	'then it$_{-7}$ hit inself'
mani chíírɒma	'then it$_{-7}$ bit itself'
chaakadeekwa	'it$_{-7}$ was cooked'
cháágaywa	'it$_{-7}$ is prohibited'
cháágota	'it$_{-7}$ is lost'
chaakɒyɪɪngɒka	'it$_{-7}$ has melted'

Perstitive

ɒchɪɪyígiza	'you are still teaching self'
achiitá	'he is still killing'
njiisyáágáa	'I am still splitting wood'
ɒchaasámɔ́raa	'you are still sneezing'
achɪɪgáa	'he is still learning'
kɒchaagɔ́rɔ́káa	'we are still coming down'
vachiinámi	'they are still bending over'
acheedéé$^{!}$kérá	'he is still cooking for self'
ɒcheeréé$^{!}$térá	'you are still bringing for self'

7.1.2. Cl. 9

Only the cl. 9 verbal OP /gɪ/ has the required structure that can undergo glide formation and then palatalization.

ajééi	'he swept it$_{-9}$'
kɒjííti	'we killed it$_{-9}$'
gɪgɒrí	'buy-pl it$_{-9}$'
kɒmaa kɒjéeye	'we will sweep it$_{-9}$'
mání vá$^{!}$jé$^{!}$éyá	'then they swept it$_{-9}$'
mánií $^{!}$njé$^{!}$éyá	'then I swept it$_{-9}$'

7.2. Perfective, plural and nominalization

The final-vowel suffixes of the form /i/ cause palatalization of /k,g/ to [ch,j], and of /h/ to [sh]. It should be noted that the causative suffix /iz/ does not cause palatalization (*kodéeka* 'to cook', *kodéékiza* 'to make cook'; *konoga* 'to pick fruit', *konogiza* 'to make pick fruit'). Among speakers, there is a minor tendency to not apply palatalization to /k,g/ before final /i/, but the rule applies so often that it probably should be treated as obligatory for these speakers, since unpalatalized forms are often retracted after they are offered. It is widely reported that some speakers do not apply palatalization, but all of my speakers fall into the set of palatalizers. However, the treatment of /h/ is more variable, and palatalization of /h/ should be treated as optional.

7.2.1. Perfective

Examples of palatalization of /k,g/ in the perfective are seen here.

aahaandiichi	‘he has written’
aafáidɪchi	‘he has profited’
zyoonechi	‘it$_{-10}$ was messed up’
abóróchi	‘he flew’
aadéechi	‘he has just cooked’
aahaanzʊʊchi	‘he has talked loudly’

aakáraanji	‘he has fried’
ashaaji	‘he ground’
aanáánji	‘he called me’
áándójí	‘he bewitched me’
atʊʊnji vwahá	‘who did he pay’
aambéji	‘he shaved me’
kʊkooŋaanji	‘we were helping’

Rarely, forms such as the following are attested.

aafáidɪki	‘he has profited’
ashaagi	‘he ground’

When the final consonant is /h/, 2/3 of the time it palatalizes to *sh* and 1/3 of the time it remains [h].

koovóshi	‘we have tied’
yiishí	‘he extracted’
nzíshí	‘I extracted’
aarʊshi	‘he has become tired’
yʊʊshí	‘he scattered’
vaashí	‘they plucked’
vasáméeshi	‘they forgave’
aatáámbɪshi	‘he has grown tall’

nzahi	‘I plucked’
áámbohi	‘he has tied me’
nzʊgɪhi	‘I became sharp’
nzíhí	‘I extracted’
rwá vasamɪɪhi	‘when they forgave’

7.2.2. Nominalization

Likewise, /k,g/ regularly palatalize before the nominalization suffix /-i/.

ʊmʊhaandiichi	‘one who writes’
ʊmwóómbachi	‘builder’
ʊmʊdéechi	‘one who cooks’
ʊmweellechi	‘one who goes downhill’

ʊm̀bʊrʊchi ‘one who flies’

ʊmʊroji ‘one who bewitches’
ʊmwíiji ‘one who learns’
ʊm̀baanji ‘one who arranges’
ʊm̀béji ‘one who shaves’
ʊmwíishaaji ‘one who chops wood’
ʊmwíisuunji ‘one who hangs himself’
ʊmkáraanji ‘one who fries’
ʊ́mʊ́nóji ‘one who picks fruit’

Palatalization of /h/ is optional (but most frequent).

ʊm̀bóshi ‘one who ties’
ʊ́ḿbééshi ‘one who lies’
ʊmʊrʊshi ‘one who is tired’
ʊmwáashi ‘one who plucks’
ḿbóhi ‘one who ties’
mwáahi ‘one who picks leaves’
ʊmwáahi ‘one who plucks’

8. Vowel Hiatus

Vowel sequences are generally eliminated, either by the deletion of the first vowel, or by changing it to a glide. The processes of hiatus-elimination differ somewhat, depending on whether the sequence is within a word, or is between words. Moreover, monosyllabic grammatical particles, the “proclitics”, exhibit somewhat mixed behavior depending on what thing they attach to. The possible underlying vowel sequences also differ, depending on whether the sequence is created word-internally versus across words, for example /e,o/ as first vowels in a sequence can only arise between words.

8.1. Word-internal vowel sequences

Nearly all cases of /V-V/ sequences within words involve inflectional prefixes before a vowel. It is possible but not certain that there are vowel-final roots in the language – for example the root underlying *kʊgwa* might be /gʊ/. Insofar as ostensive V-final roots are limited to the so-called monosyllabic verbs whose behavior is more complex than just vowel-hiatus reduction, such roots are treated separately. The status of certain *ny* sequences likewise might be analyses as being underlying /ni/, but again such an analysis is merely one possibility, and will be treated separately.

Prefixes may have underlying /i, ɪ, ʊ, a/ – mid vowels are lacking, as is /u/. Roots may begin with /i ɪ ʊ e o a/, but not /u/. Few prefixes are composed of just a vowel: reflexive /ɪ/, 2s SP /ʊ/, 1s SP /a/, cl. 9 SP /ɪ/, nominal secondary agreements /ʊ/ for cl. 1 and

/ɪ/ for cl. 9, and the past tense prefix -a(a)-.[61] As discussed in 4.3.1, the cl. 1 subject prefix /a/ is subject to replacement by *y* when a vowel follows.

The behavior of /ʊ, ɪ/ in prevocalic prefixes does not differ significantly depending on whether a consonant precedes or not (glide formation applies irrespective of there being a preceding consonant – the output may be subject to optional glide deletion), whereas conversion of /a/ to [y] in the cl. 1 SP is restricted to that one prefix. The relevant facts are given in 4.3.1, and the cl 1. SP will not be considered as V1 in an underlying vowel sequence.

Within the word, the general strategy is that the high vowels /i ɪ, ʊ/ become the corresponding glides [y, w], and /a/ as the first vowel in a V+V sequence is deleted. In all cases, the resulting syllable has a long vowel. In case the preceding consonant is /k, g/, expected *ky, gy* become *ch, j*, see W. When *y* arises before *i*, *y* is usually deleted.[62] Basic examples of Glide Formation are as follows, using the indefinite future prefix /ri/ and the 1p SP /kʊ/. Cyi always surfaces as Ci, and since no morpheme begins with /u/ it is impossible to determine whether Cwu would undergo a similar simplification.

varyaatá	‘they may perform surgery’
aryeerémá	‘he may float’
váríítá	‘they may kill’
aryɪɪmbá	‘he may sing’
aryʊʊmbáká	‘he may build’
kwaagaani	‘we met’
kweenyí	‘we wanted’
kwiigálli	‘we prohibited’
kwɪɪmbi	‘we sang’
kwoonyoonyi	‘we messed up’
kwʊʊmi	‘we were dry’

Analogous examples of Vowel Deletion are below, using the future prefix /ra/.

kʊráata	‘we will do surgery’
kʊreenya	‘we will want’
aríígiza	‘he will teach’
ʊríɪmba	‘you will sing’
arééfoora	‘he will beat self’
keróóneka	‘it will be spoiled’
aróʊma	‘he will be dry’

[61] The reflexive prefix can also appears as [e] according to the vowel harmony rule. Word-internal vowel merger must apply before vowel harmony, to explain patterns of harmony-blocking: see section 8.2. Thus *e* does not occur in this prefix at the relevant stage.

[62] As noted in chapter Q, some speakers may also delete *w* before *ʊ* when the preceding consonant is labial, but this is most likely a phonetic process, on which grounds possible outcomes /mwʊ/ → [mʊ] will be disregarded.

8.1.1. Glide Formation

Glide formation is the most widely-applicable word-internal process that eliminates vowel sequences. It applies to all prefixes except those which end with /a/, which undergo vowel deletion.

a. Primary nominal prefixes

Nouns

ʊmwíífa	'nephew'	1
ʊmwáana	'child'	1
ʊmwááyʊ	'aroma'	3
ʊmwéémbe	'mango'	3
ʊmwooyo	'voice'	3
imyóógo	'cassavas'	4
ɪmyéeri	'months'	4
ɪríinʊ	'tooth'	5
ɪryaanda	'ember'	5
ɪryíɪta	'name'	5
ɪryóʊrʊ	'nose'	5
ɪcháá!ndáángʊ	'back door'	7
ɪcháage	'grain store'	7
ɪcháayo	'herd'	7
ɪcheelleko	'downhill'	7
ɪcheeyo	'broom '	7
ɪchiitʊ	'market'	7
ɪvííriiri	'shadows'	8
ɪvyáá!mégéré	'mushrooms'	8
ʊrwá!ásyá	'kindling'	11
ʊrweena	'abdomen'	11
ʊrwéevo	'fence'	11
ʊrwíɪga	'horn'	11
ʊvwaari	'altar'	14
ʊvwóóngo	'brain'	14
ʊvwóóma	'fork'	14
twáámi	'chiefs$_{-dim}$'	13
twéeve	'hawks$_{-dim}$'	13
utwóóngo	'brains$_{-dim}$'	13
ʊtwóʊrʊ	'noses$_{-dim}$'	13
gwáámi	'chief$_{-aug}$'	20
gweeyo	'broom$_{-aug}$'	20
ugwóóngo	'brain$_{-aug}$'	20
ʊgwíísʊka	'Isukha$_{-aug}$'	20
gwíɪta	'name$_{-aug}$'	20
gwéevo	'fence$_{-aug}$'	20
gwóʊrʊ	'nose$_{-aug}$'	20

gwíiko	'relative$_{-aug}$'	20

Infinitive

kw-áádɪka	'to burst'
kw-aayʊʊra	'to shout'
kw-aaha	'to pick small leaves'
kw-áata	'to do surgery'
kw-eelleka	'to go down'
kw-eeŋa	'to want'
kw-éérema	'to float'
kw-íígalla	'to obstruct'
kw-iigʊra	'to open'
kw-íiha	'to extract'
kw-ɪɪmba	'to sing'
kw-íínɔka	'to leave work'
kw-íita	'to kill'
kw-óóneka	'to be spoiled'
kw-óógɪha	'to be sharp'
kw-óʊma	'to be dry'
kw-ʊʊnga	'to chase away'

Adjectives

ʊmwaangʊ	'fast'	1
ʊmwóʊm	'dry'	1
ʊmwíímbɪ	'short'	3
ʊmwóógɪ	'sharp'	2
ɪmyaangʊ	'quick'	4
ɪmííngɪ	'many'	4
ɪryáá'káŋó	'red'	5
ɪryeengʊ	'ripe'	5
ɪchóómʊ	'dry'	7
ɪchéére	'empty'	7
ɪvyáána	'young'	8
ɪvyéére	'empty'	8
ʊrwóómʊ	'dry'	11
ʊvwííngɪ	'many'	14
ɔkwííngɪ	'many'	17
ɔkwéére	'empty'	17
ʊmwóʊm	'dry'	18
ʊmwóógɪ	'sharp'	18

b. Secondary nominal agreement prefixes

Examples of the various vowel-initial secondary nominal agreement prefixes are seen below.

wóosi	‘whole ‘	1
wá!ángé	‘mine’	1
wáávo	‘theirs’	1
wa mʊng’oma	‘of Mung’oma’	1
gwóosi	‘whole’	3
gwá!ángé	‘mine’	3
gwíítʊ	‘oura’	3
gwá míhádya	‘of Mihadya’	3
já!ángá	‘how many ‘	4
jíító	‘ours’	4
ryá!ángé	‘mine’	5
ryáávo	‘theirs’	5
rya rodéeji	‘of Rodeji’	5
chíítʊ	‘ours’	7
cha rodéeji	‘of Rodeji ‘	7
vyóombi	‘both ‘	8
vyáángá	‘how many ‘	8
vyá!ángé	‘mine’	8
yóosi	‘whole’	9
yáávo	‘theirs’	9
zyóombi	‘both’	10
ya rodéeji	‘of Rodeji ‘	10
rwíítʊ	‘ours’	11
rwáávo	‘theirs’	11
twóósi	‘all’	13
twa marova	‘of Marova’	13
vóombi	‘both’	14
vwá!ángá	‘how many ‘	14
vwáávo	‘theirs’	14
kwóosi	‘all ‘	15
kwá!ángé	‘mine’	15
kwóombi	‘both’	17
kwíítʊ	‘ours’	17
mwáángá	‘how many ‘	18
gwóosi	‘whole ‘	20
gwíítʊ	‘ours’	20

In addition, these prefixes can appear in the near-distal demonstrative (yV-AGR-o) ‘that’ and will undergo glide formation.

yɪgwo	3
yɪryo	5
yivyo	8
yɪvwo	14
yɪkwo	17

yɪmwo 18

c. Verbal subject and object prefixes

Glide formation also applies to various pronominal subject and object prefixes, either before vowel-initial roots, vowel-initial tense prefixes (always past tense -a(a)-), or the reflexive prefix -ɪ-.

V-root:SP

wʊʊmbachi	'you built'
weeŋáa	'you are wanting'
kwaatáa	'we are doing surgery'
mwaarámáa	'2p are spread open'
mwééyi	'2p swept'
joonechi	'it$_{-4}$ was messed up'
ryaadɪchi	'it$_{-5}$ broke'
chiirʊchi	'it$_{-7}$ ran away'
vyeerémí	'it$_{-8}$ floated'
yáádɪchi	'it$_{-9}$ has burst'
rwoonechi	'it$_{-11}$ was messed up'
tweerémí	'it$_{-13}$ floated'
vwaadɪchi	'it$_{-14}$ broke'
twiirani	'it$_{-14}$ came back'
gweerémí	'it$_{-20}$ floated'
kwééywi	'on it$_{-17}$ was sweept'
mweerémí	'in it$_{-18}$ floated'

OP+V-root

kʊkwíígʊlla	'to open for us'
akwéé!réméráa	'he is floating for us'
kwiizúlizí	'remember us!'
amwééŋaa	'he is wanting you-pl'
akwééŋaa	'he is wanting you'
kʊ́mwéeŋe	'let's look for him'
na varíitɪ	'they will kill it$_{-5}$'
chaatányе	'smash it$_{-7}$!'
cheenyé	'look for it$_{-7}$!'
vachííha	'they are uprooting it$_{-7}$'
kʊvíígʊra	'to open them$_{-8}$'
kʊvyéeya	'to sweep them$_{-8}$'
ngɪjeeyá	'I am still sweeping it$_{-9}$'
ajíítʊllaa	'he's pouring it$_{-9}$'
akwééyaa	'he is sweeping by it-$_{17}$'
amwííkari	'he is sitting in it$_{-18}$'

SP+-aa-

wááyóga	‘you talked’
kwaakódéeka	‘we have cooked’
mwaakwíínɪka	‘2p have fermented’
gwááfaa	‘it$_{-3}$ ended’
chaakʊyʊʊmba	‘it$_{-7}$ has overgrown’
vyááyámbʊkaa	‘they$_{-8}$ used to cross’
vwáásha	‘it$_{-14}$ got cooked ‘
mwaakadéekwa	‘in it$_{-18}$ was cooked’

SP+reflexive: SP

wɪɪdóyí	‘you should hit yourself’
kwííyízʊrizi	‘we have remembered ourselves’
yɪɪkóóngaa	‘it$_{-9}$ is chasing itself’
ma jeeyó!nóónyé	‘they$_{-4}$ will break selves’
gweeyó!nóónyáa	‘it$_{-3}$ is destroying itself’
chíígwɪɪrɪɪ	‘it$_{-7}$ has fallen on self’

d. Tense prefixes

The tense prefixes *-ri*, *-aakʊ, -kɪ-* also undergo glide formation, before vowel-initial roots or the reflexive prefix.

ri

varyaatá	‘they will perform surgery’
aryɪɪmbá	‘he may sing’
aryeerémá	‘he may float’
aryeetééva	‘he will ask himself’
kʊryɪɪdúyá	‘we may hit selves’
gʊryeeyó!nóónyá	‘it$_{-3}$ may destroy itself’

-aakʊ-

kwaakweeya	‘we have swept’
yaakwááta	‘he has performed surgery’
gwaakwééyonoonya	‘it$_{-3}$ has destroyed itself’
chaakwéérora	‘it$_{-7}$ has seen itself’
chaakwíígwɪɪra	‘it$_{-7}$ has fallen on itself’

kɪ

achiigóra	‘he is still opening’
acheerémá	‘he is still floating’
acheedéé!kérá	‘he is still cooking for self’

achɪɪsá!nórá	'he is still combing self'
achɪɪkóba	'he is still beating himself'
vacheevéga	'they are still shaving themselves'
ɪcheehéénzaa	'it$_9$ is still looking at itself'

e. Glide Deletion

There is a further process of glide-deletion that applies to postconsonantal [y] before [i], which affects the outcome of word-internal glide formation. This is observed in the cl. 5 art-nominalizations as well as indefinite future forms of i-initial verbs, and when the cl. 8 or cl. 5 OP /vi, ri/ stand before an i-initial root.

ɪríita	'art of killing'
ɪríiva	'art of stealing'
ɪryíɪva	'art of learning'
ɪriigala	'art of obstructing'
ariingírá	'he will enter'
ariinóka	'he will leave work'
ariinórá	'he will serve food'
kɒriiráná	'we will come back'
ndiigízá	'I will teach'
ndiivílla	'I will forget'
variitá	'they will kill'
ariríí!nórá	'he will serve it-5'
arirííta	'he will kill it-5'
arivíí!nórá	'he will serve them-8'
arivííta	'he will kill them-8'

Since /u/ is never morpheme-initial, it is impossible to determine whether this process applies to expected *wu* as well.

