Toward a more systematic investigation of substrates: the case of Africa

Tom Güldemann
Humboldt University Berlin and Max Planck Institute for the Science of Human History Jena

1 On assuming substrates

+ traditional standards for substrate hypothesis, e.g., Weinreich (1979), Kusters (2011)
> Cravens (1994: 4397, < Hall 1974: 63):

(a) the languages involved must be shown to have been in sufficient contact for a period of bilingualism to have existed;

(b) the period of bilingualism must have been long enough to have affected one or more generations of speakers;

(c) it must be demonstrated that the alleged substratum-language actually had the structural feature(s) ascribed to its influence on the later language.

(d) there must be reason to believe that the superstratum language was not already in possession of, or not in the process of developing, the feature(s) in question.

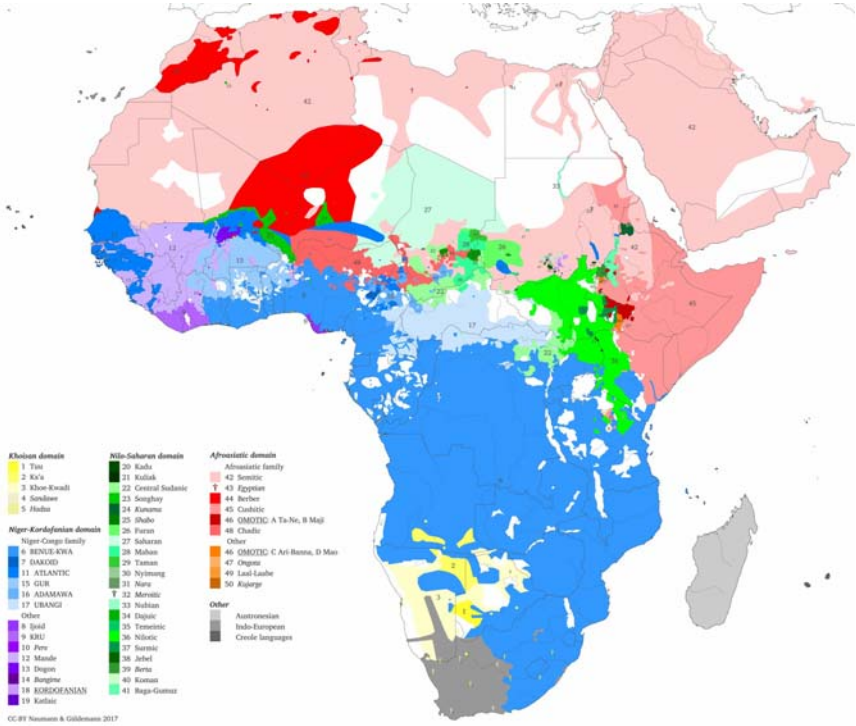
> some questionable criteria, notably (a) and (b) - no equivalent in genealogical hypotheses
+ necessary conditions:
- differential linguistic profile within a lineage > implies genealogical classification
- geographical pattern correlates with lineage expansion > implies areal linguistic profiles
+ sufficient conditions - not required by all scholars (see, e.g., Donohue 2013):
- linguistic evidence for language shift
- potential substrate(s) present/known and has likely match of innovative feature(s)

2 Substrates in Africa

+ previous substrate hypotheses mostly concern European languages and pidgin-creoles
> cases in Africa are few and restricted to the historically better researched north of the continent: Maghrebi Arabic vs. Berber, Punic and Vulgar Latin; Egyptian Arabic vs. Coptic; Ethiosemitic vs. Cushitic (cf. Wikipedia 2017)
> many other hypotheses remain historically and empirically unspecific and/or weak (cf. Bryan 1959, Möhlig 1981, Ehret 2003)
+ attempt toward a first more systematic (if incomplete) continental substrate survey
- excludes role of substrates in Malagasy as well as “new” languages with non-African basis (cf., e.g., Singler 1983, 1988; Gilman 1986) and African basis (cf., e.g., Heine 1973)
- major problem for African languages: still deficient state of knowledge about genealogical classification and areal linguistics, which in principle is a precondition for entertaining substrate as one historical explanation of linguistic isoglosses

