

The Niger-Congo family in time and space: a first attempt

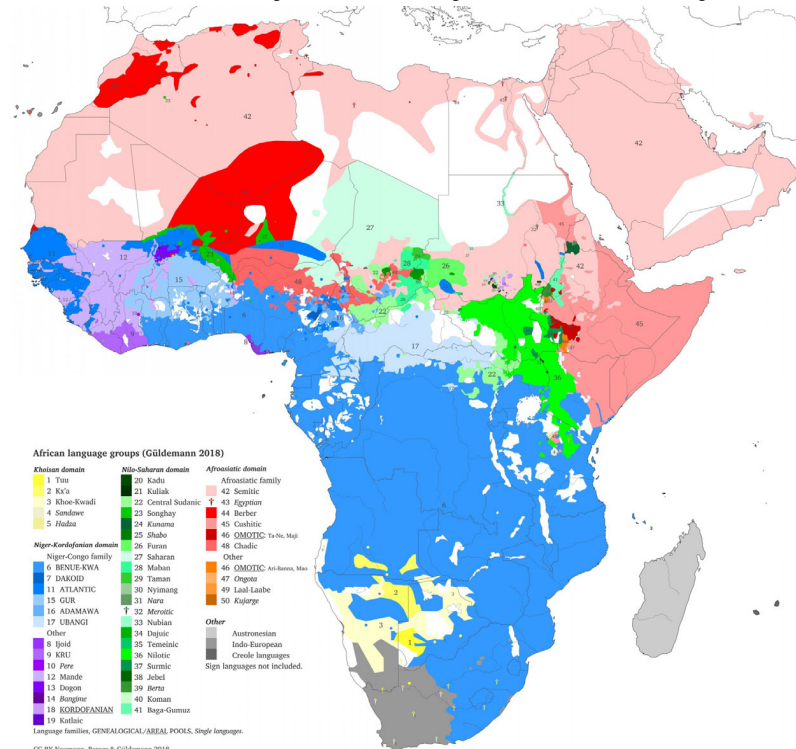
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1 Language classification in Africa

1.1 Genealogical relationships

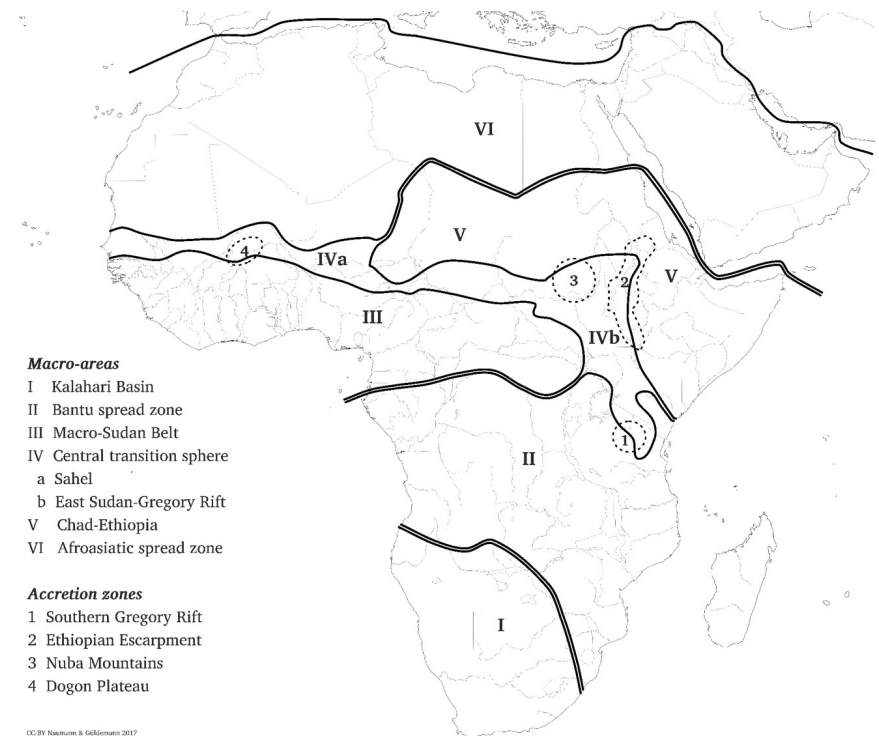
- + Greenberg's (1963) classification with just four African super-"families" widely accepted but methodologically and empirically not robust (cf., e.g., Campbell and Poser 2008)
- review of the state of language classification in Africa by Güldemann (2018b), oriented to standard criteria of the general discipline (cf., e.g., Nichols 1996, Campbell 2003)
- > Africa is genealogically far more diverse > Map 1 and Appendix 1:
- a) 2 geographically and demographically large families: Niger-Congo and Afroasiatic occupying over ¾ of the continent and representing 80% of its languages
- b) 3 intermediate families: Central Sudanic, Nilotic-Surmic, Mande
- c) 35+ small units (including more than ten singletons) without convincing affiliation



Map 1: Genealogical language classification in Africa (Güldemann 2018b)