8.1.2. Vowel Deletion

The other process which reduces vowel sequences is vowel-deletion, which within the word deletes /a/ before any other vowel.

a. Primary nominal prefixes

The class prefixes for classes 2 (*va*-), 6 (*ma*-) and 12 (ka-) have the vowel /a/ which undergoes vowel deletion. Examples with lexical nouns are given below.

aváana	'child'
avíiha	'bride'
avóómbachi	'builder'
amééngɒ	'ripe banana'
amíinɒ	'tooth'
amúuva	'sun'

amóʊrʊ	‘nose’
akóóva	‘mushroom$_{\text{-dim}}$’
akóʊrʊ	‘nose$_{\text{-dim}}$’
akííko	‘relative$_{\text{-dim}}$’
akáámi	‘chief$_{\text{-dim}}$’
akíímɪlli	‘leader$_{\text{-dim}}$’

Examples with vowel-initial adjectives are here. The cl. 16 locative prefix /ha-/ can be added to the set of morphemes participating in vowel deletion, since locative prefixes can directly precede vowel initial adjective roots.

avaangʊ	‘quick’	2
aviingɪ	‘many’	2
akiimbɪ	‘short’	2
amáá$^{!}$kányó	‘red’	6
amóómʊ	‘dry’	6
aváá$^{!}$kányó	‘red’	6
akéére	‘empty’	12
akóógɪ	‘sharp’	12
ahéére	‘empty’	16
ahiingɪ	‘many’	16

b. Secondary nominal agreement prefixes

The secondary agreement prefixes with /a/ are likewise those of classes 2 (*va*-), 6 (*ga*-) and 12 (ka-), where /a/ undergoes vowel deletion

vóosi	‘all’	2
vá$^{!}$ángé	‘mine’	2
víítʊ	‘ours’	2
va marova	‘of Marova’	2
gá míhádya	‘of Mihadya’	6
gá$^{!}$ángá	‘how many ‘	6
gáángá	‘how many ‘	6
gáávo	‘theirs’	6
góombi	‘both’	6
kíítʊ	‘ours’	12
kóósi	‘all’	12
háángá	‘how many ‘	16
héé$^{!}$hé	‘his ‘	16
hééné	‘specific’	16
hóómbi	‘both ‘	16
hómʊgeni	‘of a guest’	16

The near-distal demonstrative suffix -o also triggers vowel deletion.

yavo	2

yago	6
yako	12
yaho	16

c. Verbal subject and object prefixes

V root: SP

maní víita	'then they killed'	2
maní vá!ávórá	'then they took off the line'	2
viigóri	'they opened'	2
veenyí	'they wanted'	2
nɪ vaambókí	'they will ford'	2
reka vʊʊhí	'let them scatter!'	2
viigóraa	'they are opening'	2
veerémáa	'they are floating'	2
vʊʊmbákáa	'they are building'	2
hʊʊmbákwáa	'at it$_{-16}$ is being built'	16

V root: OP

kʊvíígʊlla	'to open for them'
mbíígizaa	'I am teaching them'
ndavééyera	'I will sweep for them'
yáágííva	'he stole them$_{-6}$'
ahííkari	'he sat at it$_{-16}$'

d. Tense prefixes

-aaka-

yáakáátanya	'he just broke'
váakeeya	'they swept'
kwaakʊʊmbaka	'they built'
váakíírʊka	'they fled'
yaakóona	'he sinned'
ndáachiíguta	'I am now satisfied'
ndáakaáta	'I did surgery'
ndáakeenya	'I looked for'

-raka-

várákáásaye	'they will slap'
várákáávʊrɪ	'they will split'
kʊrákóónogonye	'we will mess up'
kʊrákʊʊmɪ	'we will be dry'
kʊrakeeye	'we will want'

ndákáate	'I will do surgery'
ndáchíitɪ	'I will kill'
varachíírane	'they will come back'

-rika-

arikeeŋe	'he will search'
arikeeye	'he will sweep'
aríkíítɪ	'he will kill'

-ra-

keróóneka	'it will be spoiled'
ʊríɪmba	'you will sing'
mʊróómbaka	'2p will build'
ndiizuliza	'I will remember'
ndeenya	'I will look for'
ndáaha	'I will pluck'

ka-

kaahé	'now pluck!'
keerémé	'now float!'
kɪɪmbí	'now sing!'
keeŋé	'now want!'
kiiví	'now steal!'
kʊʊmínyɪ	'now dry!'
kaayórɪ	'now shout!'
koonó!ínyí	'now mess up!'

ta- negative imperative

taaná !dáave	'don't moo!'
teeŋá !dáave	'don't want!'
tiihá !dáave	'don't extract!'
tʊʊmiŋa dáave	'don't dry!'

-ta- negative subjunctive

ʊtaagʊra	'don't pluck!'
ʊteeŋyá	'don't want!'
ʊtiigóra	'don't open!'
ʊtoonoonya	'don't mess up!'

-ta- other negative relative tenses

ɪɲóómba yoteeyá	'the house that you won't sweep'
ɪnyóómba yoteeyiº	'the house that you didn't sweep'
ḿndʊ ateeiº	'the man who didn't sweep'
ḿndʊ yaatiimbiº	'the man who didn't sing'
mweene áteeyá	'the one who is not sweeping'
mweene átɪɪgá	'the one who is not learning'
váána vátɪɪmbáa	'the children who are not singing'
ɪnyóómba yotééya	'the house that you didn't sweep'
veene vá¦táámbaya	'the ones who didn't hang'
veene vá¦táávórá	'the ones who didn't take down'
veene vá¦tíímba	'the ones who didn't sing'
veene vá¦tóóma	'the ones who weren't dry'
veene vá¦tóómbaka	'the ones who didn't build'

-aa-

yóónoonya	'he messed up'
ndéérema	'I floated rem'
yéérema	'he floated'
yóóma	'he was dry rem.'
kwíímba	'we sang'
kwáára	'we spread a bed'
yííruura	'he winnowed'

8.2. Interaction between hiatus reduction and harmony

Both hiatus-reduction processes must be applied before regressive vowel harmony applies. This ordering has two consequences. First, when a prefix has a high vowel /ɪ, ʊ/ which could harmonize and the immediately following macrostem has initial *e,o* (either underlying when the prefix precedes a root, or derived in the case of the reflexive prefix /ɪ/), glide formation created a glide which blocks harmony from applying past that prefix: /ʊ-kʊ-éyéree/ → *ʊkweeyéree, *okweeyéree* 'you swept for us'. This pattern includes harmony applied to the augment in vowel-initial nouns, cf. *ɪcheeyo* 'broom', *ʊvwóóngo* 'brain', *ʊvwoova* 'mushroom', *ʊrweena* 'abdomen', *ʊtwéémbe* 'mangos$_{-dim}$', *ʊgwóógo* 'cassava$_{-aug}$'. Second, when a prefix with /a/ precedes a mid vowel, the result is a mid vowel, and harmony *does* apply across deleted *a*, cf. /ʊ-ra-eya/ → *oreeya* 'you will sweep'. Harmony does not apply across surface-realized *a*, cf. /ʊ-ra-véga/ → *ʊravéga*, **oravéga* 'you will shave.[63]

[63] The form *ʊreeya* 'you will sweep' is attested, but this is because regressive harmony is optional, see also *ʊkɪdeekáa* 'you are still cooking' alongside *okedeekáa*.

8.2.1. Glide formation and harmony

Glide formation (section 8.1.1) changes /ɪ, ʊ/ into [w,y], which always blocks application of regressive lowering, where a preceding prefix would normally be lowered when [e,o] follow.

a. Nouns

The augments /ɪ-,ʊ-/ normally lower to [e-,o-] when the following class prefix vowel is *e,o* harmoninzing with root *e,o*. In case vowel is in root initial position, the vowel of the noun class prefix undergoes glide formation, blocking harmony in the augment.

ɪcheeyo	'broom'
ʊrweena	'abdomen'
ʊrwéevo	'fence'
ʊtwéémbe	'mangos$_{-dim}$'
ʊtwéeri	'months$_{-dim}$'
ʊtwóógo	'cassavas'
ʊvwéé'réfʊ́	'heaven'
ʊvwóóngo	'brain'
ʊvwoova	'mushroom'
ʊvwóóya	'fur'

b. Secondary nominal agreement

Most examples of the near-distal demontrative, with the suffix *-o*, exemplify derived blockage by glides, since the first-syllable vowel *ɪ, ʊ* does not lower.

ʊgwo	'that$_{-3}$'
ɪjo	'that$_{-4}$'
ɪryo	'that$_{-8}$'
ɪcho	'that$_{-7}$'
ɪzyo	'that$_{-10}$'
ɪrwo	'that$_{-11}$'
ɪtwo	'that$_{-13}$'
ɪvwo	'that$_{-14}$'
ɪmwo	'that$_{-17}$'

However, there is lowering in *eyo* 'that$_{-9}$', since no post-consonantal glide arises: only post-consonantal glides block harmony.

c. OP

The glide deriving from applying glide formation to an object prefixes before an vowel-initial verbs likewise prevents lowering from applying to a preceding prefix.

kʊgwéeŋa	'to want it$_{-3}$'

ʊkɪvweeŋá	'you are still wanting it$_{-14}$'
vaakʊkwéeŋa	'they wanted us'
vaakajéeŋa	'they wanted it$_{-9}$'
ʊrwééremizaa	'you are making it$_{-11}$ float'
kʊjéeya	'to sweep it$_{-9}$'
mani kʊ́kweeyéra	'then we swept for you'
akɪvwoonógónyá	'he is still messing it$_{-14}$ up'
kʊkwóóniza	'to make us sin'

d. Tense prefixes

The perstitive prefix /ke/ similarly undergoes glide formation before a vowel-initial root or the reflexive prefix /ɪ/, and this blocks application of lowering to the subject prefix. (Subsequently, *ky* becomes *ch*).

ɪcheehéénzaa	'it is still looking at itself'
ɪcheeŋéka	'it is still necessary'
ɪcheeywá	'it$_{-9}$ is still being sweeped'
kɪcheerémá	'it$_{-7}$ is still floating'
kʊcheedéé$^{!}$kérá	'we are still cooking for self'
kʊcheeŋá	'we are still looking for'
kʊcheeréé$^{!}$térá	'we are still bringing for self'
kʊcheerémaa	'we are still floating'
kʊchiigízáa	'we are still teaching'
rʊcheehéénzaa	'it$_{-11}$ is still looking at itself'
ʊcheegééndera	'you are still walking for self'
ʊcheelléka	'you are still going downhill'
ʊcheeyé$^{!}$yérá	'you are still sweeping for self'
ʊcheeyé$^{!}$yérá	'you is still sweeping for self'

8.2.2. Deletion and harmony

When a prefix with the vowel /a/ precedes *e,o*, /a/ deletes, and vowel harmony can apply to a resulting /{ɪ,ʊ}C{e,o}/ sequence.

kovééyeree	'we swept for them'	OP -va-
orooya	'you will cry in pain'	future -ra-
koreeya	'we will sweep'	
oreeya	'you will sweep'	
keróóneka	'it will be spoiled'	
oreeŋa	'you will want'	
ɪnyóómba y-otééya	'the house that you didn't sweep'	neg. -ta-
ɪŋóómba y-oteeyá	'the house that you won't sweep'	

Non-application of vowel harmony is also possible.

ʊreeŋa	'you will want'

ʊróona	'you will sin'
gʊréenga	'it$_{-3}$ will ripen'
kɪreelleka	'it$_{-7}$ will go downhill'
ɪreeywa	'it$_{-9}$ will be swept'
kʊvééyeree	'we swept for them'

Since harmony is optional, non-harmony is not necessarily related to the fact that *a* was deleted in /ʊraeŋa/. It should be noted though that non-application of harmony across deleted *a* seems to be more frequant than it is in the case of underlyingly adjacent syllables, but a more detailed and long-term investigation of harmony in{ɪ/ʊ}Ca+{e/o} is needed before concluding that there is a special pattern of non-harmony associated with vowel deletion.

8.3. Proclitics

A number of CV grammatical elements precede well-formed words, which may involve resolution of vowel sequences. This section looks at the segmental processes, and the issue of vowel length is discussed in 9.2. The proclitics are as follows.

locative: *ha-, kʊ-, mʊ-*
pre-nominal *sa-* 'like', *na-* 'with', *nɪ-* copula
Associative *AGR-a* (nominal and verbal)
Tense *nɪ-*
Augment: *ʊ-*

In terms of segmental changes, the vowel of the proclitic is deleted if it is /a/ or /ɪ/. In all contexts from prefixes up to phrases, /a/ deletes before another vowel. Within the word, /ɪ/ undergoes glide formation, though in all such cases, the preceding consonant is a velar /k, g/. At the phrasal level, /ɪ/ always deletes before a vowel, regardless of the preceding consonant. As the examples below show, /ɪ/ in a proclitic deletes and does not become a glide. The behavior of /ʊ/ in proclitics is not entirely clear, since it primarily occurs in the locative markers attached to nouns, and vowel-initial nouns are both rare and behaviorally unclear, as discussed below.[64]

8.3.1. Locatives

The locative prefixes are on the surface mutually exclusive with the augment, thus a combination of locative plus expected augment does not present a vowel sequence.[65] There are some unprefixed nouns that begin with a vowel, such as proper names (*éditon*, *andíisi*) and common nouns (*ofisá* 'officer', *amwáávo* 'brother'). Glide formation has been found to apply in some instances:

kwáá$^{!}$míítʊ	'on brother'

[64] /ʊ/ does not delete: the irregularity is that hiatus frequently remains unresolved.

[65] Evidence is discussed in 9.3 showing that the augment is underlyingly present, but is obligatorily deleted, contrary to the general pattern that the second vowel in a sequence is retained.

kwééditon	‘on Editon’
kwóó˥fisá	‘on the officer’
kwóónzere	‘on Onzere’
kwáá˥ndíisi	‘on Andiisi’
kwíí˥sábéla	‘on Isabella’
mwaalʊʊlʊ	‘in Alulu’
mwíídwɪn	‘in Edwin’

Glide Formation can also be suspended.

kʊ́ í˥sí	‘on father’
mʊ ófis(i̯)	‘in an office’
kʊ ónzere	‘on Onzere’
kʊ́ á˥ndíisi	‘on Andiisi’
kʊ áan	‘on Anne’

Since the set of vowel-initial nouns is highly limited, the most we can say at this point is that the rule is optional in the combination of locative plus unprefixed noun root (moreover, this only arises in cl. 1). By contrast, other instances of glide formation are obligatory: *kwóóneka* ‘to be spoiled’, *ɪcháayo* ‘herd’, *ʊmwíífa* ‘nephew’, *ʊkwéére* ‘empty’ are the only forms found, and **kʊóneka*, **ɪkɪáyo, *ʊmʊífa* and **ʊkʊére* are systematically rejected.

One other context where (apparent) locatives clitics can appear before a vowel is with the post-verbal particles *kʊ* and *mʊ*.

ndáárora kw-ámagɪna	‘I have ever seen stones’
ndáaɲaaɲa kwóvosera	‘I have ever eaten porridge’
ndáágʊra kwí˥zíbárási	‘I have ever bought horses’
maambííkí mwámagɪna	‘I usually put stones in there’
máásóó˥má mw-í˥vítábʊ	‘I usually read books in’
sʊʊndʊri mw-á˥máazi	‘I poured water in’
(sʊʊndʊri amáá˥zí mʊ́	‘I poured water in)’

The situation with vowel truncation before unprefixed noun roots preceded by the cl. 16 prefix *ha-* is somewhat variable, as was the situation with glide formation noted above, but the data suggests that vowel truncation is more likely to be blocked in such constructions

ha éditon	‘by Editon’
há ó˥fisá	‘by the officer’
ha ófis(i̯)	‘by an office’
há é˥mbédéédó	‘at Embedeedo’
há óska	‘by Oscar’
h-íímari	‘at Imali’
h-íídwɪn	‘at Edwin’

It is difficult to judge whether /a+a/ sequences undergo the process, since long *aa* and two-vowel *a.a* are not clearly distinguished.

háá¦mwáávo ~ há á¦mwáávo	'by sibling'
háá¦ndíisi ~ há á¦ndíisi	'at Andiisi'
háá¦lí ~ há á¦lí	'at Ali'

8.3.2. Nominal proclitic

Proclitics which can appear before nouns include the copula /nɪ/, /na/ 'with', /sa/ 'like' and the associative (possessive) agreement markers /AGR-a/. A vowel sequence involving these proclitics arises via the combination of the prefix plus the augment: the vowel of the proclitic deletes.

n-ámagɪna	'with stones'
n-írigɪna	'with a stone'
n-ó¦róbááng'a	'with a panga'
s-ámá¦rwá	'like alcohol'
s-ékékóómbe	'like a cup'
s-ovosera	'like porridge'
s-ʊmó¦jóómbo	'like an earthworm'
n-aváana	'it's children'
n-avarɪmi	'it's farmers'
n-ʊmʊgoye	'it's a rope'
n-ovosera	'it's porridge'
n-ʊvóchíma	'it is ugali'
n-ʊvʊráhi	'it$_{-14}$ is good'
n-ekédéte	'it is a finger'
n-ékégó	'it's an animal enclosure'
avíí¦ví n-ávádáá¦máánó	'the thieves are bad'
ʊvóhíínda vó¦vwó n-óvénéne	'your riches are many'

<u>associative</u>

kíhíínda chá¦mádóóma	'basket of maize'
msííbi gwá¦váana	'belt of children'
migóóngo jávaandʊ	'backs of a people'
kesééro chéeng'oombe	'skin of a cow'
keréénge chí¦kíbága	'leg of a cat'
ḿkíra gwéé¦ngókó	'tail of chicken'
kwíígú¦rú kwé¦kéréé¦rémó	'on the top of the flat land'
mang'ána gí¦kítábu	'words of a book'
keréé¦ngé chó¦móyááyɪ	'leg of boy'
amáóa góm̀sáára	'flowers of tree'
mgá¦dí gwó¦mórína	'bread of a friend'

hányóó!mbá hómʊgeni ‘at the house of a guest’

AUG + SP section, in progress

Since the nominal augment appears at the beginning of any NP, and a relative clause verb form can be a modifier in an NP with no overt noun head, the augment can come immediately before a relative verb form. When there is an overt nominal head, no augment appears before the verb.

ʊmóóndʊ yaakadééka	‘the person who has cooked’
aváándʊ vagávóranya	‘the people who will dole out’
aváándʊ máá vasígamaa	‘people who hab. kneel’
ʊmóónd-arikeng’óóda	‘the person who will write it’
aváándʊ varikwíí!tá	‘the people who will kill us’

The augment is seen on the verb in case the

avákʊráángaa	‘the ones who call us’
avávarízi	‘the ones who counted’
avá!ríkádéeke	‘the ones who will cook’
avátya	‘the ones who will fear’

ʊríɪ	‘the one who ate’
okórogáa	‘the one who bewitches us’
odééchi	‘the one who cooked’
adééchi	‘the one who cooked’
akó!rórí	‘the one who coughed’
okó!rórí	‘the one who coughed’
ʊtáákó!jíbá	‘the one who didn’t answer us’

<BUT: gap, form when SP is before V, either -a- past or SP+Vroot>

is a nominal modifier.

8.3.3. Verbal proclitics

Proclitics which can appear before the verb include the relative associative (including the cl. 11 r*wa*- for “when”) and *nɪ*- used in certain tenses such as the consecutive, crastinal

and conditionals. In such examples, the vowel of the subject prefix is retained and the proclitic vowel is deleted

n-oohéénzé	'you will look'
n-ʊʊrímí	'you will plow'
n-aagwí	'he will fall'
n-ɪŋágúrí	'it$_{-9}$ will run'
n-eedéékwé	'it$_{-9}$ will be eaten'
rw-óóŋaaŋáa	'when you are eating'
rw-óóvegáa	'when you are shaving'
rw-óóveji	'when you shaved'
rw-órideeká	'when you will cook'
rw-á$^{!}$ríkádééke	'when he will cook'
ch-áá$^{!}$vógóráa	'what he is taking'
ch-óó$^{!}$vógóráa	'what you are taking'

8.4. Phrasal sequences

At the phrasal level, there is no glide formation, though when the vowels /i u/ precede a vowel, the resulting sequence may resemble a glide-vowel sequence. The vowels /ɪ ʊ e o a/ delete before another vowel, although deletion seems to be optional.[66] All words end with a vowel, and the main difficulty in constructing phrasal V#V sequences lies in the limited potential for a word to begin with a vowel. Initial vowels which I have identified are as follows:

1: the augment; as discussed in 11, this morpheme is independently subject to deletion. For speakers who favor augment-deletion, the main source of initial vowels is limited.
2: Subject prefixes for cl 1, 9 in certain tenses (when not followed by a vowel-initial morpheme.
3: class agreement vowels in demonstratives and other secondary-agreement patterns for cl. 1, 9 (*oyo, ɪyɪ*)
4: the proper-name pseudo-prefix /a/ (*a-ríviza, a-gooí; amwáávo*)
5: root-initial vowels in (borrowed) nominal stems: *éditon, amsíini, arubaini, erefu*
6: pronouns
7: *aa-* 'here is'
8: reduced of cl. 1 associative wa→a

[66] Pauses are possible between words, where deletion would not apply. Such pauses are usually obvious because phonation stops for some fraction of a second, or longer. There are very few tokens with no break in phonation and with both vowels present, but there are enough that it is plausible that the rule is option, albeit almost almost applied. Given the varying circumstances of elicitation, I go no further than to say that the process is optional but usually applied.

There are no clear restrictions on syntactic structure governing phrasal hiatus resolution. Non-deletion of /i,u/ is laid out in 8.4.1. The general pattern of deletion in phrases is covered in 8.4.2. The issue of compensatory lengthening is covered in 9.3.