2.1 Genealogical classification of Africa

+ 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 (forth. b), oriented to standard criteria of general discipline (cf., e.g., Nichols 1996, Campbell 2003)
> genealogically far more diverse picture (see Map 1 and Table 1):
- 2 geographically and demographically large families: Niger-Congo, Afroasiatic occupying >⅔ of the continent and representing 80% of its languages
- 3 geographically and demographically intermediate families: Central Sudanic, Nilotic-Surmic, Mande
- 35+ units (including more than a dozen singletons) without convincing affiliation



Notes: GENEALOGICAL/AREAL POOL; *Single language (complex)*

Map 1: Genealogical classification in Africa according to Güldemann (forth. b)

Table 1: African language groups and evidence for genealogical relationships (Güldemann forth. b)

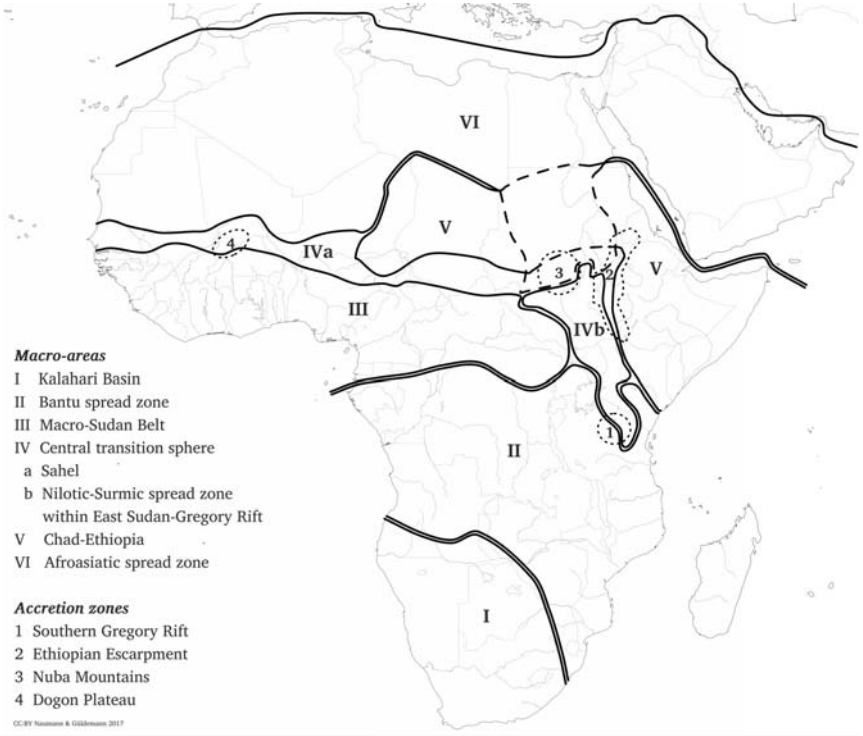
No.	Classificatory unit	Internal	External		
01	Tuu	A, C	Tuu-Kx’a: D, F	South African Khoisan: D, F	Khoisan (domain): D, F
02	Kx’a	B			
03	Khoe-Kwadi	A, C	Khoe-Kwadi-Sandawe: D, F		
04	*Sandawe*	n.a.			
05	*Hadza*	n.a.			
06.A	BANTOID	D	BENUE-KWA: D	Niger-Congo: A, C	Niger-Kordofanian (domain): D
06.B	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	*Ukaan*	n.a.			
06.J	*Oko*	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	*Ega*	n.a.			
07	DAKOID	D			
11.A	(CORE) ATLANTIC	D	ATLANTIC: D, F		
11.B	Mel	A, B			
11.C	*Gola*	n.a.			
11.D	*Limba*	n.a.			
11.E	*Sua*	n.a.			
11.F	*Nalu*	n.a.			
11.G	Rio Nunez	C, E			
15.A	(Central) Gur	A, B	GUR: D, F		
15.B	Kulangoic	C			
15.C	*Miyobe*	n.a.			
15.D	Tiefo	C			
15.E	*Viemo*	n.a.			
15.F	Tusian	C			
15.G	Samuic	C			
15.H	Senufo	C, F			
16.A	Tula-Waja	C	ADAMAWA: D		
16.B	*Longuda*	n.a.			
16.C	Bena-Mboi	C			
16.D	Bikwin-Jen	C			
16.E	Samba-Duru	C			
16.F	Mumuyic	B			
16.G	Maya	C			
16.H	Kebi-Benue	C			
16.I	Kimic	C			
16.J	Buaic	A, C			
16.K	*Day*	n.a.			
16.L	*Baa~Kwa*	n.a.			
16.M	*Nyingwom~Kam*	n.a.			
16.N	*Fali*	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	Ndogoic	D			
09.A	(Narrow) Kru	A, C			
10	*Pere*	n.a.			
13	Dogon	C, E			
14	*Bangime*	n.a.			
18.A	Heibanic	A, B	KORDOFANIAN: D		
18.B	Talodic	A, B			
18.C	*Lafofa*	n.a.			
18.D	Rashadic	C			
19	Katlaic	C			
08	Ijoid	A, B			
09.B	*Siamou*	n.a.			
12	Mande	C, E			