1.2 Macro-areal linguistics of Afrabia

- + first more comprehensive research by Greenberg (1959, 1983) and Heine (1975, 1976)
- + resumed by Güldemann (e.g., 1998, 1999, 2001, 2003, 2005, 2008b, 2010, 2011, 2017; with Fehn 2017) and independently Clements and Rialland (2008) with considerably similar results regarding macro-areal feature aggregations in Africa before more recent large-scale colonization from outside
- + most recent update by Güldemann (2018a) > Map 2
- > external separation as a continent-sized unit "Afrabia" comprising Africa and Arabian Peninsula: behaves as a unit with recurrent cross-migrations of major impact, delimited by Southwest Asian transition zone (Haig 2017, Haig and Khan 2018)
- > internal macro-areal partition of Afrabia into:
 - a) 2 genealogically homogeneous spread zones: II, VI - coherence largely due to **inheritance**
 - b) 3 genealogically diverse macro-areas: I, III, V - coherence due to **contact**
 - c) 1 non-coherent transition sphere: IV (2 subareas a and b) - separates II/III from V/VI
 - d) 4 genealogically overly diverse accretion zones: 1, 2, 3, 4 - all within IV



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Map 2: Seven macro-areas and four accretion zones in Afrabia (Güldemann 2018a)

1.3 Macro-areal linguistics as a historical research tool

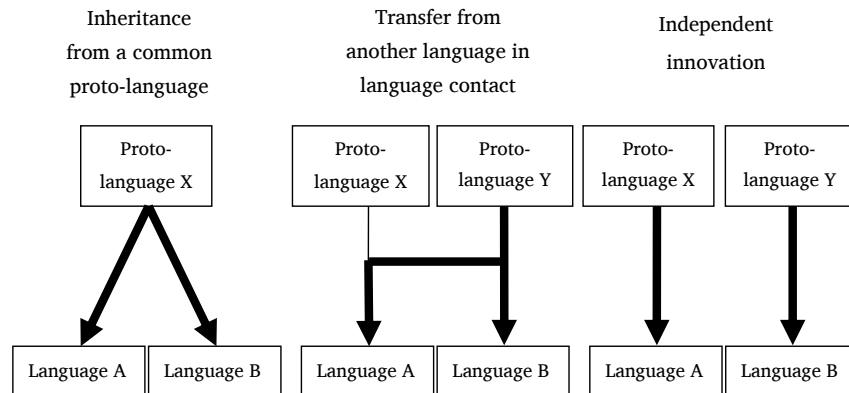


Figure 1: Major scenarios that lead to shared linguistic features among languages

- + explanation of shared linguistic features in terms of inheritance and genealogical language assignment are still the default or principal classification approach
- > contact research often only as "corrective" as soon as genealogical models are untenable
- !!! however, to the extent that concrete isoglosses exist (which is not always the case in Africanist frameworks) and are specific enough to count as historically induced, both inheritance and contact should be investigated on an equal footing and be assessed on the basis of the type of evidence
- + the larger the geographical and temporal scope the more likely is the possibility to misinterpret evidence (cf., e.g., Nichols (2010) on the relationship between large contact-mediated areas and assumed deep-time families)
- > macro-areal research does not replace but rather supplements genealogical classification within a wider agenda of historical linguistics, pace Blench (2013: 49)
- > dedicated effort to investigate whether isoglosses invoked for controversial genealogical hypotheses can be interpreted alternatively as the outcome of language contact
- + moreover, lineages expand and thereby change their areal context, the language contact in which can have important repercussions for the linguistic profile of new subgroups
- > diachronic typology in conjunction with topo-genealogical configurations informs the modelling of a lineage through space and time

Macro-areal linguistics have the potential of developing into a useful tool of historical linguistics itself (Nichols 1992) in refining problematic genealogical hypotheses (§2.2) and informing models of lineage history through space and time (§2.3)

- + continental survey of primary classificatory units across macro-areas
- > **bolded (sub)families** in Table 1 below with multiple presence in different macro-areas:
 - two major families: Afroasiatic > **!!!Semitic**, Niger-Congo > **!!!Bantu**
 - three other geographically larger families: Mande, Songhay, Nilotic-Surmic