8.4.1. Non-deletion of i, u

The following data illustrate the point that /i,u/ are retained before a vowel.[67]

/i/

ómólí ómbísɪ	'raw root'
avíívi **a**vaangʊ vá¦vírí	'2 quick thieves'
ʊmʊrímí **ó**mógé¦rí **ó**¦ríhá	'which wise farmer'
íídi ɪra	'that eid'
ɪbáá¦kúúri ŋangʊ	'light bowl'
ʊmʊrími **ʊ**rih ó¦mógéri	'which wise farmer'
mʊróóndi andíisi	'follower of Andisi'
mkárají¦ ávó	'their judge'
mʊró¦jí óvó	'your witch'
msóóréé¦rí énɣú	'2p boy'
vʊri ʊmʊtwí	'each head'
andíisi aatóri	'Andisi has left'
aŋóó¦rí **é**ng'óómbé móra	'he found a cow in there'
vakoonyi ʊmwáana	'they helped the child'
yaagʊrí ómó¦dógá	'he bought the car'
tí éngoombe	'fear-pl the cow!'
chábí áváana	'beat-pl the children!'

/u/

ɪkɪtábu ɪkijima	'whole book'
kɪtábu ekerógoori	'Logoori book'
amá¦várú¦ ámííngɪ	'many lines of ants'
ɪríkúrú éné́ne	'large pigeon'
avarámu avííngɪ	'many healthy people'
makú¦dú ámánéne	'big tortoises'
ʊmwáá¦ráábú ágwíɪ	'the Arab fell'

It should be emphasized that in normal speech, the two vowels "run together", with the duration of the first vowel being reduced, and in many tokens the high vowel, especially /u/, is sufficiently shortened that it resembles [w], thus either *avávókŭ á¦msííni or avávókwáá¦msííni* "50 blind people". This impression that the vowel has become a glide is especially strong when the following vowel is long. A controlled phonetic study will be necessary to determine whether there is ever complete neutralization with /CGV/, and it is not clear that there there are relevant forms that could establish neutralization. For ex-

[67] In constructions with 3 words, the vowel sequence of interest is bolded, in order to identify which sequence is relevant. Note that final *u* has a more restricted distribution compared to *i*).

ample, *madáá*ˡ*ndárwá* ‘canvas tents’ and *ɪswá* ‘termite sp.’ have underlying glides, and their final vowels elide before another vowel: *madáá*ˡ*ndárw-áá*ˡ*msííni* ‘50 canvas tents’ ← /madááˡndárwá amsííni/, *ɪsw-é*ˡ*éné* ‘big termite’ ← /ɪswá enéne/. There is no word ending with /u/ that is sufficiently similar to *madáá*ˡ*ndárwá* that one could test confusion between ‘canvas’ and that word in a given set of tokens. The potential is closer to being realized in the case of *ɪswá*, given the noun *ɪsu* ‘female chicken’: we can observe a near minimal pair *ɪsw-é*ˡ*éné* ‘big termite’ versus *ísw-éénéne* ‘big female chicken’ – but the difference in tone suffices to distinguish these two utterances, hence there is no neutralization.

Examples of /i,u#V/ are transcribed impressionistically and without commitment to a particular phonological analysis. The three most likely analyses are:

1: Glide formation does not apply, but /i,u/ may be phonetically shortened before a vowel to the point that they resemble a glide.
2: Actual diphthongs are created, that is, sequences of vowels within a single syllable, which may be contrastively long or short.
3: There is phonological Glide Formation applying between words, but only to the vowels /i,u/, and that rule is optional.

Theory 3 yields the potential of neutralization between underlying glide plus V versus /i,u/ plus vowel, whereas theories 1,2 posit that /i,u/ remain distinct from glides. The difference between 1 and 2 hinges on whether there is evidence for prosodic rearrangment of segments, giving a single syllable rather than a sequence of two syllables. There is in fact some tonal evidence supporting account at least partial resyllabification over stark hiatus: see discussion in Q.

8.4.2. Deletion

The remaining vowels /ɪ ʊ e o a/ delete before a vowel. This is illustrated below with combinations of vowels within the noun phrase.

N-mod	
ilíváh-ɪríné**n**e	‘big feather’
maroot-amarahi	‘good dream’
rʊbááˡng-órótáámbɪ	‘long panga’
ɪɲáánz-ɪmbááˡmbálló	‘wide lake’
kʊgʊriz-ʊkwííngɪ	‘many ways of selling’
íɲáˡm-ííndóʊ	‘bitter meat’
máhéengér-ámárahi	‘good mahengere’
éndéˡv-ímbááˡmbálló	‘wide chair’
ómbír-ómónéne	‘big body’
ʊróbááˡh-óllahi	‘good lumber’
ʊmwóóˡg-ómbísɪ	‘raw cassava’
kɪjééˡh-íkíráhi	‘good mirror’
ɪvíínd-ívívááˡmbálló	‘wide things’
ízíngóv-ízíˡnííngí	‘folded clothes’
ávásíg-ávávi	‘bad elders’

mwáá'n-ɔ́líhá	'which child'	
ʊtwáá'n-ɔ́twééne	'children$_{-dim}$ on its own'	
vitábʊ vinen-í'ívyó	'those big books'	
avɑ́ɑ́nd-ávééne	'people alone'	
séé'ng-ɑ́ɑ́ rígɑ́ɑ́re	'aunt of Rigaare'	/séénge a rigɑ́ɑ́re/
ʊmʊdót-aa vʊgʊza	'infant of Vuguza'	/ʊmʊdoto a vʊgʊza/
avɑ́ɑ́nd-ɑ́ɑ́rʊbaínɪ	'40 people'	
eng'óómb-ɑ́ína gɑ́ani	'what kind of cow'	
enzók-aatɑ́ari	'dangerous snake'	

Additional examples from other contexts are seen below

<u>Pre-head + N</u>

kɪr-ɪridííji	'every wall'
kɪr-ʊmwíivi	'every thief'

<u>Verb-Object</u>

árákáchéé'ríz-ávɑ́ɑ́na	'he will greet the children'
váá'ry-ámávóyʊ	'they ate the eggs'
kaah-ámatʊ	'pluck the leaves'
aríígʊll-eeng'oombe	'he will buy a cow for self'
vaavón-ekereenge	'they broke the leg'
ndáá'kávágʊrizɪr-ɪzing'oombe	'I just sold cows to them'
yaakákóvarizɪr-ɪm̀bano	'he counted the knives for us'
nw-oovosera	'drink vosera!'
ndáá'kákó'rógír-ɔ́vɔ́chíma	'I just cooked ugali for you'
áráá'ngɔ́ll-ɔ́mɔ́'dógá	'he will buy a car for me'
kooŋ-ʊmwáana	'help the child!'
mbé'gér-ɔ́mwɑ́ɑ́na	'I have shaved for the child'
váá'ngáráángír-ámávóyʊ	'they have fried eggs for me'
maa ngɔ́r-ɔ́mʊdoga	'I will buy a car'

<u>Subject-Verb</u>

rw-íímbw-í'ŋágɔ́ráa	'when the dog is running'
rw-é'éng-íriizáa	'when the leopard is eating'
rwá ís-adeechi	'when father cooked'
onzér-avʊʊchi	'Onzere woke'
endeg-íduukáa	'the airplane is arriving'
ɪmbw-éroka dáave	'the cow won't bark'
ʊmŋóór-avina dáave	'the Nyore won't sing'
gɔ́ɔ́'k-ágwíɪ	'grandmother fell'

<u>N-V (Subject relative)</u>

ʊmʊsɑ́ɑ́z-odéechi	'the man who cooked'
ʊmɔ́ɔ́nd-avéé'zégérí	'the man who belched'
engɔ́ɔ́mb-ɪrʊmáa	'the cow which is biting'

ʊmʊsááz-adééchi	‘the man who cooked’
ʊmʊ́ʊ́nd-arákádéeke	‘the man who will cook’
ʊmʊ́ʊ́nd-am-á!ávégé	‘the person who will shave’
ʊmʊ́ʊ́nd-adééká	‘the person who will cook’
ʊmʊ́ʊ́nd-atá!máádééké	‘the person who will not cook’
ʊmʊ́ʊ́nd-aséémbelláa	‘the person who is weeding’
eng’óómb-ɪtagórízwa	‘the cow that will not be sold’

Presentative aa

áá ʊyʊ	‘here (it) is’
ʊmsáákʊr-áá ʊyʊ	‘here is the old man’
séé!ng-áá óyu	‘here is aunt’
ʊmʊ́ʊ́nd-áá ʊyʊ	‘here is the person’
gʊ́ʊ́!k-áá ʊyʊ	‘here is grandmother’
ʊm̀yé!k-áá !yígʊ	‘here is the sand’
amíí!n-áá!yága	‘here are the teeth’
eng’óómb-áá !yíyɪ	‘here is the cow’
ʊmwóógo á!á yígʊ ~ʊmwóó!g-á!á yígʊ	‘here is the cassava’

Other concatenations

árákáháándííkír-áváánd-íbárwá	‘he will write the letter for the people’
ambáán-eng’oombe	‘come, cow!’ (ambááno)
yɪsʊʊnd-í!mbwá yɪyɪ	‘move yourself, you dog!’
íɲám-ádeechi	‘meat, he ate’

9. Vowel Lengthening under Fusion

Previous examples have shown that in some contexts, V+V results in a long vowel, but sometimes it gives a short vowel. We encounter related conditions on pre-NC lengthening in section 10. This section sorts out the basic conditions for lengthening. The basic pattern is that if one of the component vowels is long, the resulting vowel is always long. Merger of two short vowels can still result in a long vowel. It always does so within words. The pattern of lengthening in proclitic plus vowel is very complex; ordinary phrasal V#V sequences result in lengthening only when the second vowel is a root vowel, if it is a single vowel (this arises in one context), or in the case of VCV demonstratives.

9.1. Within words

Merger of vowel sequences within words always results in a long vowel, unless the sequence is word-final.

Glide Formation

ɪry-íɪta	‘name’
tw-éeve	‘hawks$_{\text{-dim}}$’
kw-eeɲa	‘to want’

w-áávo	'theirs'
kw-óosi	'all'
w-eeɲáa	'you are wanting'
ngɪj-eeyá	'I am still sweeping it$_{-9}$'
w-ɪɪdóyí	'you should hit yourself'
vary-aatá	'they will perform surgery'
ach-iigúra	'he is still opening'

Vowel Deletion

av-íiha	'brides'
ah-éére	'empty'
g-áávo	'theirs'
k-íítʊ	'ours'
maní v-íita	'then they killed'
v-eerémáa	'they are floating'
ndav-ééyera	'I will sweep for them'
várák-áávʊrɪ	'they will split'
kʊrák-óʊmɪ	'we will be dry'
k-iiví	'now steal!'
t-iihá ǃdáave	'don't extract!'

When the V-V sequence is word-final, there is no lengthening. Note that word-final long vowels are limited to the progressive final suffix, imbricated perfectives, and truncated 1s possessive pronouns. One context where final V+V can arise is in the formation of near-distal demonstratives of the form yV-AGR-o.

yɪvyo	8
yɪmwo	18
yago	6

Compare the corresponding proximal demonstratives *yɪvi, ɪmʊ, yaga*.

A second context where final V+V arises is in the form of the associative prefix, following the pattern AGR-a.

cha góókʊ	'of$_{-7}$ grandfather'	/kɪ-a/
rwa góókʊ	'of$_{-11}$ grandfather'	/rʊ-a/
ga góókʊ	'of$_{-6}$ grandfather'	/ga-a/
rya góókʊ	'of$_{-5}$ grandfather'	/rɪ-a/

Within the word, the vowel which is demonstrably lengthened is either a root-initial vowel, or the vowel of the reflexive prefix.[68]

[68] All verb roots and the reflexive have a short vowel when *not* merged syllabically with a prefix vowel. The third word-internal context where syllable merger arises is before the past prefix *-aa-*, which is always preceded by the subject prefix. That prefix is long, including in the 1s combination *ndaa-* where there is vowel in the subject prefix.

9.2. Proclitics

Examples of proclitics are separated into two groups, those before verbs and those before nominals. The reason for separate treatment is that verbal proclitics contribute to lengthening, whereas nominal proclitics do not. The underlying generalization may be unified across morphological contexts. The specific question is whether there is lengthening when a proclitic vowel is deleted before the initial vowel of a a following word. In all relevant cases of lengthening, the following word (the verb) is the host of the proclitic. As discussed in 9.3.1, there are cases where a clitic is just a V, and can be preceded by a (non-host) word. Such cases fall under the penumbra of phrasal vowel sequences.

9.2.1. Verbal Proclitics

There are three verbal proclitics, *ma-, na-/nɪ-*, and the object relative associatives *rwa-, cha-* etc. the latter group being in turn the result of syllable fusion: [rwa] = /rʊ-a/. These markers have a short vowel, which can be seen when the following subject prefix (or other morpheme) begins with a consonant.

na yaambʊ́kí	'he will cross a river'
nɪ várímí	'they will plow'
na vagánágáne	'they will think'
ma yaanzáámbʊ́kɪrɪ	'he will ford for me'
rwá vakʊrá!kʊ́ʊ́ráá	'when they are releasing us'
rwá! kósyéévaa	'when we are dancing'
chá kodeechi	'what we cooked'

The combination of a verbal proclitic plus V-initial SP yields a long vowel if and only if the SP stands immediately before the macrostem. This means that there is lengthening when the clitic+SP combination comes right before a root or an OP, but not when it is before a tense prefix. The following examples from the hodiernal perfective, present progressive or bare future illustrate this point with the relative proclitic.

Relative proclitic

ʊmwáána w-aarórí	'the child which he saw'
ɪbía y-aayéénji	'the beer that he brewed'
ʊmʊ́!dógá !gw-ʊʊ́gʊ́rí	'the car which you bought'
aváándʊ v-aakoonyi	'the people who he helped'
enzóka y-aaróóndi	'the snake which he followed'
ʊvʊ́ɲáási vw-eeɲóóri	'the grass which it found'
rw-áádeechi	'when he cooked'
rw-áá!ríírí	'when he cried'
ʊmwáána w-aasáávizaa	'the child which I am cleaning'
umʊ́dogá gw-ʊʊrʊ́ʊ́mbaa	'the car that you are pushing'
ribóksi ry-ooreetáa	'the box that you are bringing'
ʊmwáána w-ɪɪkʊʊngáa	'the child which it is chasing'
amarwá g-ʊʊnweezáa	'the alcohol that you are drinking'
amarwá g-ooyéengaa	'the alcohol that you are brewing'

ɪkɪtábʊ ch-aasóómaa	‘the book which he is reading’
rw-áárɪɪzáa	‘when he is eating’
rw-áá!gwíízaanji	‘when he was falling’
kɪndɪkí !ch-á!áséémbera	‘what will he weed?’
módogá gw-aaguráa	‘the car which he is buying’
ɪnyáma y-aadeechi	‘the meat which he cooked’
ɪnyóǿndo y-aatʊʊngámínyáa	‘the hammer which he is inverting’
rw-óó!rógáa	‘when you are bewitching’
rw-óǿŋaaŋáa	‘when you are eating’
rw-óǿ!rírí	‘when you cried’
ɪŋá!má y-óódééká	‘meat which you will cook’
ɪzisééndi zy-aanyóóra	‘the money that he will get’
aváándʊ v-oosémá	‘the people who you will insult’
ovoséra vw-aanwa	‘the alcohol that I will drink’
ch-óǿ!vógóráa	‘what you are taking’
mkáána w-eerórá	‘the girl which it will see’
ɪŋáma y-ookodéé!kérá	‘the meat that you will cook for us’

The crastinal proclitic, which precedes the subjunctive verb form, likewise exhibits vowel lengthening under fusion.

<u>nɪ-~na-</u>

n-aachóóré	‘he will draw’
n-aabómóré	‘he will demolish’
n-aagávóranye	‘he will dole out’
n-aagwí	‘he will fall’
n-ʊʊdíŋí	‘you will be hard’
n-ʊʊchóóré	‘you will draw’
n-ootégé	‘you will trap’
n-ʊʊháánzóokɪ	‘you will talk loudly’
n-ɪɪkúzí	‘it$_{-9}$ will die’

There is also lengthening when an OP comes between the SP and the root

rw-óókokóónyi	‘when you helped us’
rw-óǿvakóóŋaa	‘when you are helping them’
rw-óókoróráa	‘when you are seeing us’
rw-áákoróráa	‘when he is seeing us’
rw-áávavégaa	‘when he is shaving them’
ɪnyóǿndo y-áávatóǿngaminyɪraa	‘the hammer which he is inverting for them’
ɪŋá!má y-óókódééérá	‘meat which you will cook for us’
n-aavaháándiikɪrɪ	‘he will write to them’
n-aaganywí	‘he will drink it$_{-6}$’
n-aajíírʊri	‘he will winnow it$_{-9}$’
n-ʊʊvasáálliizɪ	‘you will injure them’
n-ʊʊkʊchérevizɪ	‘you will be late on us’

n-ookodéékere ‘you will cook for us’

However, if there is a tense-prefix syllable between the SP and the macrostem, the resulting vowel is short.

-ri- future

ch-arigórá ‘what he will cook’
gw-aritema ‘which he will chop’
rw-órideeká ‘when you will cook’
msáára gw-aritema ‘the tree which he will chop’
ɪkɪtábʊ ch-ʊrirora^{o} ‘the book which you will see’
amárwá g-ʊrinwa ‘the beer that you will drink’
ʊvʊɲáási vw-ɪryaayá ‘the grass that it will graze’
ʊvó!shí vw-áríshá ‘the flour which he will grind’
ʊvóshɪ vw-arikʊshééra ‘the flour which he will grind for us’
ʊvóshɪ v-ʊriishééra ‘the flour which you will grind for me’

negative future

kɪtábʊ ch-ʊtarórá !dáave ‘the book which you will not see’
kɪtábʊ ch-ʊtarórá ‘the book which you will not see’
ʊmwáána w-ɪtarórá ‘the child which it won’t see’
ɪɲóómba y-oteeyá ‘the house that you won’t sweep’
ɪkííndʊ ch-atadeeká ‘the thing that he will not cook’
rw-á!tágóná ‘when he will not sleep’

perstitive

aváána v-akɪsíníkiza ‘the children who he is still annoying’
rw-áchʊʊmbáka ‘when he is still building’
ɪkííndʊ ch-okekoroga^{o} ‘the thing that you are still stirring’
aváándʊ v-ókɪgómíra ‘the people who you are still holding’
amáázi g-ɪkɪnwa ‘the water that it$_{-9}$ is still drinking’

-rika- future

ʊmwáána w-arikabɪɪmɪ ‘the child that he will measure’
ɪvítábʊ vy-arikagórízɪ ‘the books that he will sell’
aváándʊ v-ʊrikavége ‘the people who you will shave’
rw-órikachí!ríng’áné ‘when you will be silent’
rw-ó!ríkádééke ‘when you will cook’
rw-á!ríkádééke ‘when he will cook’
rw-á!ríkávége ‘when he will shave’
rw-á!váríkádééke ‘when they will cook’

The future proclitic /maa/ always merges with a following vowel, resulting in a long vowel, but because that marker has a long vowel and syllable merger involving an underlyingly long syllable always results in a long vowel, the following examples do not definitively exemplify clitic lengthening.