20	Kadu	C, F			
21	Kuliak	B			
22	Central Sudanic	A, B			
23	Songhay	C			
24	*Kunama*	n.a.			
25	*Shabo*	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	Nilo-Saharan (domain): D
30	Nyimang	C			
31	*Nara*	n.a.			
32	*Meroitic*	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	*Berta*	C			
40	Koman	B	Koman-Baga: D, F		
41	Baga	C			
48	Chadic	A, B		Afroasiatic: A, C	Afroasiatic domain: D
42	Semitic	A, B			
43	*Egyptian*	n.a.			
44	Berber	A, B			
45	Cushitic	A, C			
46.A	Ta-Ne	B, C	OMOTIC: D, F		
46.B	Maji	B, C			
46.C	Ari-Banna	A, C			
46.D	Mao	C			
47	*Ongota*	n.a.			
49	Laal-Laabe	C			
50	*Kujarge*	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.

2.2 Areal linguistics of Afrabia

+ first more comprehensive research by Greenberg (1959, 1983) and Heine (1975, 1976)
+ resumed independently by Güldemann (e.g., 1998, 1999, 2001, 2003, 2005, 2008, 2010, 2017; with Fehn 2017) and Clements and Rialland (2008) with considerably similar results regarding macro-areal feature aggregations in Africa before recent large-scale colonizations
+ most recent update by Güldemann (forth. a, see Map 2)
> external separation as a continent-sized unit “Afrabia” comprising Africa and Arabian Peninsula, which behaves internally as a unit (recurrent cross-migration with major impact) and is bounded by Southwest Asian transition zone (cf. Haig 2017, Haig and Khan forth.)
> internal partition of Afrabia into:
a) 2 large spread zones: II, VI
b) 3 contact-related macro-areas: I, III, V
c) 1 transition sphere: IV with two subareas separating III from V and VI
d) 4 accretion zones: 1, 2, 3, 4 within IV



Map 2: Macro-areas and accretion zones of Afrabia (Güldemann forth. a)

+ identification of likely or potential substrate cases among indigenous African languages facilitated by the analysis of the continental macro-areal profile, particularly by observing multiple presences of lineages or languages across different areas: Afroasiatic (Semitic, Chadic, Cushitic), Niger-Congo (Bantu, Mande), Nilotic-Surmic, Songhay

Table 2: Basic classificatory units and macro-areas in Afrabia (Güldemann forth. a)

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)/ *Pere* (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), *Arabic* of Semitic (U42)/ Dajuic (U34)	Mande (U12)/ Dogon (U13)/ *Bangime* (U14)/ Laal-Labe (U49)/ *Kujarge* (U50)
IVb East Sudan-Gregory Rift	**Nilotic-Surmic**: Nilotic (U36), Surmic (U37)	KORDOFANIAN (U18)/ Katlaic (U19)/ Kadu (U20)/ Temeinic (U35)/ Jebel (U38)/ *Berta* (U39)/ Koman (U40)/ Baga (U41)/ Kuliak (U21)/ *Hadza* (U5)/ *Sandawe* (U4)/ **Afroasiatic**: Cushitic (U45)
V Chad-Ethiopia	Saharan (U27)/ Furan (U26)/ Maban (U28)/ **(Wadi Howar)**: Taman (U29), Nyimang (U30), *Nara* (U31), *Meroitic* (U32), Nubian (U33)/ *Kunama* (U24)/ **Afroasiatic**: Ethiosemitic of Semitic (U42), Cushitic (U45), Ta-Ne (U46.A) + Maji (U46.B) of OMOTIC/ Ari-Banna (U46.C) of OMOTIC	? *Shabo* (U25)/ ? Mao (U46.D) of OMOTIC/ ? *Ongota* (U47)/ **Nilotic-Surmic**: Surmic (U37)
VI Afroasiatic spread zone	**Afroasiatic**: *Egyptian-Coptic* (U43), Berber (U44), Semitic (U42)	Songhay (U23)