Macro-area	Core classificatory unit(s)	Peripheral classificatory units
I Kalahari Basin	Tuu (U1)/ Kx'a (U2)/ Khoe-Kwadi (U3)	NIGER-CONGO: Bantu of BENUE-KWA (U6)
II Bantu spread zone	NIGER-CONGO: Bantu of BENUE-KWA (U6)	-
III Macro-Sudan belt	Central Sudanic (U22)/ Ijoid (U8)/ NIGER-CONGO: UBANGI (U17), DAKOID (U7), BENUE-KWA (U6), ADAMAWA (U16), GUR (U15)/ KRU (U9)/ <i>Pere</i> (U10)/ Mande (U12)	Songhay (U23)/ AFROASIATIC: Chadic (48)/ NILOTIC-SURMIC: Nilotic (U36)/ NIGER-CONGO: Bantu of BENUE-KWA (U6), ATLANTIC (U11)
IVa Sahel	Songhay (U23)/ AFROASIATIC: Chadic (U48), <i>Arabic</i> of Semitic (U42)/ <i>Dajuic</i> (U34)	Mande (U12)/ <i>Dogon</i> (U13)/ <i>Bangime</i> (U14)/ <i>Laal-Labe</i> (U49)/ <i>Kujarge</i> (U50)
IVb East Sudan-Gregory Rift	NILOTIC-SURMIC: Nilotic (U36), Surmic (U37)	<u>KORDOFANIAN</u> (U18)/ <i>Katlaic</i> (U19)/ <i>Kadu</i> (U20)/ <i>Temeinic</i> (U35)/ <i>Jebel</i> (U38)/ <i>Berta</i> (U39)/ <i>Koman</i> (U40)/ <i>Baga</i> (U41)/ <i>Kuliak</i> (U21)/ <i>Hadza</i> (U5)/ <i>Sandawe</i> (U4)/ AFROASIATIC: Cushitic (U45)
V Chad-Ethiopia	Saharan (U27)/ Furan (U26)/ Maban (U28)/ (<i>WADI HOWAR</i>): <i>Taman</i> (U29), <i>Nyimang</i> (U30), <i>Nara</i> (U31), <i>Meroitic</i> (U32), <i>Nubian</i> (U33)/ <i>Kunama</i> (U24)/ AFROASIATIC: Ethiosemitic of Semitic (U42), Cushitic (U45), Ta-Ne (U46.A) + <i>Maji</i> (U46.B) of <u>OMOTIC</u> / <i>Ari-Banna</i> (U46.C) of <u>OMOTIC</u>	? <i>Shabo</i> (U25)/ ? <i>Mao</i> (U46.D) of <u>OMOTIC</u> / ? <i>Ongota</i> (U47)/ NILOTIC-SURMIC: Surmic (U37)
VI Afroasiatic spread zone	AFROASIATIC: Egyptian-Coptic (U43), <i>Berber</i> (U44), Semitic (U42)	Songhay (U23)

Notes: GENEALOGICAL POOL; AREAL POOL; *Single-language unit*; (POSSIBLE) HIGHER-ORDER FAMILY; **Lineage in more than one area**; / separates independent units

Table 1: Basic classificatory units and macro-areas in Afrabia

2. Niger-Kordofanian in a different light

2.1 Greenberg's (1963) problematic classification

NIGER-KORDOFANIAN (= "CONGO-KORDOFANIAN")

Kordofanian (including Kadu)

Niger-Congo

("West") Atlantic

Mande

Gur (= "Voltaic", including **Dogon**)

Kwa (including **Kru** and **Ijoid**)

Benue-Congo

Adamawa-Ubangi (= "Adamawa-Eastern")

Note: **bold** = **uncertain member**

Figure 2: Niger-Kordofanian in Greenberg (1963)

- + grammatical paradigms define core of a large family (pace Campbell and Poser 2008)
- a) **noun classification** with noun morphology and agreement marking (Westermann 1935)
- b) **pronoun paradigm** for speech-act participants (Güldemann 2017)
- verbal extensions remain so far only a typological trait (Hyman 2014: 210) rather than an individual-identifying feature, pace Voeltz (1977)
- + extensive amount of lexical comparisons do not meet traditional standards
- > useful focus in the beginning on lexemes with co-occurring morphology (e.g., nouns) and/or lexical paradigms: illustrated here with **lower numerals**
- + assessed against diagnostic evidence, not all units subsumed under Niger-Kordofanian are likely members of a family - three sets of groups according to likely membership:
 - a) less likely/weak: KORDOFANIAN (4), Katlaic, Ijoid, Siamou, Mande
 - b) promising: Kru (except Siamou), Pere, Dogon, Bangime
 - c) robust (subunits in parentheses): ATLANTIC (7), GUR (8), BENUE-KWA (> 20), DAKOUD, ADAMAWA (14), UBANGI (7)
- robust subgroups are not genuine families but rather genealogical POOLS of uncertain relatedness, whose subgroups (in parentheses) must be taken into account separately
- > 60+ subunits, so that already the Niger-Congo core is a complex and old lineage more comparable to Trans-New-Guinea in the Pacific
- Ubangi pool largely lacks major morphological traits but appears to be a robust member (pace Dimmendaal 2011) > potentially significant for Proto-Niger-Congo
- reconstruction bias toward Bantu (and Benue-Kwa) against low position in any family tree
- > focus on geographically peripheral pools, notably Adamawa, Atlantic, Ubangi

2.2 From Niger-Congo members to Macro-Sudan affiliates?

2.2.1 Ijoid in the periphery of the Niger delta

- + Ijoid as a small family in the Niger delta comprising Ijo language complex and Defaka
- + typologically dissimilar from larger areal context including purportedly related Niger-Congo neighbors, e.g., consistently head-final, unique pronoun system involving a tripartite sex-based gender system, no trace of noun classes and verb extensions
- > major classificatory reassignment from a subgroup of (Old) Kwa to a very early split-off
- + assigned to Niger-Congo based on lexicon (e.g. Williamson 1971, 1979, 1988, 1992) but isoglosses lack regularity and/or are too similar for early separation > Table 2

Meaning	Bantu	Ijo
'three'	-tátù	táró
'four'	-nèè	-né
'five'	-cáánò	sónjǎ́
'eight'	-náánà	nínǎnà

Table 2: Proposed numeral cognates between Bantu and Ijo (Williamson 1971: 282)

