VOWEL REDUCTION TO /I/ IN FUNCTIONAL MORPHEMES IN NORTHERN SUB-SAHARAN AFRICA

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VOWEL REDUCTION TYPOLOGY

Kuznetsova & Anderson (2020:7): Two general paths of vowel reduction are often distinguished:

- centripetal: centralisation towards schwa
- centrifugal: dispersion towards the three corner vowel qualities *a, i, u*, which are the most peripheral in F1/F2 space

VOWEL REDUCTION TYPOLOGY

Kapatsinki et al. (2020):

- *centrifugal: The few reported cases of apparent centrifugal vowel reduction do not result from reductive sound change
- As a result of reduction vowels:
  - shorten
  - devoice
  - unround
  - and centralize
  - (with some raising)

Kapatsinki et al. (2020) on quality changes in reduction:

- **centralization**
- raising
  - despite being common in Romance in Slavic (Crosswhite 2001; Barnes 2006)
- (lowering can only affect high vowels lowering to mid, but never to low)

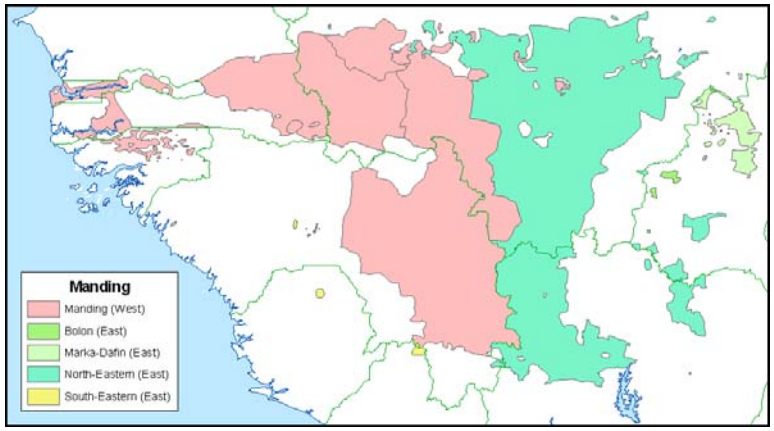
REDUCTION TOWARDS /I/ IN NSSA

In many languages of Northern Sub-Saharan Africa (NSSA) vowel qualities of functional morphemes tend to be neutralized through raising, fronting and unrounding towards /i/

- typologically uncommon
- targets functional morphemes
- has a non-trivial spatial distribution within NSSA

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Reduction towards /i/ is common in TAMP markers in Greater Manding languages (cf. Idiatov 2020:65)



Mande > Western Mande > Central Mande > Greater Manding (> Manding, Jogo-Jeli, Mokole)

(1) $_{TAMP_0}$ S **TAMP$_1$** (O) V-**TAMP$_2$** X $_{TAMP_3}$

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Idiatov (2020) focuses on positive PFV and historically related markers, but similar reduction is also observed for other TAM values.

Reconstruction	Reflexes with raising towards /i/
*kà	Maninka of Niokolo ^{H}*ka* ~ ^{H}*ke* (INF), Mauka *kɛ̀* (INF, COND^{+}), Bamana of Kolona *kɨ̀* (INF)
*yá	Ivorian Manding lects of Tenen *yé* ~ *yɛ́* (PRF^{+}), Mau *yɛ́* (PRF^{+}); Standard Bamana *yé* (PFV$_{T}^{+}$)
*tà	Northern Lele *rɛ́* ~ *ré* (*dɛ́* ~ *dé* after a nasal) (PFV$_{T}^{+}$), Maninka of Kita *ti* ~ *di* (PFV$_{T}^{+}$), Kakabe *ti* (PFV$_{T}^{+}$)
*nà(-RES COP)	Marka *ní* (PFV$_{T}^{+}$), Kakabe *ni* (SBJV^{+})
*bá(-RES COP)	Ivorian Manding lects of Tenen *wɛ́(ɛ́)* (PRF^{+}), Finan *wéé* (PRF^{+}); Bolon *wé* (PFV$_{T}^{+}$)
*-tà	Jogo *-rɛ* (PFV^{+}), Kakabe *bá.tí*(^{L}) (PRF^{+})
*mààŋ	Bamana of Kolona *mɔ́* (PFV^{-})

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Some phonological environments are more propitious for this reduction than others:
  - place of articulation of C_: palatal *y* > coronal *t* > velar *k* > bilabial *b*
  - nasalization of C_: oral > nasal
  - position wrt the utterance edge: obligatory internal ($TAMP_1$) > often final ($TAMP_2$, $TAMP_3$)