Future proclitic maa-

m-áádéékέ	'he will cook'
m-aavadéékέ	'they will cook'
am-aakáráange	'he will fry'
ʊm-ʊʊkáráange	'you will fry'
ɪm-ɪɪkáráangwɪ	'it$_{-9}$ will be fried'
ɪɲám-ím-ɪɪkáráangwɪ	'the meat will be fried'

9.2.2. Nominal proclitics

Nominal proclitics do not show lengthening of a following augment (9.3.1 considers nominal clitics before vowels which are not augments). The relevant nominal proclitics are AGR-a 'associative linker', *sa-* 'like', *na-* 'with' and *nɪ-* 'copula'. It should be noted though that in these examples, the second vowel in the sequence is the augment morpheme, which does not lengthen except when the syllable is bimoraic.[69] There is an abstract paralellism between the macrostem-adjacency condition on lengthening discussed immediately above. In the case of /na#e-ke-méreméende/, the noun class prefix /ke/ intervenes between the vowel sequence and the root.

n-á$^{!}$máazi	'with water'
n-á$^{!}$mávéere	'with milk'
n-á$^{!}$váana	'with children'
n-ávageni	'with guests'
n-é$^{!}$gékóóndo	'with a monkey'
n-é$^{!}$kémé$^{!}$réméende	'with candy'
n-í$^{!}$kítábʊ	'with a book'
n-írijʊʊngʊ	'with a rat'
n-ívireenge	'with legs'
n-órogeembe	'with a razor'
n-ó$^{!}$mwóógo	'with cassava'
n-ó$^{!}$vóchíma	'with ugali'
n-ómʊgoye	'with rope'

s-amagɪna	'like stones'
s-amareesi	'like a cloud'
s-ámárwá	'like alcohol'
s-ekereenge	'like a leg'
s-ɪkí$^{!}$mííɲó	'like a chick'
s-ímísáára	'like trees'

[69] A major set of apparent counterexamples to the generalization that clitic plus augment do not merge into a long syllable are when the following noun or adjective is underlyingly /V-NC…/, that is the initial syllable is bimoraic.

s-írídéeka	‘like cooking’
s-ókódéeka	‘like cooking’
s-ómógíˈkóyó	‘like Kikuyus’
s-ʊmʊgoye	‘like a rope’
s-órójó	‘like a saucer’
n-amáˈbwóoni	‘it’s potatos’
n-ámárwá	‘it’s beer’
n-aváana	‘it’s children’
n-avadoto	‘it’s infants’
n-ekereenge	‘it’s a leg’
n-ɪríˈng’ááng’á	‘it’s a hadada’
n-ɪrijʊʊngʊ	‘it’s a rat’
n-ɪvikóóndo	‘it’s monkeys’
n-ovosera	‘it’s porridge’
n-ʊíˈlóóngó	‘it’s finishing mud’
n-ʊmsáára	‘it’s a tree’
n-ʊmtáámbɪ	‘it’s tall’
n-ʊmʊtéénde	‘it’s a neighbor’
n-ʊrʊguuchi	‘it’s dust’
msíibi gw-áˈváana	‘belt of children’
migóóngo j-ávaandʊ	‘backs of a people’
keréénge ch-íˈkíbága	‘leg of a cat’
kwíígúˈrú kw-éˈkérééˈrémó	‘on the top of the flat land’
mang’ána g-íˈkítábu	‘words of a book’
kerééˈngé ch-ó̱ˈmóyááyɪ	‘leg of bot’
amáʊa g-óm̀sáára	‘flowers of tree’
hányóóˈmbá h-ómʊgeni	‘at the house of a guest’
ɪríítʊ ry-óm̀sáára	‘leaf of tree’
amágína g-ó̱ˈḿkíkóyó	‘stones of a Kikuyu’
ʊkíra gw-íˈkíbága	‘tail of a cat’
ɪkítóómbɪ ch-írige	‘hill of termites’
keréénge ch-ívifóóyo	‘leg of rabbits’
ɪbáákóóri y-óvosera	‘bowl of porridge’

The case of the cl. 1 reduced proclitic [a] is considered below, since that vowel merges with the preceding vowel.

9.3. Phrases

Systematic lengthening at the phrasal level depends on there being a long vowel in the input sequence: if either vowel in a V#V sequence is long, the resulting vowel is always long. Input sequences of short vowels result in both long and short vowels, depending on the nature of the second word. I consider first those cases where a long vowel results,

ending the section with cases where a short vowel results. The latter set involves subject prefixes and the augment, and the former cases with lengthening covers everything else.

9.3.1. Phrasal V+V with lengthening

In most phrasal structures, merger of two vowels results in a long vowel. However, those structures occur much less frequently compared to the structures where a short vowel results (subject prefixes and augments). A long vowel arises when the second word is:

a demonstrative prefix (y)V
a vowel-initial secondary agreement prefix
reduced version of cl. 1 associative clitic (wa→a) or verbal clitic (nɪ→ɪ)
an unprefixed vowel-initial root (noun or adjective)
ínzí 'I, me'; (*y*)*ɪvɪ*

Examples with a demonstrative are seen below.

eng'óómb-ɪɪnʊ	'this cow'
koséémbéll-ɪɪkʊ	'this weeding'
mwáán-ʊʊra	'that child'
mwáán-ʊʊyʊ	'this child'
ʊmwáá!n-ʊ́ʊ́ra	'that child'
mtéé!nd-ʊ́ʊ́yo	'that neighbor'
embʊ́ʊ́ng-eeyo	'that buffalo'
váánd-aava	'these people'
kóng'ʊ́ʊ́d-ɪɪkʊ	'this writing'
avávʊ́!gʊ́s-áava	'these Bukusus'
rigín-iiryo	'that stone'
mavʊ́y-aago	'those eggs'
misáára jɪvág-íɪjɪ	'these 3 trees'
kɪbága cheen-íɪkɪ	'this very cat'
kóvé!g-ʊ́ʊ́yʊ́	'to shave this'
aváánd-avatáá!mb-áava	'these tall people'
éng'óómb-íísáá!kʊ́r-ííyɪ	'this old cow'
é!ngókó !yáá!ng-íɪyɪ	'this chicken of mine'
kʊrákʊ́ʊ́ɲ-ʊʊyʊ	'we will help this one'

Lengthening with a secondary agreement morpheme (cl. 1 or 9, which are V-initial) are seen in these examples:

íɲám-ííri	'how much meat'
ɪsíí!nd-íírí	'how much quail'
ɪsíímb-ɪɪrihá	'which lion'
ebéd-ɪɪriha^{o}	'which ring'
ɪcháá!ndʊ́ʊ́r-ɪɪrɪhá	'which Chandoro'
ʊmwáán-ʊʊrihá	'which child'

A related example of V#V yielding a long vowel involves the merger of the reduced form of the cl. 1 associative proclitic to /a/. These examples employ proper names to eliminate the confounding effect of an augment on a common noun.

séé˥ng-áá rígááre	'aunt of Rigaare'
ʊmʊdót-aa vʊgʊza	'infant of Vuguza'
ʊmgóóg-aa mndanyi	'wife of Mndanyi'
ʊm̀bí˥sáánd-áá mdavadi	'orphan of Mdavadi'
ʊmwíísʊkʊr-aa ndoori	'grandchild of Ndoori'

There is a similar reduction of the verbal clitic /nɪ/ to [ɪ], which gives rise to a long vowel when /ɪ/ merges with the preceding vowel.

varav-íɪvádeechi	'they will have cooked'
kwaar-éékódeechi	'we had cooked (rem.)'
m-éékó˥dééká	'then we cooked'
m-íívá˥dééká	'then they cooked'
m-avíísʊkʊr-ɪɪvá˥dééká	'then the grandchildren cooked'
m-ízíngok-íɪzírya	'then the chickens ate'
m-ʊmwáán-eekó˥rórá	'then we saw the child' (fronted object)

Vowel-initial unaugmented words exist in two contexts. First, there are a few nouns and adjectives (loan words) which have no class prefix and which are vowel initial, for example *érefʊ* '1000', *atáari* 'dangerous'. Second, there are proper names which begin with a vowel, for example *adébɪ* 'Adebe', *éditoni* 'Editon'.[70] Vowel merger results in a long vowel in such a context. Some nominal modifiers do not take noun class modifiers and are vowel initial – *atáari* 'dangerous', *érefʊ, élfʊ* '1000', *arubáínɪ* '40', *amsíini* '50'. When preceded by an elidable vowel, the initial vowel of these modifiers lengthens.

aváánd-éérefʊ	'1000 people'
ɪvívááng-éérefʊ	'1000 stirring sticks'
várágór-éérefu	'they will buy 1000'
n-éélfu	'with 1000'
ɪzí˥ngók-˥áátáari	'dangerous chickens'
eng'óómb-áá˥táari	'dangerous cow'
ɪzíing-áá˥táari	'dangerous leopards'
ʊmʊ́ʊ́nd-áá˥táari	'dangerous person'
aváánd-áárʊbaínɪ	'40 people'
avádót-áárʊbaínɪ	'40 infants'
n-á˥ámsíini	'with 50'
ma vágór-á˥ámsíini	'they will buy 50'
avaɲór-aamsíini	'50 Nyores'

[70] This excludes names like *orodeeji*, a variant of *rodeeji*: such names, which resemble cl. 11 nouns, bear the augment optionally, and the *o* of *orodeeji* behaves like any other augment, not resulting in lengthening – *maa ngóóɲ-órodeeji* 'I will help Rodeji'.

The proper names *ambúúndu*, *adébi, agooí, éditoni, egóóɲa, oreeshá, ɪvayo, evayo, ogaada, ubuuru, obuura, onzere* and the place name *iríítríya* 'Eritrea' are all vowel initial. The nouns *ofisá* 'officer', *amíítu* 'brother' and *ísí* 'father' are also vowel initial: fusion of the initial vowels of these words results in a long vowel.

n-aambúúndu	'it's Ambundu'
n-aamíítu	'it's brother'
yáá!yáánz-íiríítríya	'he likes Eritrea'
arákóó!ɲ-áádébi	'he will help Adebi'
arárór-óónzere	'he will see Onzere'
varátúú!ng-éédítoni	'they will pay Editon'
aráhóll-oobuura	'he will hear Obuura'
varádééker-óó!gáádá	'they will cook for Ogada'
arachaay-uubuura	'he will despise Ubuuru'
kwaaró!r-óófísá	'we saw the officer'
kwaarór-ɪɪvayo	'we saw Ivayo'
varákóó!ɲ-óó!físá	'they will help the officer'
varákóó!ɲ-íí!sí	'they will help father'
kí!r-íísí	'every father'

As noted above, when a clitic such as *kʊ-* appears before a noun, there is no lengthening of the augment under syllable fusion. In the case of the noun *isí*, glide formation does result in a long vowel – *kwíísí* 'on father' – since this vowel is not the augment.

To this list we can add the pronouns *ínzí* 'I, me' and (*y*)*ɪvɪ* 'you'.

váárór-ɪɪvɪ	'they saw you'
vaarór-iinzɪ	'they saw me'

9.3.2. Long before short

In case the first vowel in a phrasal sequence is long, the resulting merged syllable has a long vowel. Verbs can have distinctive final vowel length, hence certain verbs (present progressive, past habitual, perfective applied long-V allomorph) result in uniformly long vowels under vowel fusion

<u>progressive</u>

arór-óóródééji	'he is seeing Rodeji'
aror-ɪɪm̀bano	'he is seeing knives'
areet-ɪɪsa	'he is bringing a watch'
yiit-ɪɪkɪgu	'he is killing a wasp'
vatém-íímísáára	'they are chopping trees'
soom-ɪɪkítábu	'I am reading a book'
shaagar-ʊʊm̀bano	'I am sharpening a knife'
vakooɲ-aavageni	'they are helping the guests'
ʊhaan-ʊʊmʊlyaango	'you closing the door'
vadoor-ʊʊvwoova	'they are picking mushroom'

aheenz-óórómémo ‘he is watching a flame’
ɲeɲ-ó!ó!rímí ‘I want that you plow’

<u>past habitual</u>
yááyáánz-oonzére ‘he used to like onzere’
yááyáánz-ɪɪmári ‘he used to like Imari’
yááyáánz-ɪɪryóóngʊ ‘he used to like pumpkin’
yaarór-ɪɪkí!fóóyo ‘he used to see the rabbit’
vaasíír-ʊʊmʊgera ‘they used to cross the river’
váámbʊk-ʊʊmʊgera ‘they used to cross the river’
ndaaséév-ɪɪmigoye ‘I used to save ropes’
kwaadéék-aamóóngʊ ‘we used to cook pumpkins’
yaayéén̈g-aamárwá ‘he used to brew alcohol’
kwaakóóng-ɪɪvibága ‘we used to chase cats’
ndéén̈-ʊʊrɪmɪº ‘I wanted that you plow’
ndéén̈-ʊʊshɪº ‘I wanted that you grind’

<u>perfectives</u>
anwɪɪ ‘he drank’
anw-aamárwá ‘he drank alcohol’
ah-ʊʊmwáana ‘he gave the child’
adeeker-aaváana ‘he cooked for the children’
asiganɪr-aandíísi ‘he knelt for Andisi’
aɲagʊll-ʊʊmʊɲóre ‘he ran for/to the Nyore’
aminágɪrw-oovosera ‘he was cooked porridge’
varííndɪll-eekekóóndo ‘they waited on the monkey’
ayóómbooree ‘he over-poured’
ayóómboor-oovosera ‘he over-poured porridge’
kʊrákúúr-aavíígiza ‘we released the teachers’
avee há!m̀bárí ‘he is at Mbale’
av-ɪɪvʊllɪ ‘he is in the bedroom’
av-ɪɪmajeengo ‘he is in Majengo’

9.3.3. Short before long

Phrasal examples involving initial long vowels are also hard to come by since initial long vowels are rather limited.

<u>have-perf</u>
séén̈g-aadóʊchi ‘aunt has arrived’
ʊmwíísʊkʊr-aagoni ‘grandchild has slept’
amwááv-aadéechi ‘sister has cooked’
is-áá!yíínzɪri ‘father has worked’
ɪɲam-íɪguundi ‘the meat has rotted’
ɪnyóónd-í!ívónɪchi ‘the hammer has broken’
ɪɲááɲ-eegoti ‘the tomato has disappeared’
ɪmbw-éegoni ‘the dog has slept’

ɪsw-íɪbʊrʊchi ‘the termite has flown’

SP lengthened before 1s OP

baab-áanáángaa ‘father is calling me’
is-áanáángaa ‘father is calling me’
ḿkóóng-aandʊ́ʊ́ngaa ‘the boss is paying me’
rodééɲ-á!ángóóɲaa ‘Rodenyo is helping me’
rodééɲ-á!ándéékeree ‘Rodenyo cooked for me’
rodééɲó yaakóóndeekera ‘Rodenyo has cooked for me’
ʊm̀bógʊs-áandʊ́ʊ́ngaa ‘the Bukusu is paying me’
ʊm̀bógʊs-áandʊ́ʊ́nji ‘the Bukusu paid me’
sééng-aandéé!kéráa ‘Aunt is cooking for me’
eng’óómb-é!énóóndaa ‘the cow is following me’
eng’óómb-í!íngúúngaa ‘the cow is chasing me’

aa presentative

éng’óómb-áá ɪyɪ ‘here is a cow’
gʊ́ʊ́!k-áá ʊyʊ ‘here is grandmother’
ʊmryaang-áá yɪgʊ ‘here is the door’
ʊmɣíígizí a ʊyʊ ‘here is the teacher’
ekedé!t-áá yɪkɪ ‘here is the finger’
amarw-á!á yaga ‘here is the alcohol’
amééy-áá !yága ‘here is the broom’
(kɪbúú!sí áá yíkɪ ‘here is the cat’
ʊmgádi áá yígʊ ‘here is bread’)

9.3.4. Phrasal V+V without lengthening

When the second word in the construction is a verbal subject prefix or nominal augment, there is no lengthening (setting aside cases involving opaque bimoraic syllables in cl. 9, taken up in section 10).[71] The following are examples of the augment as V2.

kondákt-ʊmwaangʊ	‘fast conductor’	kondákta ʊmwaangʊ
wá!ch-ʊ́mʊ́ráhi	‘good buddy’	wá!ché ʊ́mʊ́ráhi
kákóóng-ákáráhi	‘good boss$_{\text{-dim}}$’	kákóóngó ákáráhi
ɪvímʊ́g-ɪvííngɪ	‘many gourds’	ɪvímʊ́ga ɪvííngɪ
ɪzíngʊ́!v-ɪzyáá!nʊ́kí	‘clothes off the line’	ɪzíngʊ́!vʊ́ ízyáá!nʊ́kí
mween-ʊmʊ́gádi	‘owner of a bread’	mwéénéʊ́mʊ́gádi
aváánd-íríkʊ́mi	‘10 people’	aváándʊ́ íríkʊ́mi
ʊmban-ɪnʊ́ʊ́sʊ	‘half a knife’	ʊ́mbánʊ́ ínʊ́ʊ́sʊ
ʊ́mb́án-éróbo	‘quarter knife’	ʊ́mb́ánʊ́ éróbo
rí!chúú!ngw-éróbo	‘quarter orange’	rí!chúú!ngwá éróbo
vʊ́jír-ʊ́mwáána	‘without a child’	vʊ́jírá ʊ́mwáána

[71] The uncontracted forms on the right diverge on minor ways from the corresponding contracted forms especially in tonal realization, where leftward spreading may be applied in one token but not the other.

kɪr-ekekóómbe	‘every cup’	kí!rá ékékóómbe
kariv-ʊmwaáana	‘even a child’	kárívá ʊ́mwáana
vʊjɪr-orodeeɲo	‘without rodenyo’	vʊjira orodeeɲo
ɪsíí!mb-íyéene	‘lion by itself’	ɪsíímba ɪyéene
kʊzaazaam-ovosera	‘to taste porridge’	kʊzaazaama ovosera
manááveg-ʊmwáana	‘then he shaped a child’	manáávega ʊmwáana
yaagʊ́r-ʊmʊ́!dógá	‘he bought a car’	yáágʊ́ra ʊmʊ́!dógá
arádéék-ovosera	‘he will cook porridge’	arádééka ovosera
deeker-ʊmʊgeni	‘cook for the guest!’	deekera ʊmʊgeni
varaminag-ovosera	‘they will cook porridge’	varaminaga ovosera
varádóó!r-íkíkábo	‘they will pick up a bag’	varádóóra ɪkíkábo
mavárúg-ʊ́vʊ́chíma	‘they will cook ugali’	máavárúga ʊvʊ́chíma
váákíí!t-ékékóóndo	‘they killed the monkey’	váákíí!tá ékékóóndo
yaakóhéé!vw-íséendi	‘he has been given money’	yaakóhéé!vwá íséendi
ʊtadeek-ovosera	‘you should not cook porridge’	ʊtadeeka ovosera

Likewise, when the SP is V2, this does not result in a long vowel (except after a clitic as discussed in 9.2.1).

ʊmʊ́ʊ́nd-á!séémbellaa	‘the person is weeding’	ʊmʊ́ʊ́ndʊ́ aséémbellaa
ʊmʊ́ʊ́nd-arákánwí	‘the person who will drink’	ʊmʊ́ʊ́ndʊ́ arákánwí
ʊmʊ́ʊ́nd-odééchi	‘person who cooked’	ʊmʊ́ʊ́ndʊ́ odééchi
marov-ádeechi	‘Marova cooked’	máróvá adeechi
ʊmkʊ́ʊ́ng-á!gwíɪ	‘the elder fell’	ʊmkʊ́ʊ́ngʊ agwíɪ
ɪngʊ́rʊ́v-ɪɲagʊráa	‘the pig is running’	ɪngʊ́rʊ́ve ɪɲagʊráa
geneká!á yɪv-ʊ́!rímí	‘it is necessary that you plow’	
kaand-adeechi	‘also he cooked’	
kaand-ʊgʊ́rízaa	‘also you are selling’	
haʊ́nd-amáadéékaa	‘possibly he cooks’	
lek-arímí	‘let him plow’	
ɪnz-á!ráá!ngóóɲá	‘me, he will help’	
íɲám-ádeechi	‘meat he ate’	
ʊmʊ́!dóg-ʊ́gʊrízi	‘the car you sold’	
haʊ́nd-agwíɪ	‘perhaps he fell’	
mwɪɪgánís-ʊgwíɪ	‘in the church you fell’	
ʊvʊ́ráh-ɪnwɪɪ	‘fortunately it drank’	
sáás-ɪriizáa	‘now it is eating’	
sa ndar-óvegáa	‘sometimes you shave’	
ndáávóór-odeekáa	‘I said you are cooking’	
chígírá k-aturi	‘why did he leave’	
mbooy-óveeshi	‘I said you lied’	

Some examples of multi-word sequences with syllable merger and no lengthening, in a range of syntactic constructions, are as follows.

mɪsáár-ɪmisáá!kʊ́r-ímííngɪ	‘many old trees’

akagóy-áká¦kózóóz-akashaº ‘small new rope’
ɪmídog-ímɪkó¦r-ímyáá¦kányú ‘old red cars’
amarw-á¦márá¦h-ámánúru ‘good sweet alcohol’
amagín-ámáné¦n-ámádínyu ‘big hard stones’
amáá¦z-ámíí¦ng-ámázíllʊ ‘a lot of cold water’
ʊm̀bán-ómtáá¦mb-ómwóógɪ ‘long sharp knife’
ʊrʊwáá¦y-órótáá¦mb-órwáá¦kányú ‘long red wire’
ɲeɲ-ómsíí¦bí gwá¦áng-ó¦mtáámbɪ ‘I’m looking for my long belt’
~ɲeɲa ómsíí¦bí gwá¦ángé ó¦mtáámbɪ
maróvá yáákarɪm-ɪriis-ɪrijima ‘M plowed for a whole hour’
maróvá yáákarɪma ɪriisa ɪrijima
ndáá¦kávágʊrizɪr-ɪzing’oombe ‘I just sold cows to them’
~ndáá¦kávágʊrizɪra ɪzing’oombe
kaand-ʊmwáán-adeechi ‘also the child cooked’
vɪɪk-ómwáán¦-ídíidi ‘put the child on the back!’
~vɪɪká ómwáána ɪdíidi
ndáá¦kánw-óvósér-ávʊg-ɪɪbáá¦kóʊri ‘after I ate the vosera he took the bowl’

The following examples show deletion of the vowel in the enclitic *kɪ* in the fronted wh-phrase *chí¦gírá kí* ‘why’ – although *kí* is a clitic, it attaches to the preceding word, not the following, and thus the vowel combination is an example of general phrasal combination. As can be seen, the nominal augment and the subject prefix are not lengthened when fused with /kí/.

chí¦gírá k-á¦ríráa ‘why is he crying?’
chí¦gírá k-ínweezáa ‘why is it drinking?’
chí¦gírá ¦k-árímí ‘why did he plow?’
chí¦gírá ¦k-ébé¦d-ígwíɪ ‘why did the ring fall?’
chí¦gírá ¦k-é¦kéróóri kɪkuzi ‘why did the calf die?’

