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Labial-velars: A questionable diagnostic for a linguistic area

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1. Introduction – "KP" stands for any labial-velar (k͡p, g͡b, ŋ͡m)

- A "linguistic area" is defined by unusual features which cannot be explained by chance, genetic relationship, *or* normal language development (Heine and Leyew 2008:16).
- These authors, as well as Güldemann (2008) and Clements and Rialland (2008), assert that the occurrence of labial-velars is one of several diagnostics to identify the "Sudanic Belt" of Africa as a linguistic area, since KPs are:
  a) unusual, and
  b) largely arise through language contact
- I argue that both these sub-assertions are incorrect, and that the occurrence of labial-velars is less decisive for establishing a linguistic area than these authors, as well as previous ones (e.g. Dalby 1970, Greenberg 1983) have assumed.
- Clements and Rialland (2008) state that labial-velars are "almost unique to Africa".
- In Maddieson (1984), only 6% of the languages sampled have a KP, with one outside Africa. Ruhlen (1976), in an earlier survey of 693 languages, also came up with 6%.
- Maddieson (2013) also groups KP with the "uncommon consonants," now with 8%.
- However, a considerably more extensive database of specific languages with KPs, collected over several years, shows that KP is not as unusual as previously thought, but occurs in at least 848 (12%) of the world's languages, including at least 60 languages of the Pacific, and a handful of cases elsewhere.
- Furthermore, though language contact is a factor in the occurrence of some labial-velars in Africa, the occurrence of KPs in the vast majority of languages can be attributed to genetic inheritance or regular sound change.

2. My database and what it shows in general

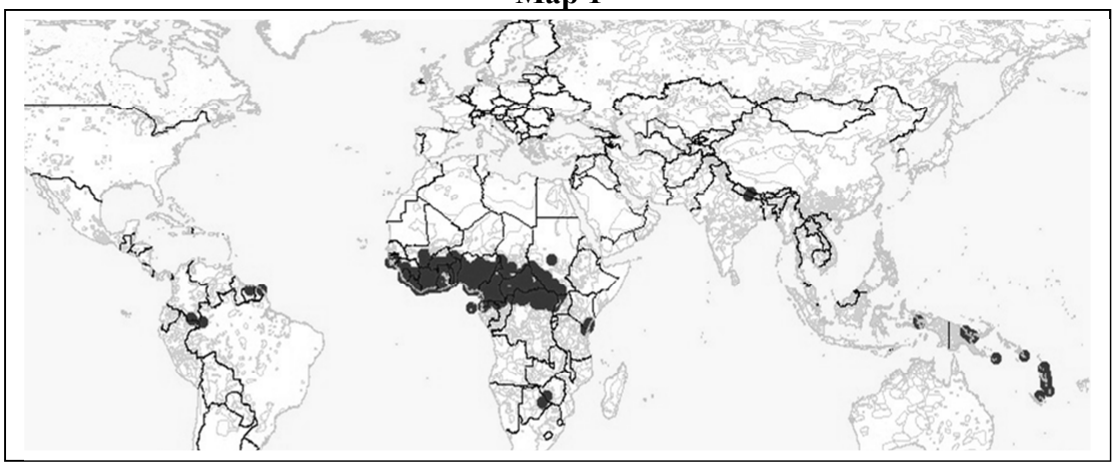
1) Sample from Cahill labial-velar database

Language	Country	ISO	Sources	Phonemes
Cherepon	Ghana	cpn	Snider89, Kropp-D80	kp only, no p
Chonyi (Chichonyi-Chidzihana-Chikauma)	Kenya	coh	Hinnebusch73	kp, gb, Nm
Cori (Chori)	Nigeria	cry		
Cung (Chung)	Cameroon	cug	Boutwell pc	kp, gb
Daba	Cameroon	dbq	UNESCO-SIL93	kp, gb, B, kw, gw
Daba	Nigeria	dbq	UNESCO-SIL93	kp, gb, B, kw, gw
Dagaari	Ghana	dga	Kennedy66	kp, gb, Nm

Notes: 1) Some languages are spoken in more than one country, e.g. Daba above. I recorded these all, but in counting *languages*, I eliminate the duplicates. 2) Languages are uniquely identified and counted by ISO codes. 3) Phonemes noted are not only kp, gb, Nm (ŋm), but related sounds. 4) Multiple sources are noted where available. 5) Some languages have no source listed (artifact of my early research).