Alternative hypothesis: Isolated language family indigenous to the Niger Delta that became marginalized by the spread of genuine Niger-Congo groups, accompanied by heavy borrowing of Ijoid from Benue-Kwa (cf. lower numerals from 3 upwards) and substrate interference in Benue-Kwa from Ijoid (simplification to "Kwa" profile)

2.2.2 Mande between Sahel (IVa) and Macro-Sudan Belt (III)

- + Niger-Congo affiliation equivocal (cf. Köhler 1973/4, Dimmendaal 2011)
- + family currently straddles two macro-areas: Sahel (IVa) and Macro-Sudan Belt (III)
- + strong evidence for expansion from a likely homeland in the north (cf. Vydrin 2009)
- + old contacts in the north, notably with Songhay (Mukarovsky 1965, 1966; Nicolai 1977, 1984, 2006; Creissels 1981) and around the Dogon Plateau (Hammarström 2010)
- + later and current contact with (and marginalization of) other language groups in the south(west), notably with Atlantic (cf. Childs 2004, 2010a, b, Vydrin 2007; Cobbinah 2010; Juillard 2010) and Kru (cf. Vydrin 2004, 2008)
- > Mande as major component of "Upper-Guinean Coast Sprachbund" (Vydrin 2008) in III
- > substrate-induced features in (mostly Southern, South-Eastern and Eastern) Mande, e.g., in phonology (Vydrin 2004, 2008), STAMP morphs (Vydrin 2008, Konoshenko 2014)
- Alternative hypothesis: Isolated language family from the green Sahara that was pushed south into the Sahel and later expanded further into the Macro-Sudan Belt accompanied by borrowing from genuine Niger-Congo groups and structural effects very similar to simplification to "Kwa" profile commonly recognized further east**

2.3 Niger-Congo across and within African macro-areas

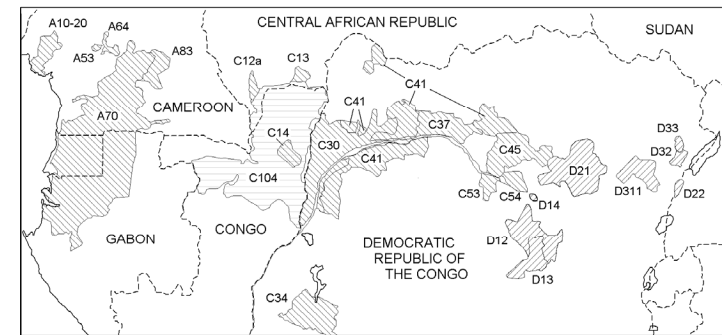
2.3.1 Bantu and the major macro-areal split within Niger-Congo

- + Grollemund et al. (2015): Bantu underwent an apparently fast and direct migration from the border region of Nigeria/Cameroon in the Macro-Sudan Belt through a former savanna corridor in the western area of the modern Central African Rainforest
- > several possible routes through corridors during forest crises:
 - Sangha River interval 2000 BP (Maley et al. 2001) > timing unlikely for family age
 - coastal route 4000 BP (Ngomanda et al. 2009)
- + Güldemann (2011): primary areal-typological split between Non-Bantu Niger-Congo in Macro-Sudan Belt (III) and Narrow Bantu in its own Bantu spread zone (II)
- + Bantu spread zone tied together by:
 - a) numerous isoglosses inherited from Proto-Bantu, often assumed for Proto-Niger-Congo
 - > Bantu bias: unproportional role as model for Proto-Niger-Congo, rather low clade in phylogeny in line with Greenberg (1963) with minor historical modelling role
 - b) secondary family-internal convergence, which is strongest in the center - "Bantu nucleus"
 - b) some innovative features vis-à-vis Macro-Sudan Belt profile, notably compact predicate structure (Güldemann 2011, 2013; contra Hyman 2011)
 - c) overall absence of Macro-Sudan feature profile (Güldemann 2011)

Feature	(III) Macro-Sudan Belt	(II) Bantu spread zone
Labial-velars	X	(North)
Implosives	X	(Northwest, East)
Labial flaps	(X)	-
7+ vowel qualities	X	(North)
3+ tone heights	X	(North)
Nasalized vowels	X	(Northwest)
"Lax" question prosody	X	-
"(Sur)pass" comparative	X	X
Logophoricity	X	(North)
Minimal-augmented pronoun system	(X)	(Northwest)
O-V-OTHER	X	(Northwest)
STAMP morph in S:AUX O-V/V-O	X	(Northwest)
Postverbal/clause-final NEG	X	(West, Central, East)
Plural word	X	-
Verb serialization	X	-

Table 3: Features of the Macro-Sudan Belt and their role in Narrow Bantu

- > several Macro-Sudan features presumably absent in Proto-Bantu but acquired later, in particular in the northern rainforest fringe in contact with southeastern Macro-Sudan languages



Map 3: Labial-velar stops in northern Bantu languages (Clements and Rialland 2008)