Domain-size is relevant to the matter of whether two short vowels merge into a long vowel. Nevertheless, the following examples show that when the first word in a two-word sequence has a monomoraic root, there is still no lengthening.

mb-ámagɪna	‘give me stones’	mbé amagɪna
nw-amárwá	‘drink beer!’	
ry-amágáánda	‘eat beans’	
sh-ovóró	‘grind millet’	
t-írídáanji	‘bury the tank!’	
t-íkíbága	‘bury the cat!’	
ty-íkíbága	‘fear the cat!’	
ty-ʊmwáámi	‘fear the chief!’	

Dimoraic (C)VCV demonstratives also do not result in long vowels under contraction with a subject prefix.

oy-ádeechi	'he cooked'
yıy-íkuzi	'this one died'
yıy-íˈgwíı	'this one fell'
yıy-ıŋaanyi	'that one ate'
yıy-ıryıı	'that one ate'
yırá ıryıı	'that one ate'
yır-íˈzyıı	'that one went'
yıy-ítyıı	'this one feared'

Similarly, there is no lengthening under syllable merger whene the second word is a VCV verb.

marov-áˈgwá dáave	'Marova won't fall'
lek-ashí	'let him grind'

Examples of non-lengthening include combinations of a monosyllabic post-verbal enclitic which happens to stand before a vowel-initial noun.

ndáárora kw-ámagına	'I have ever seen stones'
ndáákooŋa k-óˈmwáana	'I have ever helped a child'[72]
ndááŋaaŋa kw-íˈmító	'I have ever eaten mito'
máásóóˈmá mw-íˈvítábʊ	'I usually read books in'

10. Pre-NC-lengthening

Bantu languages with distinctive vowel length frequently neutralize the contrast before sequences of nasal plus consonant, so that all vowels are long before NC. The correlation between vowel length and NC has decreased in Logoori. There are three main contexts where length before NC can be investigated:

1: within morphemes (e.g. *ko-roond-a* 'to follow')
2: across morphemes where N is the 1s object of object prefix in inflected verbs
3: In the context of the nominal class prefixes for cl. 9 and 10

The subsections below focus on contexts 2 and 3 since they illustrate productive phonological patterns. The main generalizations about pre-NC length are the following.

1: Vowels are redundantly long before NC within a morpheme, with no alternations or evidence that such vowels behave as short.
2: Vowels always lengthen within the word before the 1s OP: this is consistent with the pattern of length-preservation within words, on the assumption that the 1s OP coulds as a length unit

[72] This form is an example of optional reduction of Cwʊ to Cʊ, which may not be full phonetic neutralization.

3: The 1s SP causes lengtheing of a preceding proclitic just in case the prefix immediately precedes the macrostem – this is the same generalization as governs lengthening of proclitic plus vowel-initial SP.

4: The cl. 9 nominal prefix /N/ and the augment /ɪ/ both contribute a unit of length in phrasal VNC sequences and cause lengthening: this is due to the general pattern of phrasal length only in case one of the two syllables is long.

As far as VNC morpheme-internal contexts are concerned, vowels are generally long before tautomorphemic NC. One context where they are not is in vowel-initial roots before NC. As observed in previous discussion of N+C effects, and vowel fusion, such vowels are systematically short, though usually they are long on the surface because of vowel-merger effects. Thus *kw-aambɔk-a* 'to cross' has a long vowel due to the vowel combination given underlying /kɔ-ambɔk-a/, and *nzámbɔ́kaa* 'I am crossing' from /n-ambɔk-aa/ has a short vowel because there is no vowel sequence which results in vowel length. All VNC-initial roots behave the same, and have a surface long syllable if a vowel prefix precedes, a short vowel otherwise.

Apart from vowel-initial roots, vowels before NC within a morpheme are generally long. There are rare unclear cases involving relatively long roots, for example *gara*(*a*)*ngatan* 'fall and roll over' which most often has a short vowel but may be freely long or short within a single speaker (e.g. [fa]*agáráángatani* 'he fell and roll over (perfective)', [fa]*yáágárangatana* 'he fell and rolled over (remote)'). Two nouns are known to have short vowels before NC within roots: *kondákta* 'conductor' and *mambáása* 'Mombasa'; the name *andíisi* and the bird species *ɪmbí'rámbírízi* also have such sequences, *a-* is a frequent pseudo-prefix in personal names, and the noun *ɪmbí'rámbírízi* looks like a reduplication, so its structure may be ɪ-N-REDUP-*vɪrɪzi*, where medial *a-m-b* actually copies the cl. 9 prefix N-.

10.1. 1s OP within verbs

Within the word, a vowel before an NC sequence created by combining the 1s OP with a following consonant is always long. The conditioning nasal or the following consonant may be deleted or modified, following NC rules discussed in sections 1-3 above (e.g. *kóóŋeengera* 'to brew for me', *aafóóri* 'he beat me' from /ko-N-yeengera, a-N-fóóri/).

avaambégizi	'he made them shave me'
aváángooŋeree	'he helped me for them'
valiinzízólila	'they may remember me'
valiimbéga	'they may shave me'
kóóŋeengera	'to brew for me'
kóómbega	'to shave me'
kóósyɔɔvɪra	'to throw out for me'
kóómbaayɪra	'to visit me'
ɔtaanzáyɔlla	'don't shout at me!'
ɔtaaníínda	'don't watch me!'
arɪkáánganagane	'he will think of me'
ɔrááng'oodera	'you will write for me'

ʊʊmbéézegelle	‘belch on me!’
ɔ́ɔ́ngaraangɪrɪɪ	‘you have fried for me’
aafɔ́ɔ́ri	‘he beat me’
aambée	‘he gave to me’
aandákɔ́ɔ́llɪɪ	‘he released me’
aandémeraa	‘he’s chopping for me’
manɪ vá!ángɔ́ɔ́ŋa	‘then they helped me’
mání vá!ásémáányá	‘then they insulted me’
mavaanzáámbɔ́kɪrɪ	‘they will ford for me’
na vaanzízólliri	‘they will remember me’
vaaŋáánzaa	‘they are loving me’
vaambááyɪrɪ	‘they visited me / for me’
kaandí!vóllí	‘now answer me!’

A systematic exception to this pattern of lengthening is that the epenthetic vowel associated with this prefix (see 4.3.3) is not lengthened.

vááyíndora	‘they saw me rem’
yáyí!ndákɔ́ɔ́ra	‘he released me’
vááyí!mórómeraa	‘they used to speak to me’
yáímbegaa	‘he used to shave me’
yaaindɔ́mi	‘he sent me’

When the preceding vowel is otherwise long – it derives from a V+V sequence – there is no visible effect on vowel length in VNC.

yáámbegaa	‘he used to shave me’
mwáá!ngɔ́ɔ́ŋaa	‘2p used to help me’
áámbomollee	‘he has demolished for me’
váá!njéériza	‘they greeted me’
váá!nɔ́má	‘they bit me’
wáá!ngíínga	‘you protected me’
yáá!nzíránɪra	‘he returned for me’

10.2. Proclitic before 1s SP

The subject prefix is not preceded by prefixes within the word, but it can be preceded by proclitics. In such a case, the proclitic vowel lengthens only when there is no tense-aspect prefix syllable – proclitic plus NC yields a long vowel in exactly the same conditions as proclitic plus V merger does.

<u>na</u>-

naa shí	‘I will grind’
naa nzítí	‘I will kill’
naa mbégé	‘I will shave’
naa ndákɔ́rɪ	‘I will release’

naa ɲɔ́mbákí ‘I will build’
naa ndéékέ ‘I will cook’
naa ɲááɲé ‘I will eat’
naa mbéénzé ‘I will look’
naa nóóndé ‘I will follow’
naa sɔ́ɔ́ndɔ́rí ‘I will pour out’
naa nyííngírí ‘I will enter’

The relative agreement proclitic can appear before most verb forms,[73] making it easier to contrast forms with and without a tense prefix. The relative future, hodiernal perfective and progressive are tenses with no prefix after the SP, where pre-NC lengthening occurs.

<u>relative future</u>
ɪzíng’óómbe zyaa ndya ‘the cows that I will fear’
ʊmʊgóye gwá!á mbóhá ‘the rop that I will tie’
ɪɲáma yáá! ndéékά ‘the meat that I will cook’
mʊgɔ́ɔ́nda gwáá séémbella ‘the farm that I will weed’
rwá!á nzímbá ‘when I sing’
rwá!á móróma ‘when I speak’
rwá!á mbéénzegera ‘when I belch’
rwáá! ɲágɔ́rá ‘when I will run’

<u>hodiernal perfective</u>
ʊmsáá!rá gwáá mbódóng’ání ‘the tree that I went around’
zing’óó!mbé zyáá nzáí ‘the cows that I herded’
zing’óó!mbé zyáá nííndi ‘the cows that I watched’
ɪbía yaa nwɪɪ ‘the beer that I drank’
aváána vaa ndójí ‘the children who I bewitched’
ɪnyɔ́ɔ́!mbá yáá ngɔ́rí ‘the house that I bought’
rwáá ndeechi ‘when I cooked’
rwáá ngwɪɪ ‘when I fell’
rwáá! nzéyí ‘when I swept’
rwáá ndʊri ‘when I left’

<u>progressive</u>
aváándʊ vaa ndóráa ‘the people who I am seeing’
rwáá ɲagʊráa ‘when I am running’
aváána vaa ngooɲáa ‘the children that I am helping’
ɪɲáma yaa ngaráángá ‘the meat that I am frying’

There is also lengthening when the SP comes immediately before an OP

rwáá ngokóónyi ‘when I helped you’
rwáá mbavá!rízíráá ‘when I am counting for them’

[73] Certain tenses such as the immediate future with *-ra-* are not allowed in relative clauses.

rwáá ngʊráámaa	‘when I am cursing you’
rwáá ngoróráa	‘when I am seeing you’
rwáá mbavégaa	‘when I am shaving them’
rijúúngu ryaa mbíí!tíráa	‘the rat that I am killing for them’
amarwá gaa ngoyéé!ngéráa	‘the alcohol that I am brewing for you’
rwáá mbaríí!ngólláá	‘when I am unfolding for them’
rwáá mbasáá!mbʊ́rógányíráá	‘when I am destroying for they’

In tenses selecting a prefix between the SP and the macrostem, there is no lengthening of the proclitic before NC

ŋáma ya ndáádééka	‘the meat that I cooked’
ɪkɪtábʊ chá! ndááháándiika	‘the book that I wrote’
módogá gwá! ndáágúriza	‘the car that I sold’
rwá! ndááháándiika	‘when I wrote’
rwá! ndáámóroma	‘when I spoke’
rwá! ndáánwa	‘when I drank’
rwá! ndáávéga	‘when I shaved’
ŋáma ya ndaakódéeka	‘the meat that I have cooked’
ɪzing’óómbe zyá! ndáávárizaa	‘the cows that I used to count’
rwá! ndáágwíízaa	‘when I used to fall’
rwá! ndáámórómaa	‘when I used to speak’
aváándʊ va ndikooŋá	‘the people that I will help’
ɪngáno ya ndisha	‘the wheat which I will grind’
ʊmʊ́ʊ́ndʊ wa ndivega	‘the person that I will shave’
gwa ndikateme	‘the one which I will chop’
rwá! ndíkávége	‘when I will shave’
aváándʊ va ngevegáa	‘the people who I am still shaving’
rwa ngɪrímáa	‘when I am still plowing’

10.3. Phrasal vowel + NC in verbs

At the phrasal level, there is no lengthening before verbal NC, whether the nasal is the subject prefix or the object prefix.

reka ndééké	‘let me cook’
reka nzyí	‘let me go’
leka nímí	‘let me plow’
tareká !ngwí !dáave	‘let me not fall’
engóómbé !ngórízi	‘a cow, I sold’
ʊvʊráhɪ ndeechi	‘fortunately I cooked’
ʊvʊráhɪ nwɪɪ	‘fortunately I drank’
ʊvʊrá!hí sóóm-órósʊ́ʊ́ngʊ	‘fortunately I study English’
yáásʊ́ʊ́vɪra ndáádééka	‘he thought I cooked’
mskó!ró sóóm-órósʊ́ʊ́ngʊ	‘in school I study English’
amádʊ́ʊ́ma ndááyaanza	‘maize I like’

íɲámá ndeechi	‘meat I ate’
karónɔ ndeekáa	‘now I am cooking’
haóndɪ ndáádééka	‘possibly I cooked’
sáá ndárá ndáádééka	‘sometimes I cooked’
ɪɲamá ndeekéra	‘meat cook for me!’
ɪmísáára ndeméra	‘trees chop for me!’
ɔm̀píira ndasíra	‘the ball throw to me!’
ɪmbwá siingíra	‘the dog wash for me!’
ɪmbwá ꜜngóllá	‘the dog buy for me!’

10.4. Cl 9-10 nominal prefix

Pre-NC vowel lengthening associated with classes 9 and 10 is complex, compared to 1sg SP and OP data. Most of the relevant instances involve the cl. 9 prefix N- in various context, but the cl. 10 prefix is also exhibits pre-NC lengthening in one context.

The vowel of *zi* in the cl. 10 prefix is not lengthened before NC when the following stem has multiple syllables.

zíꜜmbímá	‘spleens’
zíꜜngókó	‘chickens’
zimbarɔ	‘rib’
zíngáda	‘pipes’
zingano	‘stories’
zingáta	‘headpads’
zinguza	‘vegetable’
zínzóka	‘snakes’
zínzókɪ	‘bees’
zíꜜmbóóngó	‘buffalos’
zíꜜmbóóngó	‘keys’
zíꜜnáámbó	‘chameleons’
zíꜜndóóro	‘sleep’
zimbááho	‘boards’
zing’eendo	‘journies’
zínjuugu	‘peanuts’
zíꜜndógóꜜnyí	‘ant sp.’
zíꜜngóróve	‘pigs’
zíꜜmbéréenge	‘water skippers’
zíꜜngárááye	‘wash-basins’

When the root is monosyllabic, the prefix vowel is optionally lengthened. A single speaker may use lengthened and non-lengthened forms, for instance BK *zímbwá* or *zíímbwá* ‘dogs’, *zííngó* or *zíngó* ‘firewood’, *zingo* or *ziingo* ‘leopards’; EM: *zíímbwá* ‘dogs’, *ziimbwáꜜ zínéne* ‘big dogs’ but *zímbwá* ꜜ*zínzána* ‘young dogs’; *zííngó* ‘firewood’, *zííngó* ꜜ*zínyíngí* ‘many pieces of firewood’ but *zíngó* ꜜ*zímbyó* ‘hot firefood’. Speaker tendencies are not uniform: BK predominantly attests non-shortening by a ratio of about 2 to

1, EM has a greater tendency to lengthen than not to, and RL and PM always length in the data.[74]

[EM]zinjɔ	'bowls'
[FA] zíínjɔ́ zyééng'íné	'the bowls alone'
[BK]zinji [EM] ziinji	'flies'
[BK]zímbyá	'gatherings of elders'
[BK, EM]zíínda	'lice'
zííswá	'termite'
ziisa	'times'

Data on monosyllabic adjective roots is sufficiently limited that speaker trends cannot be discerned, but both lengthened and non-lengthened variants are attested.[75]

zííndí	zíndí	'small$_{-10}$'
zííngé	zíngé	'few$_{-10}$'
zíímbí	zímbí	'small$_{-10}$'

Otherwise, pre-NC lengthening only pertains to cl. 9 nouns, and is related to the presence of the augment. The augment [e~ɪ] appearing before NC in citation cl. 9 nouns is always short, excluding cases of V+V merger covered below. This is illustated below with monosyllabic roots.[76]

<u>Overt</u>

engo	'leopard'
ímbwá	'dog'
ɪnda	'stomach'
índá	'louse'
ɪnji	'fly'
ímbí	'bad'

<u>Ambiguous</u>

ɪnyɔ	'anus'
ísá	'time'
ɪsɔ	'female chicken'
íswá	'termite'
ɪsyo	'shaper'

<u>Unprefixed</u>

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[74] Some of the relevant nouns have very limited attestation.

[75] Monosyllabic adjective roots usually triplicate, viz. *zíngeengéénge*.

[76] Three classes of stems are inducated here: overt, ambiguous and unprefixed. This refers to whether there is a surface-evident prefix N, the prefix cannot be detected except indirectly, or the prefix N is demonstrably lacking.

íchó ‘toilet’

Before longer roots, the augment is likewise always short.

é!ngókó ‘chicken’
é!ngóóndó ‘banana flower’
embégo ‘maize planting’
éndéve ‘chair’
í!ndámá ‘tobacco plant’
í!ngóvó ‘hippopotamus’
ɪmbáda ‘hawk’
ímbúrú ‘monitor’
índóómba ‘drum’
ɪngʊvʊ ‘cloth’
é!mbéréenge ‘skipper’
í!ndógónyi ‘ant’
índúrúme ‘seizure’
ɪmbá!rábára ‘road’
ɪnduvagɪrʊ ‘sole of animal’

10.5. Locative before nominal NC

The different behavior of a preceding proclitic versus preceding word with verbs arises from the fact that tense inflections influence whether there is lengthening. This does not arise with noun morphology, consequently phrases and proclitics can be treated together. However, there is a behavioral difference between locative prefixes on nouns and other vowels before nominal NC.

The augment is always lacking from a nominal after a modifying locative prefix,[77] and the vowel of the locative prefix is lengthened in these constructions.

háámbwá ‘by the dog’
haambogo ‘at a buffalo’
háándéve ‘by a chair’
haandege ‘at an airplane’
kóó!ngókó ‘on a chicken’
koombogo ‘on a buffalo’
kóóndéve ‘on a chair’
kóómbá!rábára ‘on the road’
kóómbwá ‘on the dog’
kʊʊnji ‘on the fly’
kóónzɪra ‘on the road’
mʊʊmbogo ‘in a buffalo’

[77] The augment is not deleted when the postverbal clitics *mʊ, kʊ* happens to precede a noun with an augment, e.g. *ndáá!végá kw-á!váána* ‘I have ever shaved the children’ – the postverbal clitic merely precedes the noun, but does not structurally attach to it.

mʊ́ʊ́ndéve	‘in a chair’
mʊʊnzóka	‘in a snake’

The augment is generally omitted in nouns modified by *kí* ‘what’. Nouns in cl. 9 so modified do not have lengthening of the preceding vowel of a locative prefix.

kʊmbarabara kí	‘on what road’
kʊngáá!sí kí	‘on what ladder’
ha mbʊ́!rí kí	‘by what goat’

This indicates that lengthening in locative forms of cl. 9 nouns is in part due to the augment, and this in turn implies that the augment is underlyingly present in e.g. [mʊ́ʊ́ndéve], i.e. /mʊ-endéve/, even though the locative prefix replaces the augment. The proposed analysis is that the augment deleted after a locative proclitic.

