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'VOCALOGENESIS' IN CENTRAL CHADIC LANGUAGES

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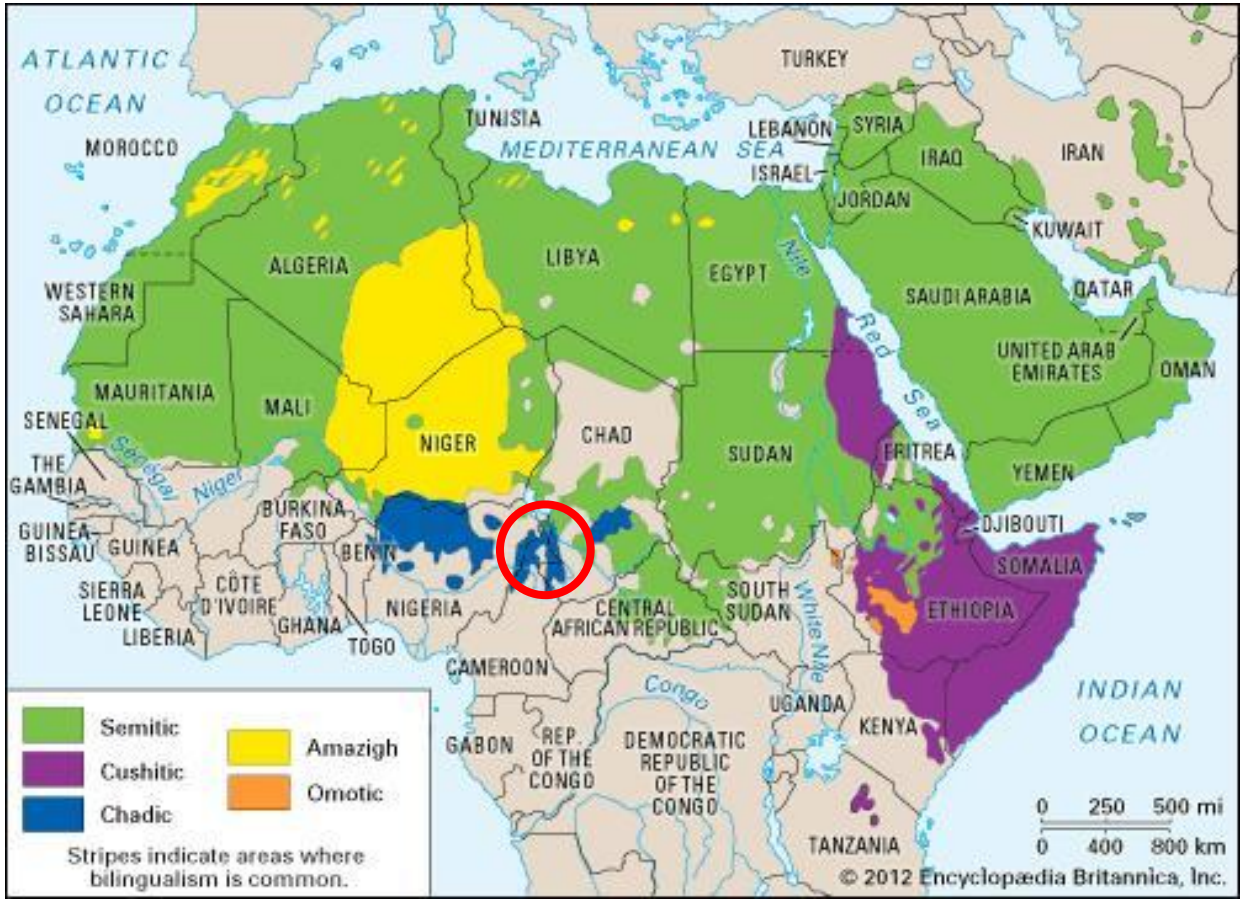
1. Introduction: Chadic within Afroasiatic

CHADIC: Well-established language family within **Afroasiatic** with more than half of all known Afro-asiatic languages, besides **Ancient Egyptian, Berber (Amazigh), Cushitic, Semitic,** possibly **Omotic.**

Family of 200 languages in vicinity of Lake Chad in West/Central Africa.
Mostly minority languages with less than 100.000 or even 50.000 speakers.

About 80 languages belong to the '**Central** Branch' of Chadic.