2.3.2 Niger-Congo-internal feature distribution and geography

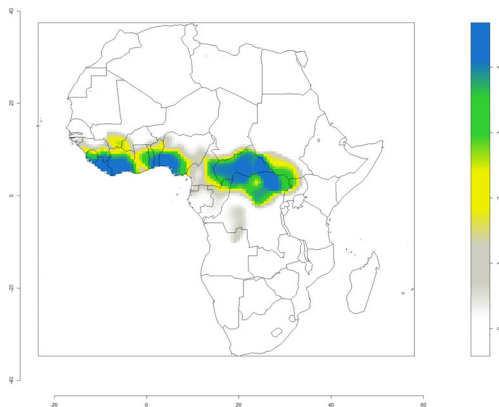
- + geographical survey of features thought to be characteristic of early stages of Niger-Congo in order to trace language change of subgroups through space and time

2.3.2.1 Word order

- + considerable amount of variation between head-initial and head-final word order features
- a) Givón (1975, 1979), Hyman (1975), Williamson (1986) etc.: reconstruction of a shift from original head-final to head-initial profile
- b) Heine (1975, 1976) argues for original head-initial profile, substantiated by Heine (1980), Claudi (1993), Heine and Claudi (2001), Güldemann (2007) ~ diachronic typology (grammaticalization, information structure) > not challenged since then
- + if originally head-initial, how can head-final features be explained?
- a) family-internal pathways toward preverbal objects (see above sources und b))
- b) language contact of secure Niger-Congo groups with other lineages that are possibly non-Niger-Congo and are consistently head-final or at least display preverbal objects, notably Ijoid in the **south-central** and Mande in the **western** Niger-Congo sphere
- + survey of three word order domains > untypical patterns cluster:
 - a) O-V in transitive clause: Gulf-of-Guinea Coast and in wider Mande sphere
 - b) GEN-NOUN order: Gulf-of-Guinea Coast and in wider Mande sphere
 - c) PROPERTY-NOUN order: Central Africa with "dependency reversal" (Van de Velde 2012)
- > "head-final" features are potentially due to internally as well as externally induced change in individual Niger-Congo groups, with a geographical bias toward west and south
- > accounts for a large portion of Heine's (1976) "inconsistent" Type-B languages in Africa!

2.3.2.2 Noun class system

- + no noun class traces in most of **eastern** Ubangi and parts of **north-central** Adamawa
- + modern gender system from late classifier system (Kießling 2018; Güldemann and Merrill in prep.) > inherited classifier traces in **eastern** Mbaic and **northern** savanna
- + robust retention of "noun class"-based genders in three major spatial configurations:
 - northern and western savanna** areas of Macro-Sudan Belt: Adamawa, Gur, Atlantic
 - two **southern** forest gaps correlating with low labial velar frequency (see Map 4)
- > "Dahomey gap": Ghana-Togo-M., Guang; Nigeria-Cameroon border: Benue-Congo/Bantoid
- c) Bantu spread zone (with repeated loss in languages of northern zones A, B, D)



Map 4: Clusters of high labial-velar frequency (Idiatov and Van de Velde 2018)

2.3.2.3 Pronouns

- + Proto-Niger-Congo forms by Güldemann (2017), previous reconstructions of 1SG and 2SG were modeled on Benue-Kwa-like forms but are better viewed as local innovations

Genealogical pool	Lineage	1SG	2SG	1PL	2PL
ATLANTIC	Mel: Temnic	.mi	.mO	.sV	.nV
ATLANTIC	Sua	meN-	mɔɔ	nrɔ	nɔɔ
GUR	Central: Oti-Volta	*mV	*bV/(f)V	*tV	*(n)yV
BENUE-KWA	Bantoid: Bantu	.mi/ *n-	*u-	*-cú-	*-nú-
BENUE-KWA	Lagoon: Abé	mə	fə	-lə	ɲə
ADAMAWA	Mumuyic	.mE/ .N	.mo	.rO	.noO
ADAMAWA	Fali	(-).mì	*mu	.-to	*-no
UBANGI	Gbayaic	*mí	*mé	*-lɛ́	*-nɛ́

Table 4: Pronoun paradigms in presumably conservative Niger-Congo subgroups

- + alliterative *m/m* canon in the singular not only in Proto-Niger-Congo but shared in the **east** between Niger-Congo and Central Sudanic today AND in the past > Table 5

Family	1SG	2SG	1PL	2PL
Niger-Congo	.mV ^{front}	.mV ^{back}	.TV ^{close}	.NV ^{close}
Central Sudanic	*(V).ma	*(V).mi	*^(V).ma	*^(V).mi
Shared canon	mV ^A	mV ^B	-	-

Table 5: Pronoun paradigms of early Niger-Congo and Central Sudanic compared

- + evidence of later contact-induced change in both Ubangi of Niger-Congo and Central Sudanic toward a non-inherited vowel canon that is more similar to that in the other lineage with possible contact partners in the vicinity > Table 6

Language (group)	1SG	2SG	Source
Niger-Congo reconstruction	.mV ^{front}	.mV ^{back}	cf. Table 10
Day	Adamawa	-mà	Nougayrol (1979: 167)
Proto-Mundu-Baka	Ubangi	*mā	Winkhart (2015: 66)
Birri	Central	má	Santandrea (1966: 201-2)
Aja	Central	(m)a.ma	Santandrea (1976: 93)
Kresh	Central	.a.ma	Santandrea (1976: 93)
Central Sudanic reconstruction	*(V).ma	*(V).mi	cf. Table 10

Note: **Bold** = (possibly) diverges from inherited form, Arrow = direction of change