10.6. Other vowels before cl 9 NC

This subsection will focus on the presumed proclitics *na-, nɪ-, sa-,* AGR-*a*, and the next subsection will consider other V+NC combinations. Normally, the vowel of the proclitic is deleted and the vowel of the augment is retained, lengthened. For example, /nɪ endéve/ becomes *n-eendéve* ‘it’s a chair’. Lengthening in this case is an instance of preservation of syllable length, where a long vowel always results from the combination of a long syllable plus any syllable. The crucial factors causing vowel length in these examples is that there is an augment and the cl. 9 prefix /N/, which is assumed to be moraic. When there is no augment (10.6.2) or no moraic nasal (10.6.3), there is no lengthening.

10.6.1. Augment plus nasal prefix

The proclitics /nɪ-, s(y)a-, na-, AGR-a/ lose their vowel before the augment, and the augment is long in the following cl. 9 examples.

n-ɪɪmbwá	‘it’s a dog’
n-ɪɪmbʊ́ri	‘it’s a goat’
n-ɪɪngáási	‘it’s a ladder’
n-ɪɪmbíízɪ	‘it’s a warthog’
n-ɪɪnzaga	‘it’s marijuana’
n-eemboongo	‘it’s a buffalo’
n-ííngókó	‘it’s a chicken’
n-íí!ndógónyi	‘it’s an ant’
s-íímbwá	‘like a dog’
s-eengo	‘like a leopard’
n-iimbítí	‘it’s a hyena’
s-éé!ngókó	‘like a chicken’
sh-íɪmbiti	‘like a hyena’
s-ɪɪngʊvʊ	‘like cloth’
s-íí!ngóróvɪ	‘like a pig’
sh-é!émbódóka	‘like jealousy’

n-í!ímbwá	‘with a dog’
n-íɪngʊgɪ	‘with a baboon’
n-í!íngóóngɪ	‘with a basket’
n-é!émbóóngó	‘with a buffalo’
n-é!é!ngókó	‘with a chicken’
n-íɪmbʊkʊ	‘with a mole’
n-íɪngavɪ	‘with luck’
n-íɪngʊrʊvɪ	‘with a pig’
n-í!índógónyi	‘with ant’
n-éé!mbódóka	‘with jealousy’

<u>associative</u>

ríváha ry-íɪmbáda	‘feather of hawk’
mkíra gw-í!ímbwá	‘tail of a dog’
mavóyʊ g-éé!ngókó	‘eggs of a chicken’
ɪrigódo g-í!ímbóri	‘skin of a goat’

10.6.2. No augment

Common nouns with the modifier *kí* ‘what’ typically do not have the augment. When a vowel precedes a cl. 9 noun lacking an augment because of *kí*, the result is a short vowel.

ha-mbó!rí kí	‘by what goat’
kʊ-ngá!tá kí	‘on what headpad’
mʊ-ndóó!hó kí	‘in what bucket’
ha-ngó!kó kí	‘at what chicken’
sa-ngoko kí	‘like what chicken’
sa-ngʊrʊve kí	‘like what pig’
na-ndé!gé kí	‘with what airplane’
na-ngó!kó kí	‘with what chicken’
ná-ngá!tá kí	‘with what headpad’
nɪ-ndeve kí	‘it’s what chair’

Another nominal context where there is no lengthening before cl. 9 NC is in the ‘X-wards’ construction, with *ɪma-*, which does not have the augment on the base noun.

ɪnámburi	‘goat-wards’
ɪnángoko	‘chicken-wards’
ɪnándooho	‘bucket-wards’
ɪnámburu	‘monitor-wards’
ɪnánjene	‘jigger-wards’
ɪnámboongo	‘buffalo-wards’
ɪnángoko	‘chicken-wards’
ɪnámbwa	‘dog-wards’
ɪnángo	‘leopard-wards’

There is also no lengthening before personal and place names which begin with NC. Only names are potential examples, since only names are obligatorily augment-free.[78]

mboozó	'brother'
nɪ mboozoº	'it's brother'
mbaaja	'PN'
nɪ mbaaja	'it's Mbaaja'
ndaanyi	'PN'
sa ndaanyi	'like Ndaanyi'
mbaata	'Mbaate (Tanzania)'
nɪ mbaate	'it's Mbaate'
mbábáne	'Mbabane (Swaziland)'
hámbábáne	'in Mbabane'
mbíízi	'Mbizi (Zimbabwe)'
cha mbíízi	'of Mbizi'

On the other hand, the place name *Mbihi* does take the locative augment, and a long vowel arises when combined with a proclitic.

ɪmbɪhɪ	'Mbihi (village west of Mbale)'
n-ɪɪmbɪhɪ	'It's Mbihi'
haambɪhɪ	'in Mbihi'

10.6.3. No nasal

Not all nouns in cl. 9 employ the prefix N-, and those which do not also do not exhibit lengthening even when the augment is present. In one phonological class of nouns, it is obvious that the noun underlyingly lacks the prefix /N-/, but in another class the citation form of the noun is ambiguous, and vowel lengthening must be called on to distinguish nouns without /N/ versus those which phonologically delete the nasal.

When the noun in question lacks the prefix N- (e.g. *e-béde* 'ring'), no vowel lengthening occurs from combination of V plus an (augmented) cl. 9 noun. The clearest examples are those beginning with a stop, *f, h*, or *r*, since there is no deletion of a nasal before those consonants. Examples with the locative prefix are seen below

ha bóósta	'at the post office'
há chó	'at a toilet'
ha pé!téróori	'by petrol'
ha bósa	'by maize beer'
kó béde	'on a ring'

[78] Even then, place names subdivide into those in Evologoori which do select the place-name augment *ɪ-*, versus personal names and other places. Also, some speakers employ the augment in personal names that resemble cl. 11 nouns, such as *rodééji ~ orodééji*.

In the case of other CV proclitics, the vowel of the proclitic is deleted and the augment remains, unlengthened.

n-é!béde	'with a ring'
s-íkáháwa	'like coffee'
s-ékóófi	'like coffee'
n-í!dáákɪka	'with a minute'
ebáái y-é!béde	'price of a ring'
ɔmtwí !gw-ídwáási	'head of a heifer'
kwiigóɾɔ kw-ɪkɪhabo	'top of a bag'
kwiigóɾɔ kw-í!báaga	'top of a bag'
rízáázá!má ry-í!bósaa	'taste of busaa'

10.7. Phrasal nominal NC

Phrasal combinations of vowel plus NC likewise attest lengthening of the augment, just as was observed with proclitics.

kɪr-éé!ngókó	'every chicken'
kɪr-eengo	'every leopard'
kɪr-eengo	'every leopard'
kɪr-éé!ngókó	'every chicken'
kɪr-ɪɪngóɾɔve	'each pig'
mween-ɪɪnyóómba	'owner of house'
mween-ɪɪmbóri	'owner of the goat'
mween-ɪɪmbwá	'owner of dog'
vɔjɪr-eengo	'without a leopard'
vójír-íímbwá	'without a dog'
vójír-éénzóka	'without a snake'
vójír-íínzáro	'without gravel'
vójír-éémbódóka	'without jealousy'
vójír-íí!ndógónyi	'without ant'
vójír-ííngóóngɪ	'without a basket'
kariv-ɪɪndú!gútá	'even a letter'
kariv-íí!mbúrú	'even a monitor'
yaakógólízíl(w)-ééndéve	'he has been sold a chair'
vaakwíí!t-íímbwá	'they have killed a dog'
yáákórór-ééndéve	'he has seen a chair'
vaaréét-eendéve	'they brought a chair'
váá!kárór-éémbégo	'they saw a seed'
maníyíí!t-éengókó	'then he killed a chicken'

It is crucial that the first vowel in the underlying sequence be deleted, in order for a long vowel to arise. Final *i* does not delete before a vowel at the phrasal level, in which case the augment of a cl. 9 noun has a short vowel.

arorí ꜜéndéve	‘he saw a chair’
vɒri engo	‘each leopard’
vǿri íꜜnjǿɒgɒ	‘each peanut’

When there is no augment (as in the case of *N+kí* constructions), there is no lengthening.

vǿjírá ndéꜜgé kí	‘without what airplane’
mweene ndeve kí	‘owner of what chair’
yááróra nzoka kí	‘he saw what snake’
vííta mbɒri kí	‘they killed what goat’
vaakávóꜜnáányá ndeve kɪº	‘they broke what chair’
mavareeté ndoho kí	‘they will bring what bucket’

There is also no lengthening of a vowel before a proper name that begins with NC.

ndaaróra mboozoº	‘I saw brother’
makororé ndaanyi	‘we will see Ndaanyi’
ndáávááya mbaate	‘I visited Mbaate’
ndááꜜyáánzá mbábáne	‘I like Mbabane’
maambááyí ꜜmbíízi	‘I will visit Mbizi’
ndááꜜkárórá mbíízi	‘I saw Mbizi’
(cf. ɪmbɪhɪ, ndáávááy-ɪɪmbɪhɪ	‘I visited Mbihi’)

Finally, in certain NPs with a demonstrative, the augment is omitted from an immediately post-nominal adjective,[79] for example *avɒ́ándɔ varah-áava* ‘these good people’ cf. *avɒ́ánd(ɔ́) ávárah-áava* ‘these good people’. In this context, the final vowel of the head noun is not lengthened before adjectival NC, because there is no augment.

eng’óómbe ndah-íɪyɪ	‘this good cow’
ŋɲáma ndeek-íɪra	‘that cooked meat’

In cl. 9 nouns which have no nasal class prefix, fusion of a preceding vowel with an augment results in a short vowel.

kíꜜr-íbíráǿni	‘every plate’
mween-ɪdárája	‘owner of the bridge’
vǿjír-ébéde	‘without a ring’
vǿjír-épóósta	‘without a post office’
vɒjɪr-ɪpǿǿnda	‘without a donkey’
vǿjír-ébéde	‘without a ring’
vǿjír-épóósta	‘without a post office’
yááróꜜr-íchó	‘he saw the toilet’
manyíꜜí máróv-íchó	‘I showed Marova the toilet’
yaavógɒr-ebéꜜdé mbá	‘he didn’t take a ring’

[79] There are also substantial tonal differences associated with this construction.

vaagórizɪrw-ɪpóónda	‘they were sold a donkey’
varágór-íbárási	‘they will buy a horse’
varádóó!r-íbáaga	‘they will pick up a bag’

10.8. Ambiguous stems

Stems beginning with *s* or a nasal are potentially ambiguous as to underlying form, since /Ns, Nn, Nɲ, Nm, Nng’/ [become s, n, ɲ, m, ng’], and there is no independent way to determine if a noun in question has the prefix N or the alternative Ø: *emére* ‘mashed cooked bananas’ could be /e-N-mere/ or /e-mere/, and *emééri* could be /e-N-mééri/ or /e-mééri/. Most ambiguous stems in cl. 9 exhibit the vowel-lengthening effect associated with augment+NC, which I take to diagnose the presence of the nasal class prefix.

aríít-eesereº	‘he will kill the weevil’
gʊr-ɪɪmu	‘buy seed!’
h-aanyʊʊndo	‘at a hammer’
kariv-ɪɪng’wɪɪna	‘even a crocodile’
kí!r-íísóóka	‘each sheet’
kír-ɪɪng’ɪɪnga	‘each moment’
kɪr-ɪɪsʊna	‘every mosquito’
k-ooɲeengero	‘on a beer pot’
mavágóríz-íɪsu	‘they will sell a chicken’
mavátáág-í!íɲááɲa	‘they will plant a tomato’
mween-íí!ɲáámbó	‘owner of chameleon’
mween-ɪɪsúzɪ	‘owner of fish’
na viit-íínaambárʊ	‘they will kill an ant’
ndáágó!r-íísóóka	‘I bought a sheet’
n-eemoondo	‘it’s a gizzard’
n-eeng’ombe	‘it’s a cow’
n-íɪɲama	‘with meat’
n-íɪsa	‘with a watch’
s-ɪɪɲʊ	‘like an anus’
varárór-íísóri	‘they will see a bedbug’
várávír-éémére	‘they will boil emere’
varíí!t-íí!swá	‘they will kill a termite’
vóómbak-ɪɪnyóómba	‘they built a house’
yaakótó!mírw-íínyííngʊ	‘he has been sent a cooking pot’
yaamórom-ɪɪnáámba	‘he spoke a number’
yaaríínd-ɪɪng’ɪɪnga	‘he waited a moment’

Some nouns have short vowels, most of which are identifiable recent Swahili loan words (*ɪsugudi* is borrowed from Isukha).

gʊr-ɪsíímu	‘buy a telephone!’
ha-sa	‘at a clock’
ha-súmú	‘at poison’

kír-ɪshíída	‘each problem’
mween-eméésa	‘owner of the table’
mween-ɪsííndɔ	‘owner of the quail’
mween-ɪsóó!góoni	‘owner of the market’
ní!máári	‘with wealth’
n-ɪsí!ríínjí	‘it’s a shilling’
váá!kágór-ísweéta	‘they bought a sweater’
vɔ́jír-ísáá!vɔ́ɔni	‘without soap’
vɔjɪr-ɪsugudi	‘without a sugudi’
yíít-ɪsíímba	‘he killed a lion rem’
yɪyí nɪná!fáási	‘this is an opportunity’

11. Augment Deletion

The augment morpheme is present in many contexts, and lacking in many others. There are two main factors governing whether there is an augment. The first is morphosyntactic context. The details of the morphosyntactic distribution of the augment are presented in more detail in X, but an example already considered is that the augment may be lacking when a noun is modified by *kí*, cf. *ndeve kí* ‘what chair?’. The main generalization is that the augment is generally present on nouns and adjectives, and may be added to certain other word classes (in which case, it may matter whether the host word is NP-initial). Even when underlyingly present, the augment may be phonologically deleted. It is always missing in the *iná-* ‘X-wards’ construction. Cl. 1a nouns do not have the augment. It is unclear whether adjectives and nouns follow the same distribution patterns w.r.t. the augment, and it is possible that the augment on adjectives follows somewhat different rules. Lacking clear evidence for distinct rules for nouns and adjectives, I assume that the distribution of the augment is uniform on adjectives and nouns: when the augment is lacking, it is deleted phonologically, unless it falls within one of a few morphosyntactic omission contexts (presence of kí; cl. 1a; proper names). The concern of this section is the fact that the augment is phonologically deleted, and this section describes the conditions for deletion. In 11.2 I evaluate the possibility that some speakers have a more restricted underlying distribution of the augment.

11.1. Phonological deletion

The first relevant factor governing deletion is the individual speaker: some speakers tend to delete the augment, and some tend to retain it. For example, the word ‘old woman’ is attested in the data (in citation forms) as *mkeere* and *ʊmkeere*; ‘trees’ appears as *mísáára* and *ɪmísáára*. Speakers RL, RK, EM, RO, PM most often have the augment; speakers BK, ML, SY, EK, FA tend not to attest the augment. The phonological context of the noun matters: the augment is very strongly preferred in cl. 9, in certain kinds of cl. 5 and cl. 11 nouns. The likelihood of having an augment is also related to the length of the noun root. Deletion affects a word-initial augment, which effectively refers to any augment except one that is preceded by a CV proclitic (such as *na* ‘with’, *sa* ‘like’, *nɪ* ‘it’s’).

Various subsets of the data have been sampled to determine speaker and phonological context tendencies. Since I have not conducted a systematic, controlled study

across speakers with randomized elicitation, I make no claims about statistical significance, and simply report general tendencies with a very coarse granularity. For EM, I extracted around 1,000 noun tokens in cl. 7-8, finding the augment present (***e-kereenge*** 'leg') in around 40% of tokens, and lacking (*ke-reenge*) in about 60% of tokens. In a broader sample of about 7,000 nouns in all classes outside of cl. 9, I find the augment present in about 60% of tokens and lacking in about 40%. The reason for this apparent difference between cl. 7-8 vs. nouns in general is that in cl. 7-8 (also 14, 12, 13), independent phonological factors thwart the tendency to delete the augment, for example, reduction of /mʊ/ to *m̀* and reduction of /rVr/ to *ll* works against augment deletion. When /rVr/ reduces, augment-deletion is categorially blocked, at least for speaker EM. nouns in cl. 7-8 constitute a high-frequency minimal-complication context for assessing relative liklihood of augment reduction. Looking forward to the broader conclusion across speakers, I conclude EM attests augment-deletion about half the time.

Speaker BK, on the other hand, very frequently deletes the augment: in cl. 7-8, I find only 4% of about 1,000 cl. 7-8 nouns with the augment, and 96% without. In a larger sample of about 7,500 non-9 nouns, 5% of tokens attest the augment. The frequency of augmentation in nouns outside of cl. 9 for various speakers is summarized below.[80]

	Aug	N
BK	4%	7,500
EK	0%	2,000
EM	60%	7,000
FA	8%	2,500
ML	5%	2,000
RK	97%	3,000
RL	50%	2,000
SY	0%	2000

These patterns can be subsumed under three variations in augment-deletion. Speakers BK, FA, SY, EK and ML have a virtually obligatory rule. There are various reasons why ML, FA and BK would have produced some tokens with the augment, and the frequency of augmented tokens is low enough that a few examples can reasonably be disregarded.[81] For EM and RL, deletion occurs about half the time, thus the rule is optional; and for RK, the rule almost never applies.

An obvious alternative to phonological deletion is to say that affixation of the augment is itself optional (obligatory, blocked). As we explore the phonological conditions on augment deletion we will see why that is unlikely. A cogent reason to reject the morpheme-optionality approach, discussed below, is that even speakers with near-zero

[80] Because of the comparative paucity of data from NM, I refrain from providing numeric data for that speaker. In the case of data from PM, elicitation circumstances are insufficiently controlled to justify making any claim for this speaker.

[81] For example, there may be normative pressure to retain the augment; the circumstances of elicitation can also encourage production of the augment; within this residue of augmented forms, there is a high frequency of reduction cases such as *á-ḿ-bére* 'sorghum', *ɪ-d-dáˈfááˈrí rɪˈíryé* 'his brick' where augment retention is favored by the phonological context.

attestation of the augment systematically have the augment when the noun is preceded by a monosyllabic proclitic.[82]

The augment-retention pattern of cl. 9 nouns is rather different from that of nouns in other classes: all speakers strongly prefer the augment in such nouns, and most speakers absolutely require it (FA and ML, speakers who prefer augment deletion, explicitly reject tokens with augment deletion in cl. 9, as does EM).

BK	85%	1500
EK	100%	400
EM	100%	400
FA	100%	600
ML	100%	550
RL	100%	400
SY	97%	400

A relevant phonological fact distinguishing cl. 9 from other classes is that the prefix for other classes has the form CV, and cl. 9 is just C. For most speakers, one condition on augment deletion is that deletion only happens before an underlyingly CV prefix. In the case of BK, we may surmise that the conditions on deletion are relaxed so that it is allowed although disprefered when the noun class marker is just C.

Two other phonological factors favor retention of the augment. One is that the augment tends to be retained when the following noun root is monosyllabic. This pattern is attested for EM, where the augment is retained 90% of the time in about 100 tokens of non-9 monosyllabic roots (e.g. *ʊmʊko* 'brother in law', *ʊrósó* 'scent'). Second, when the noun class prefix undergoes vowel-deletion (mʊ → m; rVr → ll), out of about 300 tokens, the augment is retained around 85% of the time.

/ʊ-rʊ-rɪmi/ → ʊ-l-lɪmi	'tongue'
/ɪ-ri-reesi/ → ɪ-l-leesi	'cloud'
/ʊ-rʊ-doto/ → ʊ-d-doto	'childishness'
/ɪ-ri-tígɪɲʊ/ → ɪ-t-tígɪɲʊ	'heel'
/ʊ-mʊ-vʊ́ǃgʊ́sʊ́/ → ʊ-m̀-bʊ́ǃgʊ́sʊ́	'Bukusu'
/ɪ-mi-páángo/ → ɪ-m̀-páángo	'plans'
/ʊ-mʊ-vaango/ → ʊ-m̀-baango	'ugali stick'

Prefix-reduction and root-size limits account for more than 50% of the tokens from FA where the augment is retained.

There is one context where the augment is required, namely when preceded by a CV proclitic – /na/ 'with', /sa, sya, sha/ 'like', AGR-a 'of' or nɪ- 'it's'.

n-ʊ́-mǃ-sáára	'with a tree'	*na Ø-m-sáára
n-í-rɪ-jʊʊngʊ	'with a rat'	*na Ø-rɪ-jʊʊngʊ
n-á-ma-jʊʊngʊ	'with rats'	*na Ø-ma-jʊʊngʊ

[82] However, ML's pattern of augmentation suggests that his system is different, since the augment is missing even after a proclitic, see below.