REDUCTION TOWARDS /I/ IN GREATER MANDING

- In paticular, reflexes with reduction are:
  - very rare for **mààŋ*
    - unlike raising, unrounding in the same environment is less rare, as in in the COP **mù > mí*
  - very rare for **bá*
    - but may appear to be more frequent because of the conflation with the reflexes of **bá*-RES (COP), such as **bá-tà > bati > …*
  - rare for **nà*

REDUCTION TOWARDS /I/ IN GREATER MANDING

- In paticular, reflexes with reduction are:
  - rare for $TAMP_2$ **-tà*
    - unless as part of $TAMP_1$ **bá-tà > bati*
  - less rare for the reflexes of $TAMP_1$ **kà* and **tà*
  - very common for **yá*
    - remarkably, raising after the palatal approximant *y* was never found to go all the way up to *i*
    - the same seems to hold for the environment after the labial-velar approximant *w*

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Particularly striking evidence is found in Kakabe (cf. Vydrina 2017)
  - With the exception of the PFV_T^+ *ka*, all light monosyllabic TAMP_1 markers in Kakabe have the shape *Ci*

    ☞ PROG^+ and COP^+ *bi*, IPFV^+ *si*, SBJV^+ *ni*, and the allomorph *ti* of PRF^+
  - Although the regular reflex of the old RES marker **-tà* in Kakabe is the PFV_I^+ TAMP_2 marker *-ta*, its vowel is reduced to *i* within two synchronically unanalyzable TAMP_1 markers, viz. PRF^+ *bátí*$^{(L)}$ < **bá-tà* and COND^+ *mání*$^{(L)}$ < **máŋ-tà*.

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Jogo and Ligbi (Kastenholz 1997; Persson & Persson 1980):
  - *tá(gá)* 'go', *yá* 'come'
  - When used as a kind of auxiliaries with motion semantics, they have variants with front vocalism: *té* (Ligbi, Jogo), *tí* (Jogo) and *yɛ́* (Jogo), *yé* (Ligbi) respectively (irrespective of the TAM construction)

REDUCTION TOWARDS /I/ IN GREATER MANDING

- Neutralization through raising, fronting and unrounding towards /i/ in functional morphemes in Greater Manding can be analyzed as a type of vowel reduction process.
- The relevant functional morphemes can be safely construed as prosodically weak thanks to the fact that typically they are affected by a whole range of concomitant lenition and neutralization processes
  - The consonants of the TAMP markers tend to undergo lenition mirroring similar lenition processes affecting word-internal consonants, viz. *t* > *d* > *r* > ∅, *k* > *g*, *x*, *ɣ* > ∅, *b* > *w* > ∅ and *y* > ∅.
  - The long vowels are shortened.
  - The tonal distinctions of TAMP markers tend to become neutralized, with the markers becoming toneless or H, as is common for clitics and suffixes.