1. Introduction: Disturbingly divergent vowel systems

1. **Synchronic vowel inventories across Chadic:** between one phonemic vowel – or even no phonemic vowel at all – and 17 vowels.
2. **How many & which vowels** in which **positions** (initial, medial, final)
3. **Short** &**long** vowels:
   - Symmetrical & asymmetrical systems
   - no long vowels at all
   - only /a/ appears both short and long
4. **Frequent mid vowels e** and **o**: clearly of secondary status.
5. ***Schwa*: ə ([i̵]):**
   - treated as a full vowel (some authors/some languages)
   - fully predictable epenthetic vowel (other authors/other languages).
6. **Diachronic:** possibly **no vowel phonemes**

   Newman (1977:12): "In many languages ... vowels are not fully contrastive, the distinction between *i* and *u*, *ə* and *i*, and/or *ə* and *u* being neutralized in specific phonological environments"

(1) No vowel & short vowel systems; short vowel sub-systems

No vowel system	**Ø**	discussed for **Central Chadic** in Wolff (1981, 1983a, 2004, 2006, 2011a, 2011b), and for Wandala in Wolff/Naumann (2004)
One vowel system	**a**	some **Central Chadic** languages, e.g. Moloko (Bow 1999); deep level analysis of Wandala (Wolff/Nauman 2004), Lamang (Wolff in press)
Two vowel system	**ə** **a**	many **Central Chadic** languages, e.g. Wandala (Mirt 1969), Hdi (Langermann 1994), Gude (Hoskison 1974, 1975)
Three vowel systems	**i** **u** **a**	**West Chadic** Ngizim (Schuh 1981); monophthongs in **Central Chadic** Lamang (Wolff 1983); remote possibility for Proto-Chadic (Newman 1977)
	***i** ***ɨ** ***a**	reconstructed for **Proto-Central Chadic** (Gravina 2014)
Four vowel systems	***i** ***ə** ***u** ***a**	suggested for **Proto-Chadic** (Newman 1977)
	i **ə** **u**(?) **a**	e.g. **Central Chadic** Sukur (Gravina 2014)
	i **u** ***ay** **a**	e.g. **Central Chadic** Lamang (Wolff 1983)

(2) Short vowel systems; short vowel sub-systems

Five vowel system	i u e o a	common across Chadic; e.g. Ron Daffo (Seibert 1998); short vowels in **West Chadic** Hausa (Newman 2000), Pero (Frajzyngier 1989), Kwami (Leger 1994), **East Chadic** Bidiya (Alio 1986) and Mokilko (Jungraithmayr 1990)
Six vowel system	i ə u e a o	e.g. **West Chadic** Kanakuru (Newman 1974)
Seven vowel systems	i ɯ u e ə o a	e.g. **West Chadic** Goemai (Hellwig 2003)
	i u e o ɛ ɔ a	e.g. short vowels in **East Chadic** Dangaleat (Ebobissé 1979)
Eight vowel system	i u e o ə ɛ ɔ a	e.g. short oral vowels in **East Chadic** Tumak (Caprile 1975)

(3) Symmetrical short + long vowel systems

Ten vowel system	**i u** **e o** **a**	**ii uu** **ee oo** **aa**	e.g. **West Chadic** Hausa (Newman 2000), Pero (Frajzyngier 1989), Kwami (Leger 1994), **East Chadic** Bidiya (Alio 1986), Mokilko (Jungraithmayr 1990)
Twelve vowel system	**i u** **e ə o** **a**	**ii uu** **ee əə oo** **aa**	e.g. **West Chadic** Zodî (Caron 2002)
Fourteen vowel system	**i u** **e o** **ɛ ɔ** **a**	**ii uu** **ee oo** **ɛɛ ɔɔ** **aa**	e.g. **East Chadic** Dangaleat (Ebobissé 1979)

(4) Asymmetrical short + long vowel systems

Three vowel system	ə a	aa	**West Chadic** Miya (Schuh 1998)
Eight vowel system	i u a	ii uu ee oo aa	e.g. **West Chadic** Ngizim (Schuh 1981)
Eleven vowel system	i ə u e o a	ii uu ee oo aa	e.g. **West Chadic** Guruntum (Haruna 2003)
Fifteen+2 [+nas] vowel system	i u ũ e o õ ə ɛ ɔ a	ii uu ee oo əə ɔɔ aa	e.g. **East Chadic** Tumak (Caprile 1975)

2. Vocalogenesis theory: Central Chadic (80 lgs)

3 Claims:

1. *Proto-Chadic* had a **minimal number** of **vowel contrasts**, **if any at all!**

2. If PC had any **vowel phonemes**, the choice is between one vowel (****a***), two vowels (****a***, ****ə***), three vowels (****a***, ****i***, ****u***), or maximally four vowels (****a***, ****ə***, ****i***, ****u***).