Notes: GENEALOGICAL POOL; AREAL POOL; *single-language unit*; **(possible) family above basic units**; / separates independent units

2.3 Macro-areal spread zones

+ two macro-areas that are established by spreads concerning a single lineage, involving a patterned structural difference to genealogical relatives in other macro-areas

a) Bantu Spread Zone (II):

- reflects colonized area emerging from south(west)ward Bantu expansion
- languages differ structurally from their closest and partly neighboring Bantoid relatives in Macro-Sudan belt (cf. Güldemann 2011, but see Hyman 2011) > substrate-induced?!
- virtually complete replacement of pre-Bantu languages except in the fringes (see §2.4-2.5) > no graspable substrate(s)! - possibly a few faint reflexes in some Pygmy languages

b) Afroasiatic Spread Zone (VI):

- hosts 3 different lineages, Berber, Egyptian, Semitic, that are diverse and involve a great time depth but share a basic structural profile (despite important break at the Red Sea) > first two lineages largely replaced by the latest spread of Semitic Arabic
- characteristic profile diverges from all Afroasiatic languages outside this spread zone:
    - Ethiosemitic, Cushitic, Ta-Ne, Maji in Chad-Ethiopia (V)
    - Chadic in Sahel of Central transition (IVa) and Macro-Sudan Belt (III)
    - South Cushitic in Southern Gregory Rift accretion zone of Central transition (IVb)
- ancient Afroasiatic migration history largely open > unclear status of spread-zone profile

2.4 Substrate candidates across macro-areas

+ in a number of cases where lineage-internal structural diversity patterns according to macro-areal alliance of relevant languages/subgroups

Table 3: Substrate candidates crossing macro-areal boundaries

Resultant language(s)	**Colonized area**	**Source area**	**Sub-strate**	**References**
Kalahari Basin (I)				
1 Bantu S	Kalahari Basin (I)	Bantu spread zone (II)	Khoe-Kwadi, Tuu	Meinhof (1905), Engelbrecht (1925), Maingard (1933), Bourquin (1951a, b), Lanham (1962), Bill (1974), Louw (1974, 1976, 1977a, b, c, 1979, 1986, 2013), Lickey (1985), Argyle (1986), Herbert (1987, 1990a, b), Voßen (1997), Güldemann (1999), Pakendorf et al. (2017)
2 Bantu R, K	Kalahari Basin (I)	Bantu spread zone (II)	Khoe-Kwadi, Kx’a	Engelbrecht (1925), Kubik (1984), Sommer and Voßen (1992), Voßen (1997), Güldemann (1999), Sommer (2013), Möhlig (2013), Barbieri et al. (2013), Gunnink et al. (2015), Pakendorf et al. (2017)