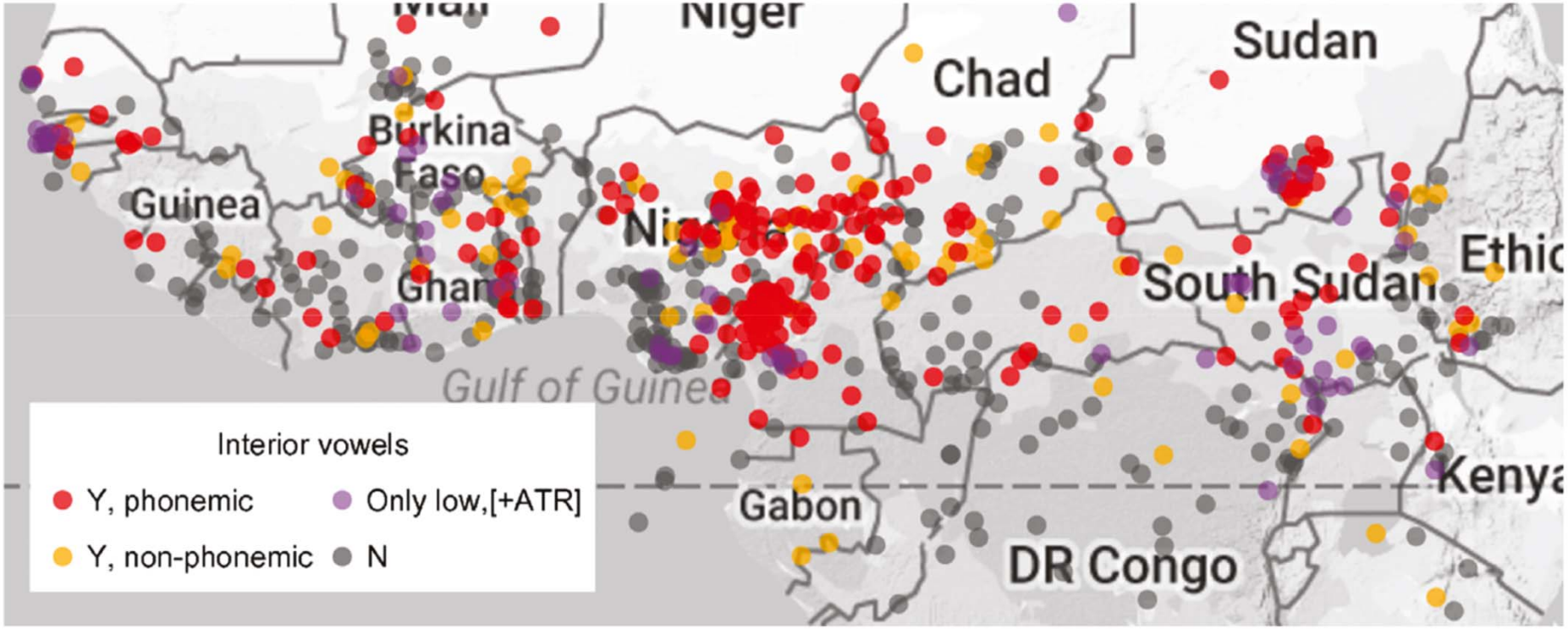
VOWEL REDUCTION IN LEXICAL MORPHEMES

- Both in Mande and in NSSA in general, vowel reduction in prosodically weak positions within lexical morphemes proceeds through the typologically more common processes of shortening, devoicing, unrounding and centralization.
  - Reduction is often driven by the phenomenon of stem-initial prominence (cf. Lionnet & Hyman 2018:652–55; Idiatov & Van de Velde 2021:93-94)
  - Negative evidence: no noticeable skewing towards front articulations of vowels or palatalization effects on consonants in lexicons of languages affected by phonological erosion.

REDUCTION TOWARDS /I/: SPATIAL DISTRIBUTION

- Reduction towards /i/ in functional morphemes has a non-trivial spatial distribution within NSSA with its distribution crossing genealogical boundaries.
  - The details of this spatial distribution still very much need to be worked out.
  - On the basis of the sporadic examples so far:
    - More likely to be found as an active process in languages without interior vowel phonemes, such as /ɨ ɯ ɜ ə ʌ … /.
    - However, absence of interior vowels is not a necessary condition as confirmed by non-Northwestern Bantu languages spoken to the south of NSSA.
    - Traces of such a formerly active process have been found in some languages where currently it is centralization that appears to be the regular reduction process in functional morphemes.