Table 6: Pronoun vowel canons that (may) deviate from the relevant proto-pattern

2.3.2.4 Lower numerals

- + Proto-Niger-Congo forms by Güldemann (2018), previous reconstructions of 'two' and 'five' were modeled on Benue-Kwa forms but are better viewed as later innovations

Source	'two'	'three'	'four'	'five'
Güldemann (2018)	.Ri	.ta(C)	.na(C)	.nU
Pozdniakov (2012)	*-di	*thati	-	-
Mukarovskiy (1976–7)	*-bà.li	*-tháthu	*-nán-/ *-ní(a)-	*-t(s)á.nu
Westermann (1927)	*-bà-/ *-gĩ/ *-n(i)u(a)	-	*-na(n)-/ *-ní	-nú-

Table 7: Proposed lower numeral paradigms of Proto-Niger-Congo

2.3.2.5 Spatial patterns combined

- + synopsis of geographical distribution of presumably inherited features
- > illustrate here a viable research procedure rather than propose robust reconstructions
- + once the bias toward modeling early Niger-Congo in terms of Bantu~Benue-Kwa is avoided, plausible reconstructions are closer in both matter and structure to modern forms in groups often thought to be geographically "peripheral", namely ATLANTIC, GUR, ADAMAWA, and (with exceptions) UBANGI
- > location in savanna regions as common denominator of these groups

Classificatory unit		2SG		'person'				'five'			'two'		
Code	Name	.mV ^{back}		1/2- .nV ^{front} tV ^{back} -1/2				.nU			.Ri		
U16.N	<i>Fali</i>	<i>m</i>	<i>u</i>	Ø	<i>n</i>	<i>i</i>	<i>d</i>	Ø	-	Ø	-	Ø	Ø
U16.B	Longuda	<i>m</i>	<i>O</i>	-E/bE	(<i>n</i>)	<i>yI</i>	(<i>r</i>)	Ø	ny	O-	-	Ø	Ø
U16.A	Tula-Waja	<i>m</i>	<i>O</i>	-Ø/b(U)	<i>n</i>	<i>I</i>	(<i>r</i>)	Ø	<i>n</i>	U-	-	Ø	Ø
U15.A	(Oti-Volta)	b	V	-V/ba	<i>n</i>	<i>i</i>	<i>t</i>	(V)	Ø	<i>n</i>	<i>u</i>	Ø	<i>l e</i>
U6.M	Yoruboid	b'	V	ɔ/ε-	<i>n</i>	<i>ĩ</i>	Ø	Ø	rɔ	~	á	Ø	<i>j ì</i>
U6.I	Ukaan	(<i>h</i>)	<i>O</i>	ə/à-	<i>n</i>	<i>í</i>	Ø	Ø	tjũ	<i>n</i>	<i>ĩ</i>	wà	Ø
U7	(<i>Samba Daka</i>)	<i>w</i>	<i>èè</i>	Ø	<i>n</i>	<i>èé</i>	Ø	Ø	tO	(<i>ŋ</i>)	<i>o-</i>	<i>ba</i>	<i>r a</i>
U6.C	(Ninzic)	?	Ø	u/ba-	<i>n</i>	<i>E</i>	<i>t</i>	Ø	tó	ŋ	Ø	pah	Ø
U6.A	(Ekoid)	?	Ø	ñ/(b)à-	<i>n</i>	<i>è</i>	Ø	Ø	Dó	<i>n</i>	Ø	ba	(<i>l</i>)
U6.A	(Bantu)	Ø	<i>u</i>	mu/ba-	<i>n</i>	Ø	<i>t</i>	<i>u</i>	taa	<i>n</i>	<i>o</i>	bV	<i>d i</i>

Note: (...) = data only from a subentity of the classificatory unit, ? = no data

Table 8: Potential innovations defining a partial Niger-Congo subclassification

- + tracing changes from proto-forms for arguably diagnostic elements to language-specific items (2SG, 'person', 'five', 'two') leads to two major observations > Table 8
- > segmental reduction, notably in lexical roots, toward "Kwa" type with a north-south cline from savanna into (earlier) rainforest zone, independent of genealogical affiliation
- > genuine group-specific innovations with potential to define genealogical subgroups:
 - denasalization of 2SG .mV^{back} (multiply independent events): Benue-Kwa, Gur
 - addition of TO-prefix to .nU 'five': Benue-Kwa
 - addition of BA-prefix to .Ri 'two': Benue-Kwa subgroup
 - nasal prefix innovation *U > *mu in class-1 human singular prefix: Bantu
- + similar geographical pattern regarding typological features of word order and "noun classes": fuller presence in West African savanna groups (Adamawa, Gur, Atlantic, northern (and some southern) groups of Benue-Kwa) with recurrent loss in the south

- + evidence for a contact-induced subarea in the eastern half of the Macro Sudan Belt involving first of all the Ubangi pool of Niger-Congo and Central Sudanic family (prefigured by Tucker's (1940) purely areal concept of "Eastern Sudanic")
- shared alliterative *m/m* canon in singular pronouns (Güldemann 2017) > §2.3.2.3 above
- phonological area: overall commonalities (Thomas 1972) including marked features: labial flaps (Olson and Hajek 2003), interior vowels (Rolle, Lionnet and Faytak 2020)
- > previously interpreted as evidence for genealogical supergroup joining Niger-Kordofanian and Nilo-Saharan with particular role accorded to Central Sudanic (Blench 1995)