Macro-Sudan Belt (III)				
3 West and East Nilotic	Macro-Sudan Belt fringe (III)	East Sudan-Gregory Rift (IVb)	Central Sudanic, Ubangi	Dimmendaal (1995, 2001b), Storch (2003a, 2007a, b)
4 West and Central Chadic	Macro-Sudan Belt fringe (III)	Sahel (IVa)	ADAMA-WA, BENUE-KWA	Hoffmann (1970), Wolff and Gerhardt (1977), Jungraithmayr (1980, 1987a, 1987b, 1992/93, 1995), Gerhardt (1983), Kleinewillinghöfer (1990, 1994, 1995, 2001), Adelberger (1992, 1994, 1995), Adelberger and Kleinewillinghöfer (1992), Jungraithmayr and Leger (1993), Leger (2004), Leger and Zoch (2006), Hammarström (2010: 28–31), Longtau (2012), Hellwig (2012), Caron (2014)
Central Transition sphere (IV)				
5 Chadic	Sahel (IVa)	Afroasiatic spread zone (VI)	? (*Laal*)	Jungraithmayr (1987a), Zima (1995), Jungraithmayr, Nicolaï, and Ibriszimow (1997), Brunk, Ibriszimow, and Jungraithmayr (1999), Ibriszimow (2000), MacEachern (2001, 2002), Kossmann (2005)
6 Sudanese Arabic	Sahel (IVa)	Afroasiatic spread zone (VI)	Nubian, Nilotic, ?	Diem (1979), Versteegh (1982, 2010), Owens (1993, 2006), Braukämper 1995), Lafkioui (2013)
7 South Cushitic	East Sudan-Gregory Rift (IVb)	Chad-Ethiopia (V)	? (*Hadza, Sandawe*)	Ten Raa (1969), Kießling (2002), Kießling and Mous (2003), Kießling, Mous, and Nurse (2008)
Chad-Ethiopia (V)				
8 Southeast Surmic	Chad-Ethiopia (V) fringe	East Sudan-Gregory Rift (IVb)	OMOTIC	Hieda (1991a, 1993, 1996), Dimmendaal (1998a, b)
9 Ethiosemitic	Chad-Ethiopia (V)	Afroasiatic spread zone (VI)	Cushitic	Leslau (1945, 1952), Palmer (1974), Raz (1989), Hudson (1994), Crass (2002), Meyer (2002, 2009), Crass and Meyer (2008, 2011), Lucas (2013: 419–423)
Afroasiatic Spread Zone (VI)				
10 North Songhay	Afroasiatic Spread Zone (VI)	Sahel (IVa)	Berber	Nicolaï (1990), Wolff and Alidou (2001), Christiansen-Bolli (2010), Souag (2010, 2013, 2015a, b)

Notes: GENEALOGICAL/AREAL POOL, *Remnant languages*, ?/(...) = speculative

2.5 Substrate candidates within macro-areas

\+ substrate candidates within macro-areas equally relevant > some well understood

Table 4: Substrate candidates within macro-areal boundaries

Resultant language(s)	Colonized area	Substrate	References
Kalahari Basin (I)			
1 Khoekhoe of Khoe	Cape	Tuu	Güldemann (2002, 2006, 2013a)
2 Khoe of Khoe-Kwadi	Kalahari Basin	Kx’a	Voßen (1992), Güldemann and Loughnane (2012), Elderkin (2014), Güldemann (forth.)
Bantu Spread Zone (II)			
3 Bantu E, F, G	Eastern Africa	Cushitic	Ehret and Nurse (1981), Nurse and Rottland (1991/92), Nurse (1988, 1994, 2000a, b), Mous (2003)
4 Bantu C, D[1]	Rain-forest	Ubangi, Central Sudanic, Pygmy?	Larochette (1959), Vorbichler (1963, 1966, 1968, 1979), Bouquiaux and Thomas (1976, 1994), Kutsch Lojenga (1994), Hammarström (2010: 26), Bostoen and Donzo (2013)
Macro-Sudan Belt (III)			
5 Bandaic of Ubangi	Central CAR	Bongo-Bagirmi	Cloarec-Heiss (1995, 1998)
6 Saraic of Bongo-Bagirmi	Southern Chad	Chadic, ADAMA-WA	Palayer (1975), Boyeldieu and Nougayrol (2008), Boyeldieu (2013, 2016)
7 Tupuri-Mundang of Kebi-Benue	Northern Cameroon	Chadic	Ruelland (1978, 2014), Seignobos and Tourneux (2001), Frajzyngier and Shay (2008), Melis (2014)
8 “Kwa” of Benue-Kwa	Gulf-of-Guinea coast	Ijoid, Kru, ?	Westermann and Bryan 1952: 90-4), Williamson (1985), Donwa-Ifode (1995), Dimmendaal (2001a: 382–387), Hyman (2004), Good (2012), McWhorter (2016)
9 South and Southwest Mande	Upper-Guinea Coast	Kru, Mel	Childs (2004, 2010a, b), Vydrin (2004, 2007, 2008), Cobbinah (2010), Juillard (2010)
Central Transition sphere - Nilotic-Surmic Spread Zone (IVb)			
10 South and East Nilotic	Eastern Africa	(East) Cushitic	Heine, Rottland, and Voßen (1979), Winter (1979), Heine and Vossen (1983), Brenzinger (1992)

[1] Northernmost Bantu languages, especially in the east, could also count partly as (back)colonizers of the Macro-Sudan Belt and thus be included in Table 3.