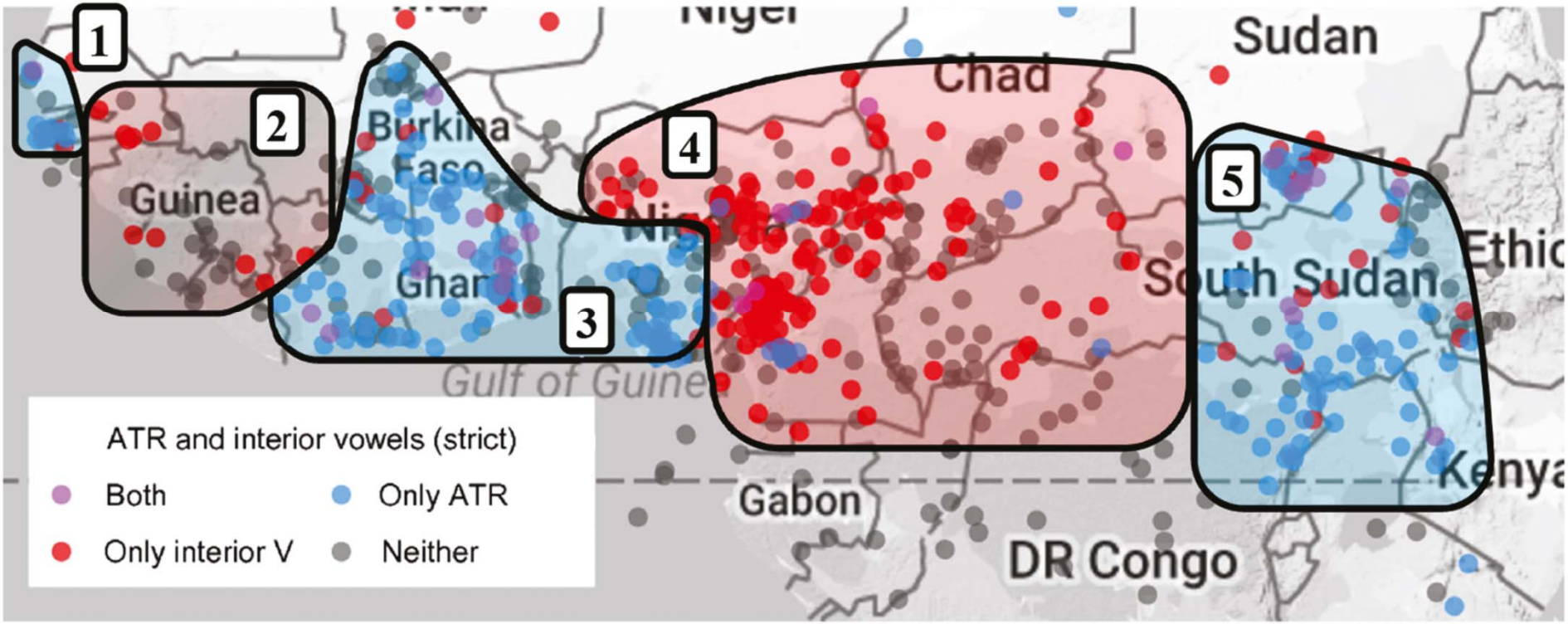
REDUCTION TOWARDS /I/: SPATIAL DISTRIBUTION



Geographic distribution of interior vowels in NSSA (Rolle et al. 2020:142)

REDUCTION TOWARDS /I/: SPATIAL DISTRIBUTION

- Rolle et al. (2020) an areal study of vowel systems in NSSA



[1] Atlantic ATR zone, [2] Guinean ATR-deficient zone, [3] West African ATR zone, [4] Central African ATR-deficient zone (includes Central African interior vowel zone), [5] East African ATR zone.

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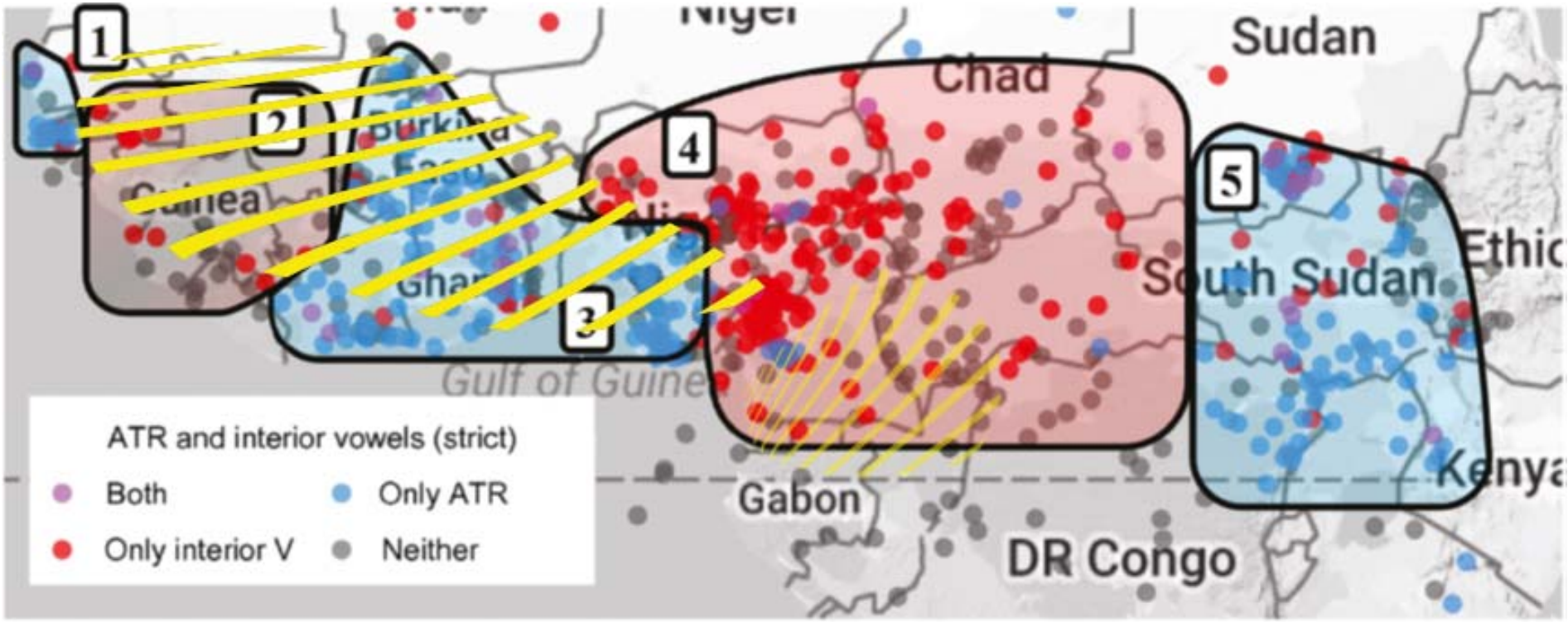