2.1 How many languages; where are they spoken?

Map 1



- Map of distribution of labial-velars:
  - 848 languages with phonemic labial-velars (so far!)
  - 60 languages of the Pacific, and a handful of isolated cases elsewhere
  - 66 outside Africa – about 8%. So 92% are in Africa.
- Subtracting sign languages (22) and Mediterranean spoken languages (40), sub-Saharan Africa has 2076 spoken languages (Lewis et al 2015). At least 40% of African languages have KP.
- So, one idea is somewhat challenged – labial-velars are double Maddieson's and Ruhlen's estimate, not so rare.

2.2 What consonants are present?

760 languages out of 848 have some data on phonemes, and 712 have approximately complete inventories. Some uncertainties:

2) Sample 2 from Cahill labial-velar database

Dongo ('Dongo-ko)	DRC	doo	Tucker&Bryan66, **Moñino88**	kp, gb, **Ngb**, B
Nalu	Guinea	naj	Greenberg83	??
Oloma	Nigeria	olm	Elugbe86	kp, gb…

Dongo has two sources which disagree on inventory.
Greenberg mentions Nalu as having KP, but gives no inventory
Oloma's source does not provide a complete inventory.

Also, I have not counted languages with only phonetic labial-velars (e.g. Vietnamese), or where there is free variation between [Kw] and [KP]

Some preliminary inventory generalizations:

- 604 have both /kp, gb/ (about 85% of languages with complete inventory)
- 110 have only /kp/ (66) or only /gb/ (44). (If only /kp/, there are always other gaps in the phonemic inventory – see Cahill 2008).
- How rare is /ŋm/? 167 languages have it, almost 1/4
  - No language has ONLY /ŋm/. If you have labial-velars, there will be a stop.
- 131 have a prenasalized /ŋKP/ or /ŋmKP/ - 19%
- 303 have only /kp/ and /gb/ as labialvelars: about 43%. The most common 3rd sound is /ŋm/.
- Sometimes /gb/ sounds like [ɓ]. Of the 712 languages, 127 have /ɓ/, ~ 18%.
- At least 6 languages have a contrast between [gb] and [gɓ]. Under-reported?

3. Is the Sudanic Belt a Linguistic Area (Sprachbund)?

3.1 The "linguistics area" proposal

- A "linguistic area" is defined by several *uncommon* linguistic features shared by languages, and these features are shared *not* because of genetic relatedness or sound change, but contact and borrowing.
- Since labial-velars are "almost unique to Africa" and "extremely infrequent" elsewhere, Clements and Rialland (2008) and Güldemann (2008) use this as one of several features to label Africa, in particular the "Sudanic Belt," as a linguistic area.
- Previous scholars have made similar claims (Dalby 1970, Greenberg 1983).
- So, a "linguistic area" label implies that language contact and borrowing is the *primary* reason that labial-velars exist in many/most African languages.

3.2 Where do labial-velars actually come from? A first pass.

3.2.1 Contact with other languages

Languages which have KP (even across major language family boundaries), e.g. some Bantu languages (74), which mostly lack KP (Grégoire 2003, others), and some Chadic languages (17).

3.2.2. Spontaneous regular sound change

Change in both recent and ancient stages of languages' histories, often following the path *KU > Kw > KP. For example, in the Sawabantu languages (Cameroon), Mutaka and Ebobissé (1996/97) show that a historical prefix *ku- was realized as *kw- before vowels (in a common glide formation process), and then *kw > k͡p.

3) Evolution of labial-velars

	Eastern Sawabantu	Western Sawabantu[1]
'diarrhea'	**kú**ɓwako	**kú**gbako
'sword'	**kw**átá	**k͡p**átá

(This path *KuV > *KwV > K͡PV is probably why some languages lack K͡Pu.)

3.2.3 Genetic, from parent languages

*KP has been reconstructed in several African proto-***families**, e.g. Central Sudanic of Nilo-Saharan (Boyaldieu 2006), and Niger-Congo families of Mande (Dwyer 1989), Gur (Manessy 1979), Ijoid (Blench and Williamson 2004), Benue-Congo (deWolf 1971), and several Benue-Congo subfamilies such as Edoid (Elugbe 1986), Igboid (Williamson et al 2013), Cross River (Dimmendall 1978), Nupoid (Blench 1989)

4) Language families with likely *KP

(bold families have been specifically reconstructed with KP;
numbers on left are from Ethnologue, ones on right from my database):