11.2. ML distribution

Data from ML, who generally does not manifest the augment, indicates a change in the pattern for proclitic+N structures. The data also suggest competing analyses for the underlying vowel of the proclitic.

In the case of *na-* 'with', the proclitic has the shape /na-/ before cl. 1a nouns, including proper names.

ná ísɪ	'with father'
ná! gúúgá	'with grandfather'
ná ˈkóózá	'with uncle '
ná ˈnnyá	'with mother'
ná ˈródéeji	'with Rodeji'
náˈándíísi	'with Andisi'
na éditon	'with Editon'

The prefix is also [na] before a noun class prefix.

ná magɪna	'with stones'
ná! mágómyá	'with bananas'
ná! márwá	'with alcohol'
ná vageni	'with guests'
ná! víiˈgízí	'with teachers'
ná! mídógá	'with cars'
ná! mító	'with mito'
ná! lísóˈgóma	'with kale'
ná ríˈmóóŋó	'with ant'
ná! ríháˈráámbé	'with wasp'
ná! rípéera	'with guavas'
ná ˈchááˈmégéré	'with mushroom'
ná kíˈfóóyó	'with rabbit'
ná kɪsóóngʊra	'with rabbit'
ná! víbága	'with cats'
ná! zíˈngwí	'with firewood'
ná! zííngú	'with firewood'
ná zíˈngókó	'with chickens'
ná! zíinji	'with flies'
ná! móˈnáándí	'with a Nandi'
ná! mórámwá	'with inlaw'
ná mʊʊndʊ	'with person'
ná! móyéke	'with sand'
ná m̀ˈdógá	'with car'
ná m̀bano	'with knives'
ná mʊgadi	'with bread'
ná! ródérʊ	'with a grain tray'

ná ˡrwíɪga	‘with a horn’
ná Íˡlóóngo	‘with white clay’
ná rɒguuchi	‘with dust’
ná vosera	‘with porridge’
náˡ vóchíma	‘with ugali’
ná góˡfwááví	‘with dirtiness’

But in case the noun is class 9, the clitic has the form [nɪɪ~nee].[83]

n-éˡémére	‘with mashed bananas’
n-éˡéndéve	‘with chair’
n-éˡéngókó	‘with a chicken’
n-éeng’oombe	‘with a cow’
n-íˡíjóʊmbɪ	‘with salt’
n-íˡímbóri	‘with goat’
n-íˡímbwá	‘with dog’
n-íˡínááˡmáárá	‘with a tick’
n-íˡínááˡmbárú	‘with ant’
n-íˡíndógónyi	‘with ant’
n-íˡíngɔ́ɔ́ngɪ	‘with a basket’
n-íɪmbiti	‘with a hyena’
n-íɪmbɒkɒ	‘with a mole’
n-íɪng’eende	‘with a jigger’
n-íɪngavɪ	‘with luck’
n-íɪngʊgɪ	‘with baboon’
n-éˡéméeri	‘with a boat’
n-íˡímáári	‘with wealth’
n-íˡímííshoni	‘with a mission’
n-ííˡbáhátị̊	‘with luck’

In these instances, the augment is clearly present; note too that the combination of proclitic plus augment results in a long vowel, even when no nasal prefix is present as in the last four examples. This indicates a difference between speakers EM and ML regarding lengthening in the outcome of proclitic plus noun. The point of relevance to the analysis of augment deletion here is that unlike the pattern previously noted, the augment does not show up when /na-/ appears before the noun. The exception is that it does show up in cl. 9: either the augment has been reanalyzed as being part of the cl. 9 prefix itself, or it is mandatory in cl. 9.

The associative clitic also has the final vowel /a/, appearing as such before proper names and class 1a nouns.

ɪnyóɔ́ˡmbá yá ˡkísááto	‘house of Kisato’

[83] In this case, there are a few unpredicted tokens of the form [nɪ], but it is likely that these are actually copular forms, *ní kéˡróóká* glossed ‘with TP plant’ but possibly ‘it’s TP plant’

ɪnyóó˥mbá yá éditon	‘house of Editon’
ɪnyóó˥mbá yá ródéeji	‘house of Rodeji’
mkóno gwá ˥góókɔ	‘hand of grandmother’
mɔsígɔ wá marova	‘enemy of Marova’
móóndɔ wá ˥áróórɔ	‘person of Alulu’

The clitic likewise has the vowel [a] before noun class prefixes other than cl. 9.

mí˥sííbí já ˥mwáana	‘belts of child’
zimóni zyá kɪbága	‘eyes of cat’
am̀báha ga riŋonyi	‘feathers of a bird’
m̀báha ga riŋonyi	‘feathers of a bird’
mkóno gwá ḿ˥syáárá	‘hand of a cousin’
mkóno gwá ˥mwáana	‘hand of child’
mkóno gwá m̀géni	‘hand of guest’
mkóno gwá˥ kíkóóndo	‘hand of monkey’
mikóno já mɔgeni	‘hands of a guest’
mikóno já ˥móndó mókári	‘hands of a woman’
mkónó já mɔrɪmi	‘hands of farmer’
mitwí ˥já ˥zíngókó	‘heads of chickens’
ɪnyóómba yá˥móóndooyo	‘house of that person’
mɔkégódo chá ˥kéfóóyó	‘in the skin of the rabbit’
mkí˥rá gwá kí˥fóóyó	‘tail of rabbit’

Again, before a class 9 noun, the associative has the form AGR-*ee*~AGR-*ɪɪ*, independent of whether there is a nasal prefix.

ritwí ˥ly-éembéva	‘ear of a mouse’
arófɔ y-íŋama	‘smell of meat’
mkí˥rá gw-í˥ímbwá	‘tail of dog’
ɪgúru w-éebéénzeni	‘top of a basin’
mtwí ˥gw-í˥íbárási̩	‘head of a horse’

The clitic *sha-* ‘like’ is similar but may have two competing underlying forms. Before a cl. 1a noun, the clitic may be *sha-*.

sha éditon	‘like Editon’
shá ˥báábá	‘like father’
shá ˥séénge	‘like aunt’
shá ˥kóózá	‘like uncle’
shá marova	‘like Marova’
shá ˥mídééva	‘like Mideva’

It also appeared as *she-* in a few examples from a single session

shé ˥éditon	‘like Editon’

shé ꜜkóózá ‘like uncle’

Before a noun class outside of cl. 9, the clitic also has the form *sha*.

shá mwíiꜜgízí ‘like a teacher’
shá mʊrɪmi ‘like a farmer’
shá m̀bano ‘like a knife’
shá migoye ‘like ropes’
shá ꜜzímbónyá ‘like ropes’
shá ꜜddíiji ‘like a wall’
shá ꜜkégó ‘like animal enclosure’
shá vosera ‘like porridge’
shá cheeyo ‘like a broom’
shá ꜜmwóógo ‘like cassava’
shá mʊllʊ ‘like a fire’
shá vosera ‘like porridge’
shá mʊʊndʊ ‘like a person’
shá ꜜmávóta ‘like petrol’
shá meeyo ‘like a broom’
shá ꜜmátímʊ ‘like spears’

In the last 3 examples, because the augment would be [a], one expects [sha] no matter what. There are also examples, from one session, of *she*- before a noun class prefix.

shé ꜜkékóóndo ‘like a monkey’
shé ꜜkírááto ‘like a shoe’
shé ꜜríívé ‘like a hawk’
shé ꜜrójó ‘like a saucer’
shé ꜜvíkóómbe ‘like cups’
shé mʊllʊ ‘like a fire’
shé vosera ‘like porridge’

This variation between she and sha suggests ongoing reanalysis of this prefix.[84]

When the clitic attaches to a cl. 9 noun, it has the form *shee~shɪɪ* (depending on vowel harmony) and, notably, has a long vowel.

sh-éꜜémbódóka ‘like jealousy’
sh-éꜜéngókó ‘like a chicken’
sh-éeng’oombe ‘like a cow’
sh-íꜜímbwá ‘like a dog’
sh-íɪmbiti ‘like hyena’
sh-íɪngʊgɪ ‘like baboon’
sh-íínyʊʊndʊ ‘like a hammer’

[84] Such reanalysis may also exist for other proclitics: further work on this topic with speakers exhibit this pattern of proclitic vowels is required.

sh-éégeengere	‘like a bell’
sh-íí$^{!}$báákúuri	‘like a bowl’

The copula appears as nɪ nearly always, and is assumed to be /nɪ/ as it is across speakers.

nɪ aríviza	‘it’s Ariviza’
nɪ éditon	‘it’s Editon’
nɪ guugá	‘it’s grandfather’
nɪ kasáandi	‘it’s Kasandi’
nɪ marova	‘it’s Marova’
nɪ midééva	‘it’s Mideva’
ní ó$^{!}$físá	‘it’s an officer’
nɪ séénge	‘it’s aunt’
nɪ kedéte	‘it’s a finger’
ní kínɔ́	‘it’s a mortar’
nɪ kísáára	‘it’s a stick’
ní kítwí	‘it’s an ear’
nɪ ḿ$^{!}$dógá	‘it’s a car’
ní márwá	‘it’s alcohol’
nɪ meeyo	‘it’s a broom’
nɪ mgeni	‘it’s guest’
nɪ mgoye	‘it’s rope’
nɪ misáára	‘it’s a car’
ní mító	‘it’s mito’
nɪ mʊllʊ	‘it’s a fire’
nɪ mʊroji	‘it’s a witch’
nɪ mʊʊndʊ	‘it’s a person’
nɪ mwáana	‘it’s a child’
nɪ mwóógo	‘it’s a cassava’
nɪ ríinʊ	‘it’s a tooth’
nɪ rʊjʊ	‘it’s a saucer’
nɪ rwíɪga	‘it’s a horn’
ní váana	‘it’s children’
nɪ varoji	‘it’s witches’
nɪ vidéte	‘it’s fingers’
nɪ vosera	‘it’s porridge’
nɪ vʊchíma	‘it’s ugali’
nɪ vwíɪnʊ	‘it’s ink’
ní vwóʊma	‘it’s a fork’
nɪ zing’oombe	‘it’s cows’

Before a cl. 9 noun, the copula has a long vowel, because the cl. 9 augment is present.

n-ɪí$^{!}$ngókó	‘it’s a chicken’
n-eeng’oombe	‘it’s a cow’
n-ɪɪmbwá	‘it’s a dog’

n-ɪɪng'é!réng'ání	'it's a star'
n-ɪɪnáá!mbárú	'it's an ant'
n-ɪɪngʊgɪ	'it's baboon'
n-ɪɪmbiti	'it's hyena'
n-ɪíméésa	'it's a table'
n-ɪɪswéé!tá dáave	'it's not a sweater'
n-ɪɪsóó!góoni	'it's a market'
n-ɪɪbéde	'it's a ring'
n-ɪɪkáháwa	'it's coffee'

The exact nature of the reanalysis observed here cannot be determined at present. One analysis is that the domain of augment deletion has expanded, or that the analysis of the nominal proclitics has changed, so that the proclitic does not deprive the augment of word-initial status. Another possibility is that augmentation itself is blocked (except in cl. 9 where it is part of the class prefix), only applying (optionally) to citation nouns. Available data are insufficient to resolving this question.

12. Other phonological processes

There are a handful of minor phonological processes which have not yet been covered, and which are presented here.

12.1. Cl. 5 lengthening

The cl. 5 prefix /ri/ lengthens before a monosyllabic lexical noun root. This lengthening is very widely attested, but there are enough examples of non-lengthening that the rule may be optional though it is usually applied, with non-application being attested often enough in *ɪrige* and *ɪrichi* that these forms cannot be considered errors.[85] Lengthening takes place regardless of whether the augment deletes.

ɪríí-chí	ríí-chí	'heel'
ɪríí-fá	ríí-fá	'thorn'
ɪrii-ge	rii-ge	'termite'
ɪrii-gʊ	rii-gʊ	'carpenter beetle'
ɪríí-ká	ríí-ká	'charcoal piece'
ɪríí-kó	ríí-kó	'body dirt'
ɪrii-re	rii-re	'cloud'
ɪrii-sa	rii-sa	'caterpillar'
ɪríí-sé	ríí-sé	'grass type'
ɪríí-sú	ríí-sú	'hair'
ɪrii-tʊ	rii-tʊ	'leaf'
ɪríí-vá	ríí-vá	'habit'
ɪrii-ve	rii-ve	'kite'

[85] Non-lengthening has been explicitly rejected – EM **riive* 'hawk' – but the question of the unacceptability of such forms has not generally been pursued.

These roots can be distinguished from iCV-initial roots, such as *ɪríɪnʊ* 'tooth', pl. *amíɪnʊ*, by the fact that in a different class, the vowel before the final syllable is appropriate to that noun class, for example *amatʊ* 'leaves', *amáká* 'charcoal', *amave* 'kites'.

This lengthening is limited to monosyllabic lexical noun roots: the same prefix on monosyllabic adjectives does not lengthen.

íríké	ríké	*ɪrííké	*rííké	'small$_{-5}$'
írídí	rídí	*ɪríídí	*ríídí	'small$_{-5}$'
íríví	ríví	*ɪríívi	*ríívi	'bad$_{-5}$'

The rule also does not apply to the cl. 5 nominalization prefix attached to a monosyllabic verb root.

ɪrizya	'act of going'	
ɪrigwa	'act of falling'	
ɪrínwá	'act of drinking'	*ɪríínwá

12.2. Cl. 5 consonant deletion

The consonant /r/ of the cl. 5 prefix optionally deletes when precede by a locative prefix: glide formation and vowel deletion apply to the resulgint vowel sequence.

harigáánda	hiigáánda	'by a bean'
hárígódo	híígódo	'at a skin'
kʊrígúru	kwíígúˈrú	'on the top'
kʊrijʊʊngʊ	kwiijʊʊngʊ	'on a rat'
kʊrinyonyi	kwiinyonyi	'on a bird'
mʊribóóksi	mwiibóóksi	'in a box'
mʊrídáraam	mwíídáraam	'in a water tank'
mʊrigoke	mwiigoke	'in ash'
mórítímu	mwiitímu	'in a spear'

This rule can apply to initial /ri-r…/ nouns, where ordinarily /rVr/ → [ll]. Thus, /m-rí-ˈréési/ → mʊ-í-ˈréési → [mwíiˈréési].

ḿˈlléési	mwíiˈréési	'in a cloud'
ḿˈllóótó	mwíiˈróótó	'in a dream'

12.3. Come

The verb 'come' has the special property that the preceding vowel is lengthened.

-ga- cl. 6 OP	n-aa**gáá**zɪrɪ	'he will come for it$_{-6}$'
-kʊ- 2s OP	va**kóó**zɪri	'they came for you'
-mʊ- 2p OP	a**móó**zɪri	'he came for 2p'

-va- cl. 2 OP	a**váá**zɪri	'he came for them'
-gɪ- cl. 9 OP	yaa**gíí**zɪra	'they came for it$_{-9}$'
ka- immediate imperative	**kaa**zí	'now come pl'
-ka- near past	yáá**kaa**za	'he has come'
-ri-ka- indefinite future	vari**kaa**ze	'they will come indef'
-kɪ- perstitive	a**kɪɪ**záa	'he is still coming'
-kʊ- past	yaa**kʊʊ**za	'he has come'
kʊ- infinitive	**kʊʊ**za	'to come'
-ra- future	a**raa**za	'he will come'
-ri- indefinite future	va**rii**zá	'they will come indef'
ta- negative	**taa**zá ǃdáave	'don't come'
ta- negative	ʊ**táa**zaa	'the one who won't come'
ta- negative	ʊ**tá**ǃ**á**zí	'the one who hasn't come'
kʊ- 1p SP	**kʊʊ**zí	'we came'
kʊ- 1p SP	na **kʊʊ**zí	'we will come'
kʊ- 1p SP	**kʊʊ**záa	'we are coming'
ʊ- 2s SP	rwá **ʊʊ**zaa^{o}	'when you will come'
ʊ- 2s SP	**ʊʊ**zí	'you came'
ʊ- cl. 1 relative SP	**ʊʊ**zaa	'the one who will come'
va- cl. 2 SP	rwá **vaa**zaa^{o}	'when they will come'
va- cl. 2 SP	**vaa**záa	'they are coming'
va- cl. 2 SP	**vaa**zí	'they came'
gʊ- cl. 3 SP	**gʊʊ**zí	'it$_{-3}$ came'
ji- cl. 4 SP	**jii**zí	'it$_{-4}$ came'
ri- cl. 5 SP	**rii**zí	'it$_{-5}$ came'
ga- cl. 6 SP	**gaa**zí	'it$_{-6}$ came'
kɪ- cl. 7 SP	**kɪɪ**zí	'it$_{-7}$ came'
vi- cl. 8 SP	**vii**zí	'it$_{-8}$ came'
zi- cl. 10 SP	**zii**zí	'it$_{-10}$ came'
rʊ- cl. 11 SP	**rʊʊ**zí	'it$_{-11}$ came'
ka- cl. 12 SP	**kaa**zí	'it$_{-12}$ came'
tʊ- cl. 13 SP	**tʊʊ**zí	'it$_{-13}$ came'
vʊ- cl. 14 SP	**vʊʊ**zí	'it$_{-14}$ came'
gʊ- cl. 20 SP	**gʊʊ**zí	'it$_{-20}$ came'
mʊ- cl. 1 noun prefix	ʊ**mʊʊ**zi	'one who comes'
va- cl. 2 noun prefix	a**vaa**zi	'ones who come'
ri- cl. 5 noun prefix	ɪ**rii**za	act of coming

The cl. 1 SP /a/ receives epenthetic *y*, as it does when it immediately precedes any vowel-initial root or prefix: *a* is lengthened.

yaazí	'he came' (hodiernal perfective)	*aazí
yaazáa	'he is coming'	

nɪ **yaa**zí ‘he will come’

In the hodiernal completive perfective, the SP is assigned a H tone, which is the regular form of this form before a vowel-initial root – cf. the C-initial L verb *oo-raanji* ‘you have called’ vs. the V-initial L verb *wéeyi* ‘you have swept’.

yáazi	‘he has come’
óʊzi	‘you have come’
váazi	‘they have come’

The tense prefix *-a-* is also long before this root, though it would be long because of the subject prefix which guarantees that *-a-* is long. Epenthetic *i* is optionally inserted in the remote past, and obligatorily so in the hesternal perfective. This is no doubt related to the obligatory insertion of *y* after the prefix -a- in the hesternal perfective and optional insertion elsewhere, as discussed in 4.2.3.

wááza	‘you came’	
vááza	‘they came’	
wáá**í**za	‘you came’	
ndááza	‘I came’	
ndáá**í**za	‘I came’	
ʊtaa**í**za	‘the one who didn’t come’	
ʊtááza	‘the one who didn’t come’	
yaa**i**zí	‘he came hest’	*yaazí
ndaa**i**zí	‘I came hest’	*ndaazí
kwaa**i**zí	‘we came hest’	*kwaazí

When the root is preceded by the 1s SP or OP, *i* is inserted (and that vowel is not lengthened).

nz**í**zí	‘I came’
nz**í**záa	‘I am coming’
máá nz**í**zí	‘I will come’
nz**í**zi	‘I have come’[86]
naa nz**í**zí	‘I will come’
rwáá nz**i**za	‘when I will come’
aanz**í**zɪrɪɪ	‘he came for me’
n-aanz**í**zɪrɪ	‘he will come for me’

The vowel *i* is also inserted in the imperative, when there is no prefix before the root.

y**i**za	‘come!’
y**i**zi	‘come$_{-pl}$!’

[86] Appearance of H in this context is due to the allomorphic rule assigning H to the SP if a vowel-ionitial verb immediately follows: this H tone diagnoses the root ‘come’ as phonologically vwoel-initial.