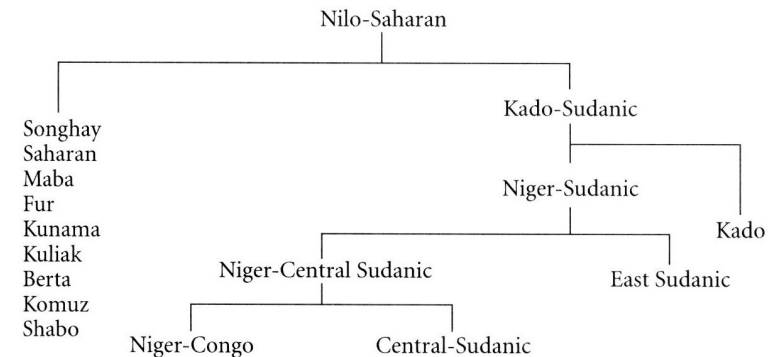
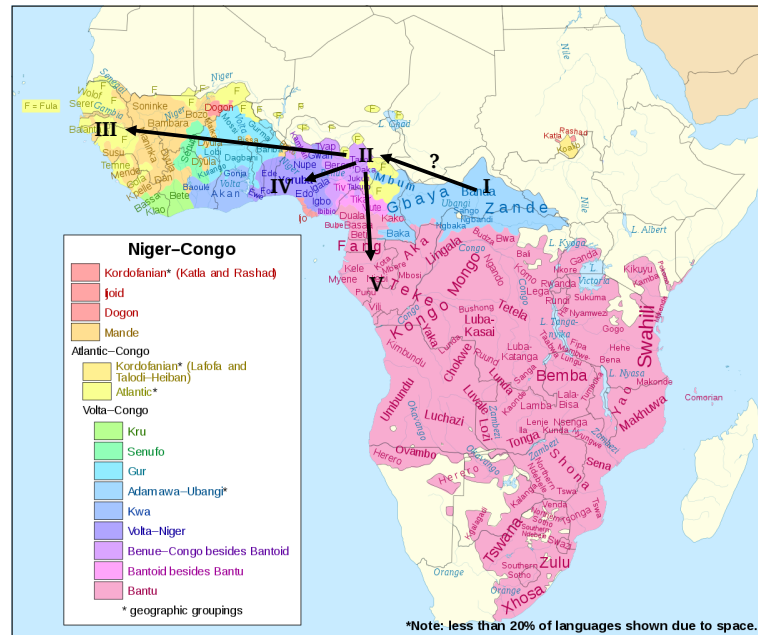


Figure 3: Genealogical tree of Nilo-Saharan and Niger-Congo after Blench (1995)

- + most of Ubangi and some Adamawa groups repeatedly lack some features reconstructed here for an early stage of Niger-Congo: noun class system (exception of Mbaic of Ubangi), plural participant pronouns, numeral 'five'
- > potential sign of innovation in Niger-Congo rather than reason for excluding groups from family - Proto-Niger-Congo without grammaticalized "noun class"-based gender?!

2.3.3 Toward reconstructing Niger-Congo through time and space

- + tentative scenario of Niger-Congo trajectories within and beyond the Macro-Sudan Belt:
 - earliest chronolect originates in the savanna belt north of the rainforest zone, possibly in the east (Ubangi) or center (Adamawa), possibly without noun classes
 - expansion within savanna belt, important staging area in center (Adamawa)
 - > diverse group potentially harboring various early clades, presence of noun classes
 - expansion from staging area westward (Gur, Atlantic)
 - > partly emergence of head-final word order traits (Mande influence)
 - expansion from staging area south(west)ward into rainforest belt (Benue-Kwa):
 - > partly emergence of head-final word order traits (Ijoid influence), recurrent loss of noun classes and development of isolating "Kwa"-type (cf. McWhorter 2016)
 - further southward expansion of Bantu with a typical Niger-Congo profile



Map 5: Niger-Kordofanian and hypothetical trajectories within Niger-Congo

3 Summary

- + contact-induced areal configurations can obscure genealogical affiliation (Mande, Ijoid)
- > language contact, which is contingent on areal linguistic setting, is a crucial determining factor for the structural makeup of language (groups)
- > large-scale areal patterns can and should inform the historical assessment of languages in conjunction with classical methods of historical-comparative reconstruction
- + geographical axis effects arguably determine spatial language dynamics due to (lack of) environmental differential (Güldemann 2010, Güldemann and Hammarström 2020)
- a) "latitude spread potential": preferred expansion along east-west axis - **savanna belt!**
- b) "longitude spread constraint": hampered north-south expansion > pressure toward environmental adaptation > more intense language with indigeneous populations > linguistic restructuring of colonizers - **shift from savanna to rainforest belt!**

A comprehensive historical assessment of language groups should integrate from the start genealogical AND areal signals for understanding dynamics in time and space

For references see:

Güldemann, Tom (ed.). 2018. The languages and linguistics of Africa. The World of Linguistics 11. Berlin: Mouton de Gruyter.