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REDUCTION TOWARDS /I/: BEYOND MANDE

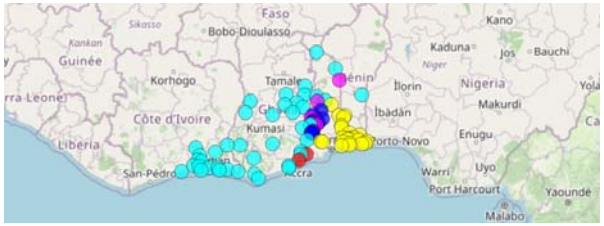
- Ci-/Cu- partial reduplication as the frequent example of reduction towards /i/ in functional morphemes in NSSA.

"In the recent literature, there is a general consensus on the analysis that reduplication consists in a process of affixation (see in particular Lieber 1992 and Marantz 1982). A reduplication morpheme can be a prefix or a suffix." (Brousseau & Lefebvre 2002:198)

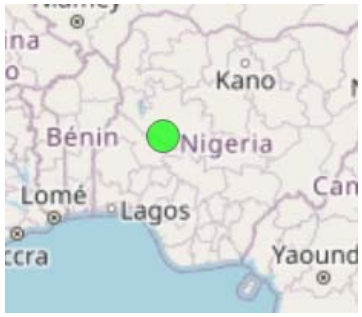
- In NSSA, Ci-/Cu- partial reduplication always involves a prefix, viz. RED-STEM.
- Cu- partial reduplication is found in some languages in rounding contexts (cf. Lionnet & Hyman 2018:650).

REDUCTION TOWARDS /I/: BEYOND MANDE

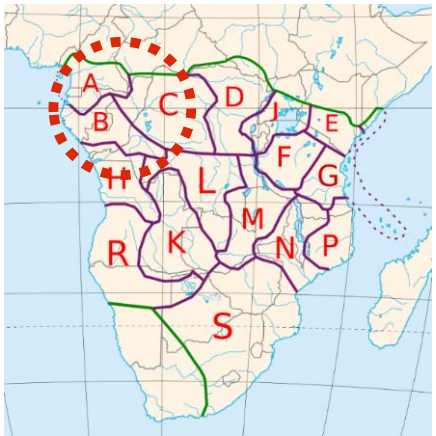
- Ci-/Cu- partial reduplication as the frequent example of reduction towards /i/ in functional morphemes in NSSA.
  - Common in Kwa languages, such as Gbe languages and Akan.



  - Attested in Benue-Congo languages, such as Nupe

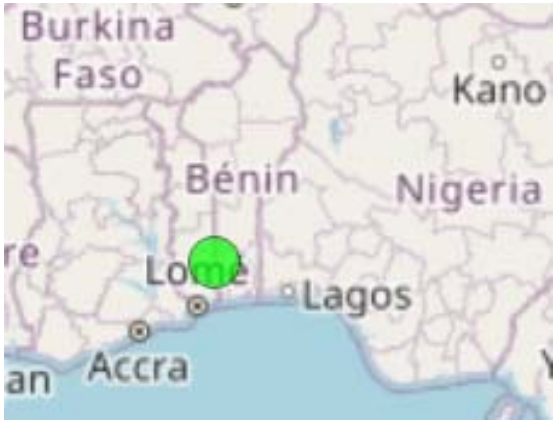


  - Reported to occur in some Northwestern Bantu languages (Hyman 2009:150)



REDUCTION TOWARDS /I/: BEYOND MANDE

- Ci-/Cu- partial reduplication in Fongbe (Kwa; Brousseau & Lefebvre 2002:195-215).
  - Function: NMLZ of verbs.