11 South and West Nilotic	Eastern Africa	Bantu	Adhiambo (1991), Nurse and Rottland (1991/92), Rottland and Okombo (1992), Dimmendaal (1995, 2001b), Reh (2000), Kuteva (2000), Wrigley (2001), Hieda (2011)
Afroasiatic Spread Zone (VI)			
12 Maghrebi Arabic	Maghreb	Berber, Latin	Diem (1979), Thomason and Elgibali (1986), Lucas (2007, 2013), Souag (2007, 2010, 2014), Tilmatine (2011), Kossmann (2014)
13 Egyptian Arabic	Lower Nile Valley	Coptic	Bishai (1960, 1961, 1962), Diem (1979), Behnstedt (2006), Lucas and Lash (2010), Lucas (2013)
14 “Napatan” Egyptian	Upper Nile Valley	Meroitic, Nubian	Peust (1999)
15 Early Egyptian	Lower Nile Valley	Indo-European	Kammerzell (2005)

Note: GENEALOGICAL POOL, ?/(...) = speculative

3 Discussion

\+ great variety of (potential) cases of substrate with wide distribution across Africa (Map 3), still excluding, apart from Arabic, all cases of large vehicular languages like Hausa, Manding etc., which also harbor substrate components

> even if some cases had to be excluded after more detailed research, good data basis for addressing various more general questions regarding:

- linguistic features typically affected by substrate
- migration and contact history of particular geographical areas

\+ potential regularities regarding the location of substrates:

- considerable correlation with linguistic macro-areas - close to/in their boundaries
- recurrent correlation with “longitude spread constraint” (Güldemann and H. forth.)

\+ substrates lead to speciation in lineages (e.g., Khoekhoe) but not necessarily (Mande, Nilotic, Kwa, Bantu) - latter case particularly diagnostic (see below)

\+ some cases lack sufficient information on substrate identity or even contact history

> “circumstantialist” approach nevertheless viable under certain circumstances:

- independent parallel innovation of different lineages in same geographical context
- non-linguistic evidence for strong population admixture
- marked feature(s) that make other explanations (inheritance, borrowing) unlikely

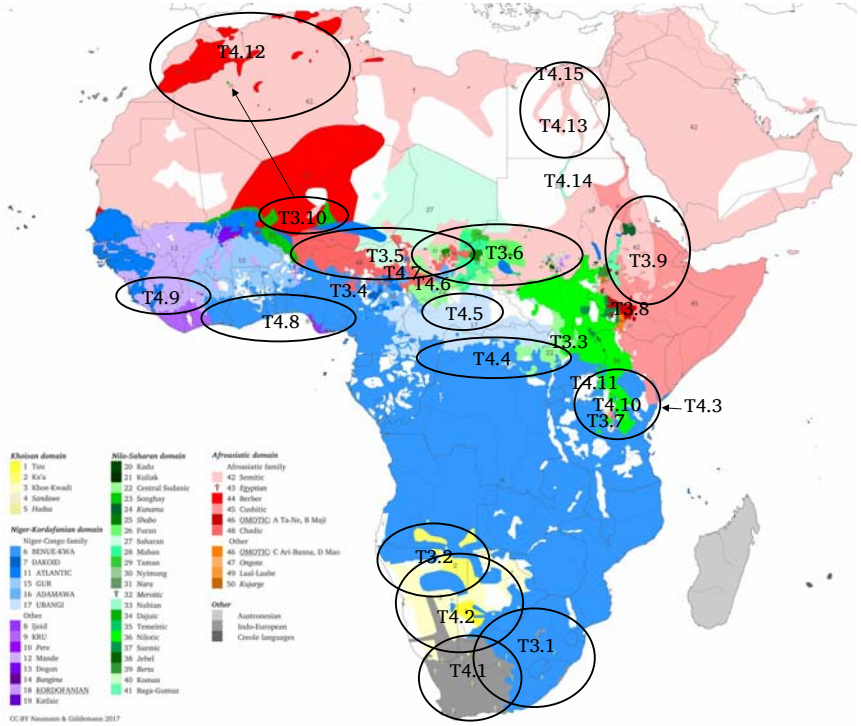
> cf., e.g., Bantu and Central Sudanic in Rainforest, or Bantu S and R in Kalahari Basin