Appendix: Evidence for African language families

No.	Classificatory unit	Internal	External		
01	Tuu	A, C	Tuu-Kx'a: D, F	South African Khoisan:	Khoisan (domain): D, F
02	Kx'a	B			
03	Khoe-Kwadi	A, C	Khoe-Kwadi-	D, F	
04	<i>Sandawe</i>	n.a.	Sandawe: D, F		
05	<i>Hadza</i>	n.a.			
06.A	BANTOID	D	BENUE-KWA: D	Niger-Congo: A, C	Niger-Kordofanian (domain): D
06.B	CROSS-RIVER	D			
06.C	KAINJI-PLATOID	D			
06.D	Igboid	C, E			
06.E	Idomoid	C, E			
06.F	Nupoid	C, E			
06.G	Edoid	A, B			
06.H	Akpes	C, E			
06.I	<i>Ukaan</i>	n.a.			
06.J	<i>Oko</i>	n.a.			
06.K	Owon-Arigidi	C, E			
06.L	Ayere-Ahan	C			
06.M	Yoruboid	B			
06.N	Gbe	B			
06.O	GHANA-TOGO M.	D			
06.P	Potou-Akanic	B			
06.Q	Ga-Dangme	B			
06.R	LAGOON	D			
06.S	<i>Ega</i>	n.a.			
07	DAKOID	D	ATLANTIC: D, F		
11.A	(CORE) ATLANTIC	D			
11.B	Mel	A, B			
11.C	<i>Gola</i>	n.a.			
11.D	<i>Limba</i>	n.a.			
11.E	<i>Sua</i>	n.a.			
11.F	<i>Nalu</i>	n.a.			
11.G	Rio Nunez	C, E	GUR: D, F		
15.A	(Central) Gur	A, B			
15.B	Kulangoic	C			
15.C	<i>Miyobe</i>	n.a.			

15.D	Tiefo	C			
15.E	<i>Viemo</i>	n.a.			
15.F	Tusian	C			
15.G	Samuic	C			
15.H	Senufo	C, F			
16.A	Tula-Waja	C	ADAMAWA: D		
16.B	<i>Longuda</i>	n.a.			
16.C	Bena-Mboi	C			
16.D	Bikwin-Jen	C			
16.E	Samba-Duru	C			
16.F	Mumuyic	B			
16.G	Yendangic~Maya	C			
16.H	Kebi-Benue	C			
16.I	Kimic	C			
16.J	Buaic	A, C			
16.K	<i>Day</i>	n.a.			
16.L	<i>Baa~Kwa</i>	n.a.			
16.M	<i>Nyingwom~Kam</i>	n.a.			
16.N	<i>Fali</i>	n.a.			
17.A	Gbayaic	A, B	UBANGI: D	?	
17.B	Zandic	C, E			
17.C	Mbaic	A, B			
17.D	Mundu-Baka	A, B			
17.E	Ngbandic	C, E			
17.F	Bandaic	C, E			
17.G	Ndongoic	D			
09.A	(Narrow) Kru	A, C			
10	<i>Pere</i>	n.a.			
13	Dogon	C, E			
14	<i>Bangime</i>	n.a.			
18.A	Heibanic	A, B	<u>KORDOFANIAN:</u> D		
18.B	Talodic	A, B			
18.C	<i>Lafofa</i>	n.a.			
18.D	Rashadic	C			
19	Katlaic	C			
08	Ijoid	A, B			
09.B	<i>Siamou</i>	n.a.			
12	Mande	C, E			

20	Kadu	C, F			Nilo-Saharan (domain): D
21	Kuliak	B			
22	Central Sudanic	A, B			
23	Songhay	C			
24	<i>Kunama</i>	n.a.			
25	<i>Shabo</i>	n.a.			
26	Furan	C			
27	Saharan	A, C			
28	Maban	A, B			
29	Taman	A, B	Northern East Sudanic ~ “Wadi Howar”: D, E, F	East Sudanic: D	
30	Nyimang	C			
31	<i>Nara</i>	n.a.			
32	<i>Meroitic</i>	n.a.			
33	Nubian	A, B			
34	Dajuic	A, B			
35	Temeinic	C			
36	Nilotic	A, B	Nilotic-Surmic: C, F		
37	Surmic	A, B			
38	Jebel	(C), F	Jebel-Berta: D, F		
39	<i>Berta</i>	C			
40	Koman	B	Koman-Baga:		
41	Baga	C	D, F		
48	Chadic	A, B		Afroasiatic: A, C	
42	Semitic	A, B			
43	<i>Egyptian</i>	n.a.			
44	Berber	A, B			
45	Cushitic	A, C			
46.A	Ta-Ne	B, C	<u>OMOTIC</u> : D, F		Afroasiatic domain: D
46.B	Maji	B, C			
46.C	Ari-Banna	A, C			
46.D	Mao	C			
47	<i>Ongota</i>	n.a.			
49	Laal-Laabe	C			
50	<i>Kujarge</i>	n.a.			

Notes: GENEALOGICAL/AREAL POOL; *Single language (complex)*; n.a. = not applicable;

A = Reconstructed morpheme paradigms; B = Regularly reconstructed lexicon;

C = Strong resemblances of bona fide reconstructibility; D = Scattered

resemblances; E = Lexicostatistic calculations; F = Structural similarities.