3. Central Chadic languages allow to identify various paths of **vocalogenesis**:

(a) diachronic: LANGUAGE CHANGE COMPLETED

- phonemicization (allophones in complementary distribution) of "**vocoids**"

(b) diachronic & synchronic: LANGUAGE CHANGE ONGOING

- lexical vowel harmonization and *umlaut* petrification,
- prosodicization of [+high] features of segmental phonological units,
- monophthongization of diphthongs,

(c) borrowed sounds through loanwords: NON-SYSTEMATIC.

2. Vocalogenesis theory: Effect of '**Prosodies**'

"**Prosodies**" (in particular **palatalization** and **labialization** prosodies):

Since mid 1960s: Hoffmann 1963, Schuh 1971, Mohrlang 1971, Hoskison 1974, Lienhard/Giger 1975, Ma Newman 1977, Frick 1977, Wolff 1983, Maddieson 1985, Barreteau 1987, Schuh 2002, Wolff 2006, Gravina 2014

According to Gravina (2014: 37), there are three broad phonological systems operating across Central Chadic (18 genetic 'language groups'):

- the ***Vowel Prosody* system** (in 8 groups),
- the ***Consonant Prosody* system** (in 3 groups),
- the ***Mixed Prosody* system** combing features of the Vowel and the Consonant Prosody systems (in 3 groups).
- the ***Kotoko* system** with no prosodies (in the 4 Kotoko groups),
- Gravina (2014: 389): The *Mixed Prosody System* may well have retained a more archaic stage of development, i.e. before the areal distribution of the *Vowel Prosody* system and the *Consonant Prosody* system as such.

Areal distribution of *PROSODIC TYPES*:

-Vowel Prosody

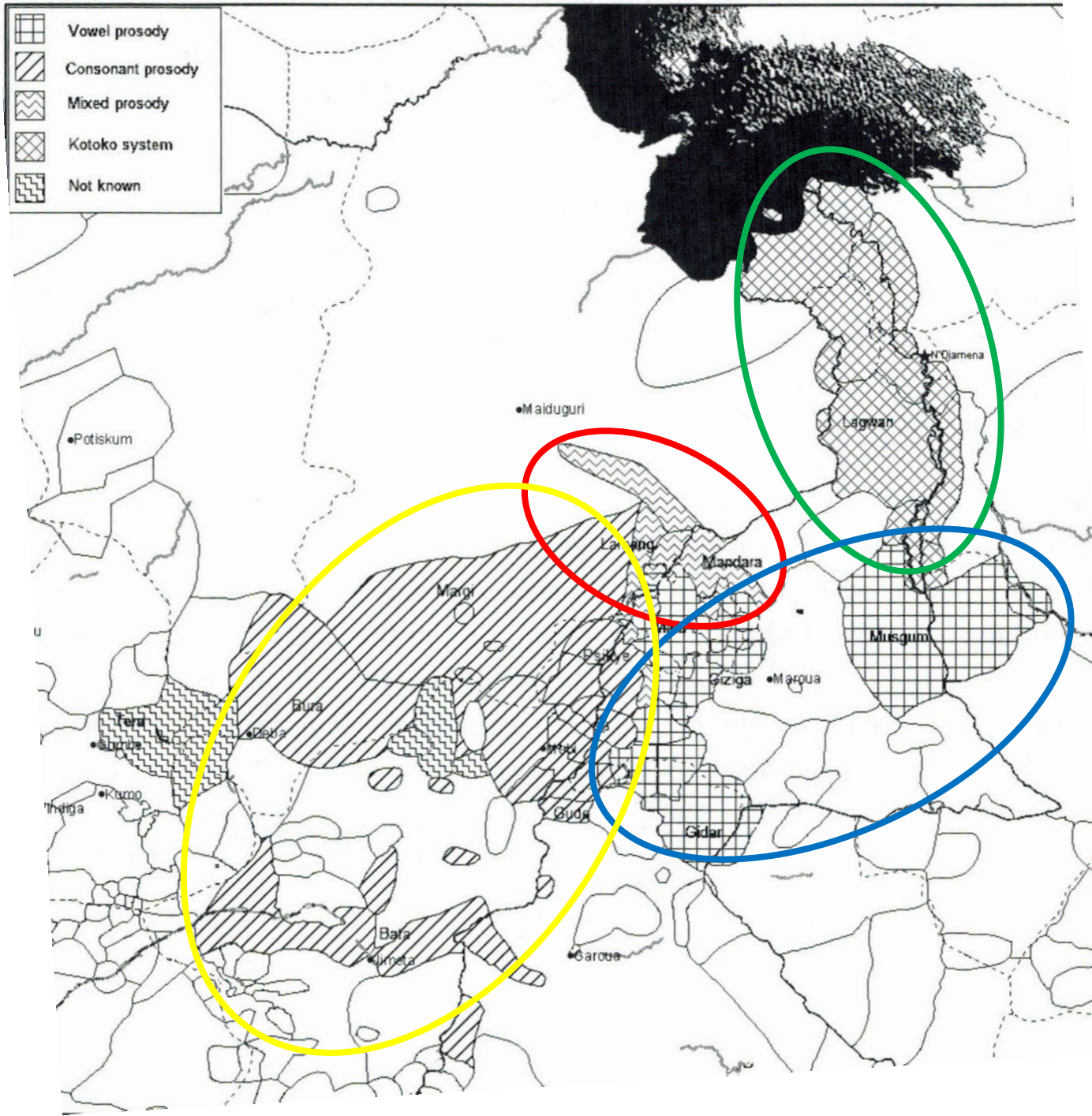
- Consonant Prosody

- Mixed Prosody

- Kotoko System

- unknown

Examples will be drawn from *Mixed Prosody* languages (**Lamang & Hdi**).



3. Diachronic phonology (Vocalogenesis)

Major issues in diachronic Chadic phonology:

1. Distinction between
   - phonologically contrastive ***phonemes***,
   - non-contrastive ***epenthetic*** vowels ("schwa").

2. Syllabicity:
   (1) *consonants* [-syll]
   (2) ***vocoids*** [±syll] (*semivowels/-consonants; approximants*)

➔ **1st hypothesis:** No "vowels", but complementary [±syll] distribution of ***vocoi***

	PC vocoids	[+syll]	[-syll]
Non-High	*ʔ	***a***	ʼ (glottal stop)
High	***Y** (IPA: **J**)	***i***	***y*** (IPA: ***j***)
	***W**	***u***	***w***

3. Diachronic phonology (Vocalogenesis)

2nd hypothesis: Proto-language system for syllable nucleus position ([+syll])

Phonetic division of *vocalic space* into three parts based on features LOW and HIGH:

	Tongue height	Front [-syll] [+syll]	Central [-syll] [+syll]	Back [-syll] [+syll]
Phonetic VOCALIC SPACE	high [+high]	[*y ~ *i]		[*w ~ *u]
	mid [-high, -low]		[*ə]	
	low [+low]		[*ʔ ~ *a]	

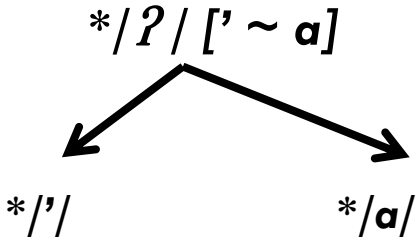
Special status of schwa:

No [-syll] counterpart in the system!

3. Diachronic phonology (Vocalogenesis)

3rd hypothesis: First proto-phoneme split

conditioned allophones ([±syll])



4th hypothesis: leading to phonological division of *vocalic space*

	Tongue height	Central
Phonological VOCALIC SPACE	Non-low [-low]	[ə]
	low [+low]	/a/

3. Diachronic phonology (Vocalogenesis)

5th hypothesis: Creation of [+high] prosodies
- labial & labialized consonants/vocoids ➔ +W Prosody
- palatal consonants/vocoids ➔ +Y Prosody

- Prosodies have an assimilatory effect on potentially several segments in the root or the phonological word, both on phonetic vowels and consonants.
- Both palatalization and labialization prosodies can be **reconstructed** for Proto-Central Chadic (Gravina 2014).