\+ different types of presumably contact-induced lineage-internal diversity

> necessary distinction between innovative languages that have:

a) acquired individual-identifying substrate features, e.g., Chadic in III, Khoekhoe in I
b) simplified inherited structure (see Kusters 2011: 9), e.g., Chadic IVa, “Kwa” in III

> unclear status of certain features, e.g., verb serialization in “Kwa”



Notes: T3.n = Key to Table 3, T4.n = Key to Table 4

Map 3: Approximate distribution of substrate candidates in Africa

References (except for Tables 3 and 4)

Bryan, Margaret A. 1959. The T/K languages: a new substratum. Africa 29,1: 1-21.

Campbell, Lyle. 2003. How to show languages are related: methods for distant genetic relationship. In Joseph, Brian D. and Richard D. Janda (eds.), The handbook of historical linguistics. Oxford: Blackwell, 262-282.

Campbell, Lyle and William J. Poser. 2008. Language classification: history and method. Cambridge: Cambridge University Press.

Clements, George N. and Annie Rialland. 2008. Africa as a phonological area. In Heine and Nurse (eds.), 36-87.

Cravens, Thomas D. 1994. Substratum. In Asher, R. E. et al. (eds.), The encyclopedia of language and linguistics, vol. 1. Oxford: Pergamon Press, 4396-4398.

Donohue, Mark. 2013. Who inherits what, when? Toward a theory of contact, substrates, and superimposition zones. In Bickel, Balthasar et al. (eds.), Language typology and historical contingency. Amsterdam: John Benjamins, 219-239.

Ehret, Christopher. 2003. Stratigraphy in African historical linguistics. In Andersen, Henning (ed.), Language contacts in prehistory: studies in stratigraphy. Current Issues in Linguistic Theory 239. Amsterdam: John Benjamins, 107-114.

Gilman, Charles. 1986. African areal characteristics: Sprachbund, not substrate? Journal of Pidgin and Creole Languages 1,1: 33-50.

Greenberg, Joseph H. 1959. Africa as a linguistic area. In Bascom, William R. and Melville J. Herskovitz (eds.), Continuity and change in African cultures. Chicago: University of Chicago Press, 15-27.

Greenberg, Joseph H. 1963. The languages of Africa. Publications 25. Bloomington: Research Center in Anthropology, Folklore, and Linguistics, Indiana University Press.

Greenberg, Joseph H. 1983. Some areal characteristics of African languages. In Dihoff, Ivan R. (ed.), Current approaches to African linguistics 1. Publications in African Languages and Linguistics 1. Dordrecht/ Cinnaminson: Foris, 3-21.

Güldemann, Tom. 1998. The Kalahari Basin as an object of areal typology - a first approach. In Schladt, Mathias (ed.), Language, identity, and conceptualization among the Khoisan. Quellen zur Khoisan-Forschung 15. Köln: Rüdiger Köppe, 137-196.

Güldemann, Tom. 1999. Head-initial meets head-final: nominal suffixes in eastern and southern Bantu from a historical perspective. Studies in African Linguistics 28,1: 49-91.

Güldemann, Tom. 2001. Phonological regularities of consonant systems across Khoisan lineages. University of Leipzig Papers on Africa, Languages and Literatures 16. Leipzig: Institut für Afrikanistik, Universität Leipzig.

Güldemann, Tom. 2003. Logophoricity in Africa: an attempt to explain and evaluate the significance of its modern distribution. Sprachtypologie und Universalienforschung 56,4: 366-387.

Güldemann, Tom. 2005. Complex predicates based on generic auxiliaries as an areal feature in Northeast Africa. In Voeltz, F. K. Erhard (ed.), Studies in African linguistic typology. Typological Studies in Language 64. Amsterdam: John Benjamins, 131-154.

Güldemann, Tom. 2008. The Macro-Sudan belt: towards identifying a linguistic area in northern sub-Saharan Africa. In Heine and Nurse (eds.), 151-185.

Güldemann, Tom. 2010. Sprachraum and geography: linguistic macro-areas in Africa. In Lameli, Alfred, Roland Kehrein and Stefan Rabanus (eds.), Language and space: an international handbook of linguistic variation, volume 2: language mapping. Handbooks of Linguistics and Communication Science 30,2. Berlin: Mouton de Gruyter, 561-585, Maps 2901-2914.