The cl. 9 verbal subject prefix has one challenging complicartion, which is that the prefix /ɪ/ does not just lengthen, and epenthetic *y* also appears.

yɪɪzí	'it$_{-9}$ came'
yɪɪzáa	'it$_{-9}$ is coming'
yɪɪzí	'it$_{-9}$ came'
yíɪzi	'it$_{-9}$ has come'

Compare these forms to completive perfective *ɪgwɪɪ* 'it$_{-9}$ has fallen', with just lengthening. These data suggest a refinement to the rule inserting *y* in connection with the cl. 1 SP /a/. We have observed that when the SP /a/ appears before a vowel, *y* is inserted, and deletes by general phonological rule. The account that we have previously given of /ɪ-énýí/ → [yeenyí] 'it$_{-9}$ wanted' is that /ɪ/ becomes a glide before another vowel. However, a more general form of the rule /a/ → [y] / __V will likewise accomplish this same change. These data from the verb 'come' show the necessity of such a generalization, that is, appearance of *y* in connection with the cl. 9 SP is not always a consequence of Glide Formation. That rule does not apply to a high vowel before 'come', yet /ɪ/ becomes [yɪ]. Noting that *y* is not inserted before the 2s SP /ʊ/ (óʊzi 'you have come'), y-insertion must be framed in terms of the fact that the following vowel is non-rounded.

Overall, the verb 'come' behaves as though it is abstractly a vowel-initial stem, but one whuch does not undergo glide formation and vowel deletion as normal vowel-initial stems do. In those cases where the abstract vowel is syllabically separated from the preceding vowel (e.g. intermediate *Vzi, n-Vzi, waa-yVza*), the vowel is realized as *i*.

12.4. Nandi-lengthening

One noun stem, *-náándí* 'Nandi', has the lexical peculiar property that the vowel of the class prefix preceding it lengthens. This includes any possible class agreement prefix, since this stem can be used adjectivally.

móónaandí	'Nandi'
váánaandí	'Nandis'
góó!náándí	'Nandi-aug'
ɪnyóó!mb-íí!náándí	'Nandi house'
rí!bwóó!ní ríí!náándí	'Nandi potato'
míványó míí!náándí	'Nandi knives'
ámágíná máá!náándí	'Nandi stones'

A similar lengthening is found in the cl. 1a relational terms *baabá, daadá* 'father', *mááma* 'mother', *séénge* 'aunt', *koozá* 'uncle', *guugá* 'grandfather', *góókʊ* 'grandmother', where a noun class prefix before these stems is lengthened.

váá!máámá	'mothers'
váábaaba	'fathers'
váádaada	'fathers'

váágʊʊgá	‘grandfathers’
váágʊʊkʊ	‘grandmothers’
váákoozá	‘uncles’
káá$^{!}$gúúgá	‘grandfather$_{\text{-dim}}$’
káá$^{!}$gʊ́ʊ́kʊ́	‘grandmother$_{\text{-dim}}$’
káágʊʊkʊ	‘grandmother$_{\text{-dim}}$’
kááseenge	‘aunt$_{\text{-dim}}$’
tʊ́ʊ́baaba	‘fathers$_{\text{-dim}}$’
tʊ́ʊ́gʊʊkʊ	‘grandmothers$_{\text{-dim}}$’
tʊ́ʊ́seenge	‘aunts$_{\text{-dim}}$’

12.5. Glide deletion

The post-consonantal glide *w* on occasion deletes before *ʊ* as does *y* before *ɪ*, more often for some speakers than others

ʊ́vʊ́$^{!}$swá		‘body hair’
ʊ́vʊ́$^{!}$s-ʊ́vʊtáámbɪ	ʊ́vʊ́$^{!}$sw-ʊ́vʊtáámbɪ	‘long body hair’
rʊháá$^{!}$ngááywá		‘cave’
rʊháá$^{!}$ngááy-ʊ́rʊtáámbɪ	rʊháá$^{!}$ngááyw-ʊ́rʊtáámbɪ	‘deep cave’
rí$^{!}$gómyá		‘banana’
rí$^{!}$góm-í$^{!}$rítáámbɪ	rí$^{!}$gómy-í$^{!}$rítáámbɪ	‘long banana’

As discussed in X, there is a related deletion of postconsonantal *y* in the perfectives of monosyllabic verbs before [ɪ] (*kʊzíɪ, kʊzyíɪ* ‘we went’)

12.6. na-dissimilation

The vowel of the future proclitic *na* optionally dissimilates to [ɪ] before [a] in a subject prefix containing the vowel *a*. The clitic is [na] when the following subject prefix has a vowel other than [a], or by no vowel.

na kɪbááng’wí	‘it will be arranged’	
na kodéékέ	‘we will cook’	
na keyóóywí	‘it will be scooped’	
na gʊgwɪ^{o}	‘it-3 will fall’	*nɪ gʊgwɪ^{o}
na rigúúndí	‘it will rot’	*nɪ rigúúndí
na mdeeke^{o}	‘2p will cook’	*nɪ mdeeke^{o}
naa mbégé	‘I will shave’	*nɪɪ mbégé
naa nʊ́mí	‘I will bite’	

When the subject prefix vowel is *a*, the clitic vowel optionally (though usually) becomes [ɪ].

nɪ vazyí	‘they will go’	
nɪ vadéékέ	‘they will cook’	na vadéékέ

nɪ vakíní	'they will play'	na vakíní
nɪ vagééndé	'they will walk'	na vagééndé
nɪ gagúúndí	'they will rot'	na gagúúndí
nɪ havíswí	'by-it$_{-16}$ will be hidden'	na havíswí
nɪ kafʊ́ʊ́ngíkí	'it$_{-12}$ will close intr.'	na kafʊ́ʊ́ngíkí

Dissimilation does not apply when /a/ of the SP is deleted before a vowel-initial root.

na viitwí	'they will be killed'
na veeyérwí	'they will be swept for'
na veeŋé	'they will want'
na yɪɪmbí	'he will sing'
na vʊʊngí	'they will join'
na vaambʊ́kí	'they will cross'

This dissimilation affects just the future proclitic *na*, and not the conditional / subordinate proclitic *nɪ* which has no allomorph *na*.

níí ɲɪmba	'if I sing'
nɪ kó$^{!}$vééhá	'if we lie'
nɪ vádeechi	'if they cooked'
nɪ vátʊma	'if they send'
aváána nɪ vádeeká	'if the children cook'

12.7. Ni-reduction

When precede by another word, the subordinate proclitic *nɪ* optionally reduces to [ɪ] when the following verb (subject prefix) begins with a consonant. This means that inter-vocalic *n* in this clitic may delete as long as the clitic has not merged syllabically with the following verb.

ma nɪ kó$^{!}$dééká	'then we cooked'	m-eekó$^{!}$dééká
aváána nɪvágwa	'if the children fall'	aváán-ɪɪvágwa
m-aváán-ɪɪvíirʊká	'then the children ran away'	
mʊráv-íímdeechi	'2p will have cooked'	
m-ííkwé$^{!}$éyá	'then we swept'	

This reduction does not generally apply before vowel-initial subject prefixes (2s, 3s), instead the clitic and SP syllables merge. However, reduction does occur when such a prefix precedes a vowel-initial root (the SP fuses with the root, blocking merger of the clitic and SP vowels).

ma nóóvega	'then you shaved'
m-ííyé$^{!}$éyá	'then he swept'
m-ííwé$^{!}$éyá	'then you swept'

A point of interest regarding interaction between rules is that while the unreduced clitic *nɪ* does not harmonize with a following vowel (see 6.1.4), there is regressive harmony when the clitic reduces to *ɪ* and merges syllabically with the preceding verb or complementizer.

kʊrav-eekódeechi	'if we had cooked'
kwaar-éékódeechi	'we had cooked'
m-éékóvega	'then we shaved'

12.8. iz- nasalization and reduction

The causative suffix /iz/ appears as [iɲ] (or [iny] depending on the following segment) when the previous consonant is a nasal. The causative suffix *-iz-* is seen taking that form in the following examples.

kódéékiza	'to make cook'
konogiza	'to make pick fruit'
kʊɲááɲiza	'to make eat'
kʊrʊʊngɪkiza	'to straighten'
kʊsékiza	'to make laugh'
ma varʊmizí marova	'they will make Marova bite'
ndáḿ!ɲágóriza	'I will make him run'
reka kʊyóóyóómanizɪ	'let's make e.o. run slowly'
tiihiza	'make s.o. fear'
varahóómorizana	'they will make e.o massage'
arikaráángizɪ	'he will make fry'

When the preceding consonant is a nasal, *z* becomes *ɲ*. The rule is optional at least for transparently derived causative forms, but usually applies.

kʊtóóngamiɲa	'to invert'		
kwíízʊʊmiɲa	'to praise'		
kogoongomiɲa	'to roll s.t.'	kogoongoma	'to roll (intr.)'
kohóómiɲa	'to make moo'	kohóóma	'to moo'
kosoomiɲa	'to make read'	kosooma	'to read'
kosoomiza	'to make read'		
kʊraaminya	'to make curse'	kʊraama	'to curse'
kwiinaminya	'to turn upside down (tr.)'	kwiinama	'to stoop down'
kwʊʊmiɲa	'to dry'	kwʊʊma	'to be dry'
kʊhamiɲa	'to make talk'		
kʊhamiza	'to make talk'		

In case the preceding nasal is *n, ɲ*, the causative almost always[87] involves changing the final nasal to [ny].

[87] A few tokens with […iɲ…] have been accepted, but generally they are rejected.

arákóoɲa	‘he will help’
arákóonya	‘he will make help’
kogeɲa	‘to wonder’
kogenya	‘to make wonder’
kʊfóɲa	‘to smell’
kʊfónya	‘to make smell’
komooɲa	‘to gossip’
komoonya	‘to make gossip’
ma vasonizí marova	‘they will make Marova point the direction’
ma vasonyí marova	‘they will make Marova point the direction’
ma vavinizí marova	‘they will make Marova dance’
ma vavinyí marova	‘they will make Marova dance’
kogoniza	‘to make sleep’
kogonya	‘to make sleep’
mavoonizí marova	‘they will make Marova sin’
mavoonyí marova	‘they will make Marova sin’
ma varwaanizí marova	‘they will make Marova fight’
ma varwaanyí marova	‘they will make Marova fight’
kohóna	‘to get better’
kohónya	‘to heal’

Finally, in case the preceding (root-initial) syllable contains *ɲ* or *n*, that consonant harmonizes to [ny].

kʊnóʊna	‘to suck the breast’
kʊnyóʊnya	‘to give the breast’
kʊɲáaɲa	‘to eat’
kónyáanya	‘to make eat’

12.9. ɲ → ny

There is for a number of speakers a surface contrast between *ny* and *ɲ*, but there are also rules that derive *ny* from /ɲ/, which are the focus of this section. There is only a small amount of evidence for an underlying distinction between /ny/ and /ɲ/.

EK, BA and FI do not appear to employ [ɲ] at all, and in my data always realizes both nasals as [ny]. Save for 4 tokens, SY also does not employ [ɲ], so data from that speaker will not be used in analyzing the distribution of [ny] and [ɲ]. Data from RO are also not included because there are too few tokens and very few repetitions of lexemes. Speakers are otherwise generally consistent in the pattern of where [ɲ] versus [ny] appear in lexical items, though there are numerous sporadic instances where [ny] is employed when [ɲ] is expected, for example tokens of *kʊnyágʊra* ‘to run’, *kukóonya* ‘to help’, *kweenya* ‘to want’, *ɪnyama* ‘meat’ from RL and ML in addition to *kʊɲágʊra*, *kukóoɲa*, *kweeɲa*, *ɪɲama*. Setting aside speaker variation for the moment, the distinction between [ny] and [ɲ] is generally predictable, with [ny] appearing before high vocoids and [ɲ] appearing before non-high vocoids.

kɔɲáaɲa	‘to eat’
kɔɲaga	‘to snatch’
kɔɲágɔra	‘to run’
kɔɲára	‘to be able’
koɲéga	‘to insult’
koɲoora	‘to find’
koɲóra	‘to strip leaves from the central vein’
kɔnyɪɪllɔka	‘to stretch’
kɔnyɪɪra	‘to stretch tr.’
kɔnyóɔnya	‘to suckle tr.’
kɔnywééka	‘to beat with a thin stick’
íˈɲáámbó	‘chameleon’
ɪɲááɲa	‘tomato’
ɪɲáánza	‘lake’
ɪɲama	‘meat’
ɲasáye	‘God’
ínyííngɔ	‘cooking pot’
ɪnyima	‘behind’
ɪnyɔ	‘anus’
ɪnyóɔ́mba	‘house’
ɪnyuundo	‘hammer’
ɪrinyuuru	‘guinea pig’

There are two well-attested nouns containing *ny* before *ɔ*, *ɔmɔ́ɔnyɔ* ‘potash’ and *ɪnyuɔ́ɔndɔ* ‘hammer’, which uniformly have *ny* and not *ɲ* before *ɔ*. There are four other well-attested nouns where the pattern is variable, depending on the speaker.

	ritíˈgínyó ‘heel’		kɪjáˈmáɲó ‘squirrel’		ɪnyóɔmba ‘house’		kíˈmííɲó ‘chick’	
	ɲ	ny	ɲ	ny	ɲ	ny	ɲ	ny
BK	4	23	10	4	1	50	13	7
EM	13	1	20	0	9	137	12	0
FA	5	0	2	0	0	11	3	0
ML	0	9	2	4	0	54	1	6
NM	1	1	0	0	0	36	0	0
PM	0	15	0	1	0	8	0	4
RL	2	3	1	0	0	20	2	0

It is obvious that there are diverging individual tendencies for some lexical items, at least before [ɔ]. There is less divergence in well-attested lexemes with *ɲ* before *a*.

	ɪɲama 'meat'		íˈɲáámbǒ 'chameleon'		ɪɲáánza 'lake'		ɪɲááɲa 'tomato'	
	ɲ	ny	ɲ	ny	ɲ	ny	ɲ	ny
BK	14	0	15	0	7	0	14	0
EM	156	0	10	0	27	0	32	0
FA	14	0	6	0	4	0	3	0
ML	65	2	1	0	3	0	2	0
NM	2	1	2	1	4	0	0	0
PM	6	11	0	4	0	2	0	0
RL	10	6	2	0	4	3	4	0

The form of the root 'bird' also varies frequently between [-nyonyi] and [-ɲonyi], the former being explicable in terms of the *ɲ*-harmony process discussed in 12.8. The verbs [kɒnya] 'to defecate' and [kɒnyaara] 'to get thin', with [ny] before a non-high vowel.

One systematic source of [ny] before non-high vowels is the reduced form of the causative /iz/. As noted in 12.8, /iz/ may be (and usually is) realised as [iɲ] when the preceding consonant is a nasal (*kosoomiɲa* 'to make read'), and if the nasal is /n, ɲ/, we find contrastive *ny* (*kɒrwáana* 'to fight', *kɒrwáanya* 'to make fight', *komooɲa* 'to gossip', *komoonya* 'to make gossip').

There is also a "distributive" verbal suffix *-a(a)ny-a* which has *ny* rather than *ɲ*.

kɒgávɒranya	'to divide up'
kɒvɒrɒganya	'to stir'
kǿkáraanya	'to slice up'
kɒvǿnaanya	'to snap'
kɒfǿrɒvanya	'to eat gluttonously'
kɒjǿǿkanya	'to mix food'
kɒɒngaanya	'to join'

In line with the lexical distributional generalization that [ɲ] does not appear before [i], when suffixal /i/ follows /ɲ/, /ɲ/ always becomes [ny].

kokóoɲa	'to help'	akoonyi	'he helped'
ɒmkoonyi	'one who helps'		
vakooɲé	'help them!'	vakoonyí	'pl. help them!'
kooɲá	'help!'	koonyí	'help-pl!'
komooɲa	'to gossip'	móónyi	'I gossiped'
mooɲa	'gossip!'	moonyi	'pl. gossip!'
kɒdɪgɪɲa	'to tickle'		
ɒmdɪgɪnyi	'one who tickles'		
kweeɲa	'to want'	kweenyí	'we wanted'

The passive *-w-* causes *ɲ* to become [ɲ] when it immediately follows /ɲ/.

yareenywa	'it will be wanted'
ɪm-ɪɲáánywí	'it will be eaten'

ahonywee	‘he was healed’
gahénywíɪ	‘they were exposed’
kɒdiginywa	‘to be tickled ‘
kóónywá	‘be helped!’
vikɪtúúngámínywá	‘they are still being inverted’

This neutralizes the difference between *ny* and *ɲ*

kɒsóóndɒranya	‘to spill’	maa kɪsóóndɒránywɪ	‘it will be spilled’
vááhónya	‘they cured	vááhónywaa	‘they were being cured’

Within roots, [ɲw] is never encountered. There are examples of [nyw] as in *ɪkɪnywéére* ‘mongoose’, *kɒnywéeka* ‘to beat’. The verb ‘drink’, expected based on related languages to be /-nyw-/ is in fact attested as [kɒnwá], although ML realizes the verb as [kɒnywá] possibly under the influence of Swahili.

When *ɲ* would be predicted as a possible output from GL (1.3.2), *ɲ* is always a possible output and *ny* almost never occurs.

ɪnyóómb-ɪɲó!mbáchí	‘a builder house’
ɪnyóómb-ɪɲó!mbáké	‘built house’
naa ɲómbákí	‘I will build’
ɲɒmbákáa	‘I am building’
kóóɲɒmbakɪra	‘to build for me’
geeɲékáá !ɲámbókí	‘I should ford’
ɪmbá!rábá!r-íɲá!mbókí	‘crossed road’
ɲáámbɒchi	‘I forded’
réká ɲámbókí	‘let me ford’
kɒɒɲɪmbira	‘to sing for me’
ɲɪmbáa	‘I am singing’
emó!ní íɲómɒ	‘dry eye’
arɪkááɲɒmizɪ	‘he will dry me’
ɲɒmáa	‘I am being dry’

In some tokens before [i] (from EM), *ɲ* arising from GL optionally becomes *ny*.

ɲimánáa	nyimánáa	‘I am being selfish’
ɲinɒri	nyinɒri	‘I served food’
ɲinɪchi	nyinɪchi	‘I fermented’

Such examples with [ny] are never preferred over [ny], and speaker judgments as to acceptability are not enthusiastic, nevertheless they will be treated as a dispreferred option. The analysis of such forms is easily comprehended in terms of the general rule where *ɲ→ny/_i*.

One other context where *ny* does more clearly arise as the output of GL before *i* is in the adjective *-ingɪ* ‘many’. The stem itself varies between *nyíingɪ* and *-ingɪ*,

madó!fáárí mííngı	‘many bricks’
mavuruuri manyííngı	‘much leaf trash’
vágíkɔyó !vííngı	‘many Kikuyus’
víí!sɔ́kɔ́ró !ványííngı	‘many grandchildren’

The cl. 10 form of the adjective varies accordingly between *zinyííngı* (/nyííngı/) and *zínyíngí* (/ingı/), so the same speaker may employ both *ízínd-í!zínyííngı* and *ızínd-í!zínyíngí* ‘many toads’. In tokens using the stem *-ingı*, the cl. 9-10 prefix consonant is always *ny*, not *ɲ*.

ızí!mbún-úízínyíngí	‘many tethers’
zíngókó !zínyíngí	‘many chickens’
ına!kídárí ınyíngí	‘many bedrooms’

One of the words for ‘mother’, not extensively attested across speakers, is [ńnyá], and it is always attested with *ny* rather than *ɲ*. This suggests the possibility that when geminate, *ɲ* becomes [ny]. If that is so, not all sources of geminate *ɲɲ* undergo that rule. The following examples illustrate [ɲɲ] arising from reduction of /rV/.

rɒɲáasi	ɒɲɲáasi	‘medicine’
ırıɲɔ!róró	ıɲɲɔ!róró	‘veg sp.’
ırıɲonyi	ıɲɲonyi	‘bird’
rí!bwóón-íɲɲóre		‘Nyore potato’

The combination [ɲi] can arise at the phrasal level by combining /ɲV#i/: if the final vowel deletes, the sequence [ɲi] results, and this sequence does not becomes **nyi*.

yéé!ɲá ísí	‘he wanted father’
yéé!ɲ-íísí	‘he wanted father’
yááɲáá!ɲ-íísí	‘he chewed father’
yaakóó!ɲ-íísí	‘he helped father’

In fact, *nyi* is possible, but it derives from the reduced causatives *kweenya* ‘to cause to want’, *kɒnyáanya* ‘to cause to eat’, *kokóonya* ‘to cause to help’.

yéé!ny-íísí	‘he made father want’
yáányáá!ny-íísí	‘he made father chew’
yaakóó!ny-íísí	‘he made father help ‘