4. Prosody effects (Vocalogenesis): *Lamang-Hdi*

+Y Prosody: Scenario of the origin of palatalization prosody

Phonological words may contain the vocoid ***Y** which, during the process of "syllabification", ends up in syllable nucleus positions where it is realized as phonetic surface vowel *[i]. Subsequently, it assimilates other (epenthetic) vowels in the phonological word.

GLOSS	SEGMENTAL RECONSTRUCTION	SYLLABIFICATION & PROSODIC EXPANSION	LAMANG	HDI
sauce	*ɗ l {-y}$_{[det]}$	*^{y}ɗ[ə].li.	ɗĩlí	
dirt	*r ɓ sl ({-y}$_{[det]}$)	*^{y}r.ɓ[ə].sl(i).		rɓisl

4. Prosody effects (Vocalogenesis): *Lamang-Hdi*

+W Prosody effect

The origin of labialization prosody lies reconstructable labialized velars and /w/ in the root. During the process of "syllabification", /**w**/ and the labial co-articulation feature of /**C^{w}**/ may end up in syllable nucleus position as phonetic surface vowel *[**u**] and subsequently assimilate other (epenthetic) vowels in the phonological word.

GLOSS	SEGMENTAL RECONSTRUCTION	SYLLABIFICATION & PROSODIC EXPANSION	LAMANG	HDI
wound	[metathesis]: ***wlk {-y}$_{[det]}$** ***lwk**	***^{w}w[ə]l.ki.** ***^{w}lu.k[ə].**	**wúlkí**	**luku**

4. Prosody effects (Vocalogenesis): *Lamang-Hdi*

+Y & +W Prosody effects on root vowels

1. **Palatalization prosody** would create front vowels (high, mid) as conditioned allophones of the underlying or reconstructable Proto-Central Chadic non-front vowels, whether phonemic or non-phonemic:

gloss	surface	Underlying/ prosodic	diachronic analysis	remarks
fish	**kɨl.pi.**	***ʸk[ə]l. pi.**	***k l p {-y}$_{[det]}$**	P-CC ***kɨrɨpʸ**
going up	**dʒɛ́.fé.**	***ʸdza.´fí.**	***dza {-fy}$_{[ext2]}$**	1. [+pal] ext suffix 2. vowel harmonization: ***/CaCi/ > [CɛCe]**

4. Prosody effects (Vocalogenesis): *Lamang-Hdi*

+Y & +W Prosody effects on root vowels

2. Labialization prosody creates back-round vowels as conditioned allophones of the underlying or reconstructable Proto-Central Chadic non-back vowels, whether phonemic or non-phonemic.

gloss	surface	underlying/ prosodic	diachronic analysis	remarks
belly	**hu.ɗi.**	***ʷh[ə].ɗi.**	***hʷ ɗ {-y}$_{[det]}$**	
goat	**o.go.**	***ʷa.gu.**	***agw**	PC ***a(w)ku** (Newman 1977)
flour	**hu.po.**	***ʷh[ə].pay.**	***hʷpa {-y}$_{[det]}$**	final diphthong ***/ay/ > [o]**

5. Summary: Vocalogenesis in Central Chadic

Step 1: The genesis of vowel phoneme */*a*/

- Proto-Chadic vocoid **ʔ* underwent phoneme split
- giving rise to a rudimentary one vowel system as it still exists in some Central Chadic languages like **Moloko**.
- */***a***/ became contrastive (& able to carry contrastive length).
- */***a***/ shared the bipartite [±low] *vocalic space* with epenthetic **ə*.

5. Summary: Vocalogenesis in Central Chadic

Step 2: The genesis of vowel phonemes */i/ and */u/

- Proto-Chadic vocoids ***Y** and ***W** maintained their ambivalent [±syll] feature characteristics. It remains a question of theoretical preference whether the complementary distribution is analysed as reflecting 2 or 4 phonemes:

[+syll]	[-syll]
i	***y***
u	***w***

5. Summary: Vocalogenesis in Central Chadic

Step 3: Phonemicization or not of epenthetic *schwa*

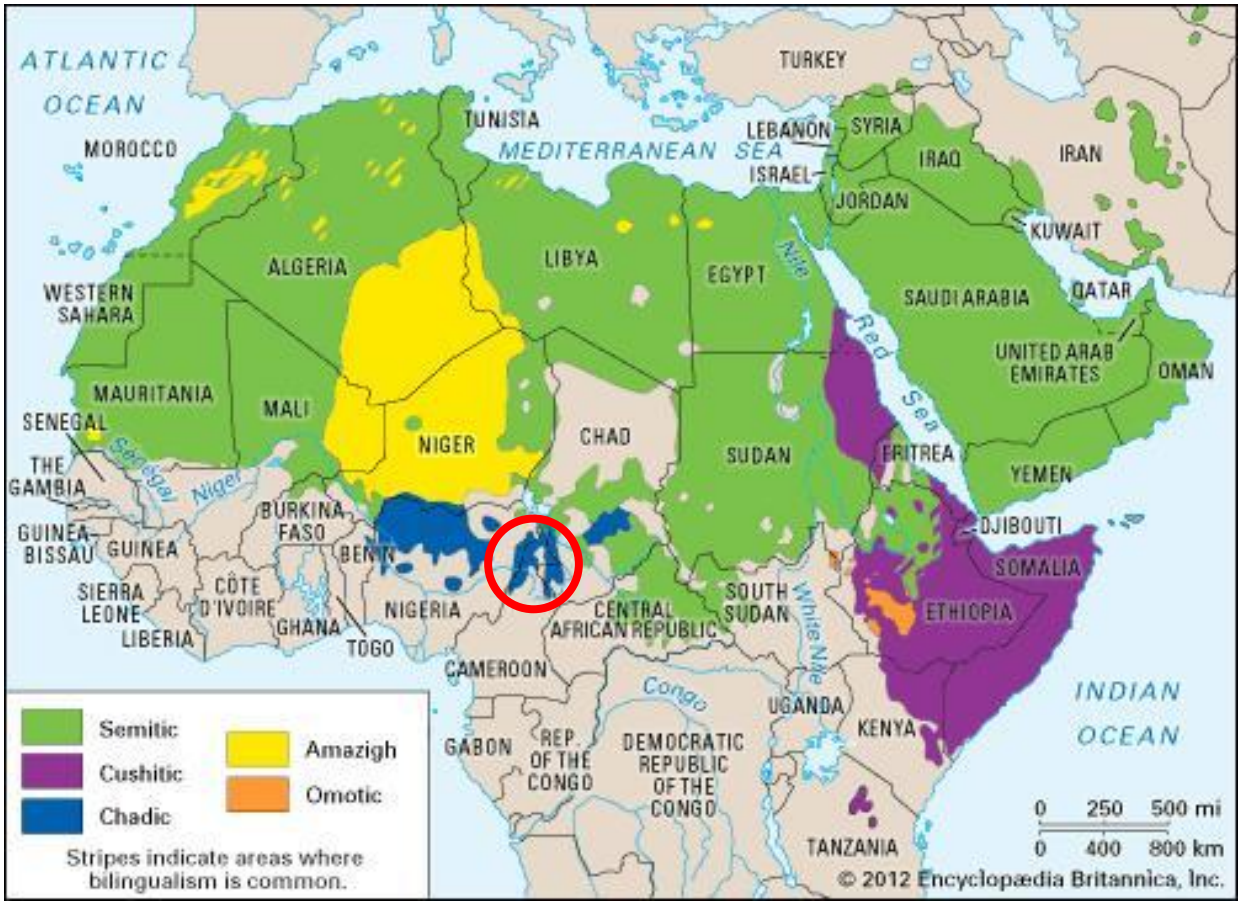
- Some Chadic languages may have phonemicized *schwa* as a separate phoneme, others have not.
- The phonemicization of *schwa* could still be ongoing in Chadic languages, which would explain the notorious analytical and descriptive problems of authors.
- In many Chadic languages, it remains a question of theoretical preference whether *schwa* is analysed as full vowel or as purely epenthetic.

5. Summary: Vocalogenesis in Central Chadic

Options for Proto-Central Chadic reconstruction

System type	Major feature(s)
1. No vowel system	Syllabic manifestations of *vocoids*/approximants; with epenthetic vowel insertion
2. Vowel system based on feature Low [±low]	2 options: (1) 1-vowel system *//**a**//; with epenthetic vowel insertion; (2) 2-vowel system *//**a**// *//ə//; without epenthetic vowels
3. Vowel system based on feature High [±high]	Gravina (2014): Three vowel system: *//**i**// *//**ɨ**// *//**a**//

Thank you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