Güldemann, Tom. 2011. Proto-Bantu and Proto-Niger-Congo: macro-areal typology and linguistic reconstruction. In Hieda, Osamu, Christa König and Hirosi Nakagawa (eds.), Geographical typology and linguistic areas, with special reference to Africa. Tokyo University of Foreign Studies, Studies in Linguistics 2. Amsterdam: John Benjamins, 109-141.

Güldemann, Tom. 2017. A shared pronominal canon in the Macro-Sudan belt: typological, areal and genealogical perspectives. In Kramer, Raija and Roland Kießling (eds.), Mechthildian approaches to Afrikanistik: advances in language based research in Africa, Festschrift für Mechthild Reh. Köln: Rüdiger Köppe, 101-146.

Güldemann, Tom. forthcoming a. Areal linguistics and linguistic areas of Afrabia. In Güldemann (ed.).

Güldemann, Tom. forthcoming b. Historical linguistics and genealogical classification. In Güldemann (ed.).

Güldemann, Tom (ed.). forthcoming. The languages and linguistics of Africa. The World of Linguistics 10. Berlin: Mouton de Gruyter.

Güldemann, Tom and Anne-Maria Fehn. 2017. The Kalahari Basin area as a “Sprachbund” before the Bantu expansion. In Hickey (ed.), 500-526.

Güldemann, Tom and Harald Hammarström. forthcoming. Geographical axis effects in large-scale linguistic distributions. In Crevels, Mily and Pieter Muysken (eds.), Language dispersal, diversification and contact. Oxford: Oxford University Press.

Haig, Geoffrey. 2017. Western Asia: East Anatolia as a transition zone. In Hickey (ed.), 396-423.

Haig, Geoffrey and Geoffrey Khan (eds.). forthcoming. The languages and linguistics of Western Asia: an areal perspective. The World of Linguistics 6. Berlin: Mouton de Gruyter.

Hall, Robert A. Jr. 1974. External history of the Romance languages. New York: Elsevier.

Heine, Bernd. 1973. Pidgin-Sprachen im Bantu-Bereich. Kölner Beiträge zur Afrikanistik 3. Berlin: Dietrich Reimer.

Heine, Bernd. 1975. Language typology and convergence areas in Africa. Linguistics 144: 27-47.

Heine, Bernd. 1976. A typology of African languages based on the order of meaningful elements. Kölner Beiträge zur Afrikanistik 4. Berlin: Dietrich Reimer.

Heine, Bernd and Derek Nurse (eds.). 2008. A linguistic geography of Africa. Cambridge: Cambridge University Press.

Hickey, Raymond (ed.). 2017. The Cambridge handbook of areal linguistics. Cambridge: Cambridge University Press.

Hyman, Larry M. 2011. The Macro-Sudan belt and Niger-Congo reconstruction. Language Dynamics and Change 1,1: 3-49.

Kusters, Wouter. 2011. Substrate. In Edzard, Lutz and Rudolf de Jong (eds.), Encyclopedia of Arabic language and linguistics Online. http://dx.doi.org/10.1163/1570-6699_eall_EALL_COM_0324.

Möhlig, Wilhelm J. G. 1981. Stratification in the history of the Bantu languages. Sprache und Geschichte in Afrika 3: 251-316.

Nichols, Johanna. 1996. The comparative method as heuristic. In Durie, Mark and Malcolm Ross (eds.), The comparative method reviewed: regularity and irregularity in language change. Oxford: Oxford University Press, 39-71.

Singler, John V. 1983. The influence of African languages on pidgins and creoles. In Kaye, Jonathan et al. (eds.), Current approaches to African linguistics 2. Publications in African Languages and Linguistics 5. Dordrecht/ Cinnaminson: Foris, 65-77.

Singler, John V. 1988. The homogeneity of the substrate as a factor in pidgin/creole genesis. Language 64: 27-51.

Weinreich, Uriel. 1979 [1953]. Languages in contact: findings and problems. New York: Mouton Publishers.

Wikipedia “Stratum (linguistics)” 2017. https://en.wikipedia.org/wiki/Stratum_(linguistics) (accessed 29/7/2017)