(39)	a.	*zì-zɛ̀*	<	*zɛ̀*	'to split'
	b.	*gbì-gbá*	<	*gbá*	'to build'
	c.	*xì-xɔ́*	<	*xɔ́*	'to buy'
	d.	*kpí-kpábá*	<	*kpábá*	'to flatten'
	e.	*ɖì-ɖà*	<	*ɖà*	'to prepare'
	f.	*wì-wlán*	<	*wlán*	'to write'

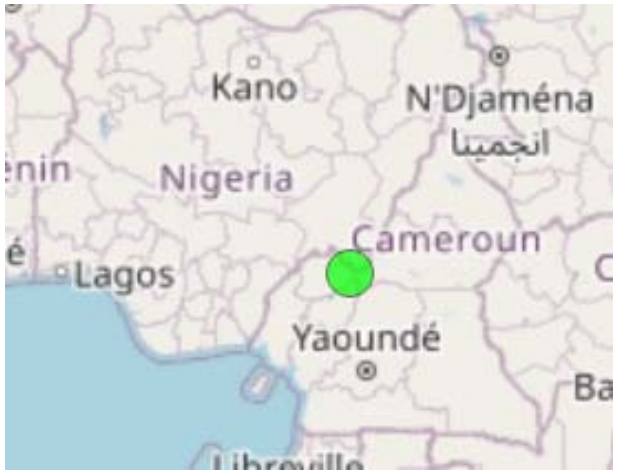
REDUCTION TOWARDS /I/: BEYOND MANDE

- Kugama ("Adamawa" pool > Mumuye-Yandang; Litvinova 2023).

  - Several verbal functional morphemes have the shape *Ci*
    - PFV clitic *=tí/=rí*
    - CAUS clitic *=si*
    - (preverbal) PROG marker *tì ~ tè* < *tɛ̄* 'place' (viz. 'X is at the place of doing Y')
  - With only few exceptions, prosodically weak σ in stems (non-stem-initial σ) have a closed front vowel, viz. *Ci ~ Ce*, while in disyllabic verb stems the final syllable is always *Ci*.

RESIDUAL REDUCTION TOWARDS /I/

- Lamnso' (Bantoid > Grassfields) (cf. McGarrity & Botne 2001, Anderson 2015)



  - CV noun class markers (prefix and enclitics) are all *Ci*
    - E.g., including CL 6 *mi-*, compare Proto-Bantu **ma-*.
  - In lexical morphemes, vowels in prosodically weak positions appear to have been deleted, as the typical root shape is (N)C_1(w)V(V)(C_2) (verbs are just C(w)VC)
  - Lamnso' also has /ə/, also found in prosodically strong positions
  - There are also functional morphemes with /ə/ rather than /i/
  - No vowel reduction in partial reduplication

A KEY TO SOLVING (SOME) RECONSTRUCTION PROBLEMS

- Recognizing the existence of an areal tendency to reduction towards /i/ in functional morphemes in large parts of NSSA allows us to offer a principled solution for two types of reconstruction-related issues:
  - When multiple, but only slightly formally divergent cognate sets and reconstructions have been proposed for a given functional morpheme
    - The nominal prefix of class 13: De Wolf (1985) for Proto-Benue-Congo ***ti-*** vs. Meeussen (1967) ****tu-*** for Proto-Bantu, one of its major branches
    - Creissels (2020) reconstructs several Mande PL markers differing in their *u/i* vocalism, such as Manding *-lú* vs. *-lí* and Soninke *-nu* (Eastern) vs. *-ni* (Western), as sourced from the Proto-Mande associative plural marker **ni.*

A KEY TO SOLVING (SOME) RECONSTRUCTION PROBLEMS

- Recognizing the existence of an areal tendency to reduction towards /i/ in functional morphemes in large parts of NSSA allows us to offer a principled solution for two types of reconstruction-related issues:
  - It can guide us in the search for the most plausible lexical source of a given functional morpheme
    - Creissels (2020) relates the future ("potential") auxiliary *sí* ~ *sé* in Mandinka to the Mandinka verb *sé* 'reach; overcome'
    - But the source that would be typologically and comparatively more plausible is the verb **sá* 'come', absent as a lexical verb in Mandinka itself