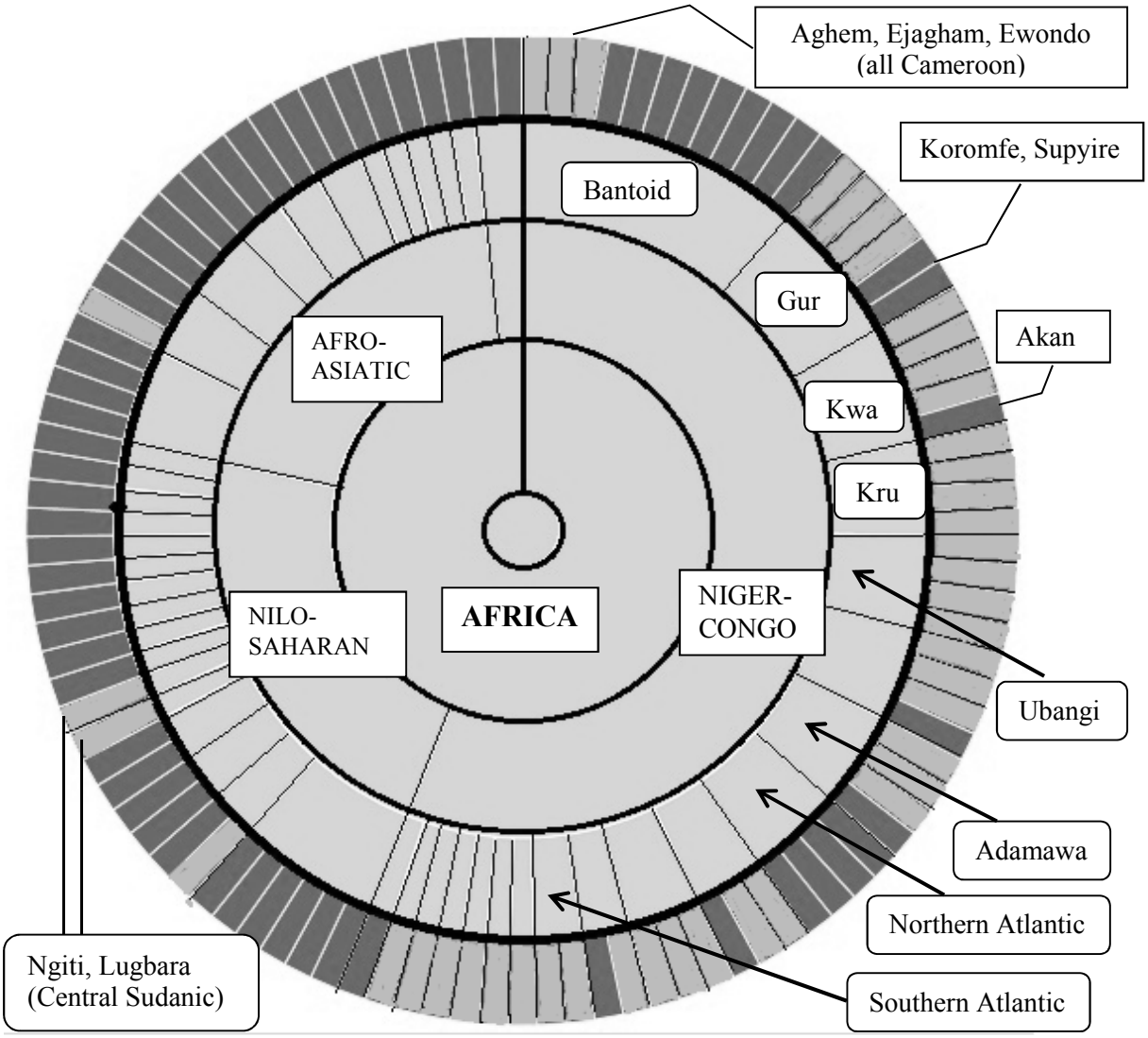
Central Sudanic	**65**	(31)	Defoid	17	(15)
Gur	**97**	**(70)**	**Edoid**	**32**	**(20)**
Kru	**39**	**(39)**	**Ijoid**	**10**	**(10)**
Kwa	80	(72)	**Igboid**	**10**	**(9)**
Mande	**73**	**(46)**	**Nupoid**	**11**	**(5)**
Cross River	**68**	**(45)**	Jukunoid	20	(15)
Platoid (Plateau)	54	(52)	Kainji	59	(17)
Adamawa	89	(66)	Ubangi	70	(56)
			TOTAL	**794**	(568)

- Not all daughter languages in these groups have KP, e.g. Akan is a rare Kwa language with no KP (it changed to P historically). Likewise Moore in Gur. However, even if only 2/3 retained KP, this is still well over 500 languages.
- Example: Proto-Central Sudanic had *KP, but all of its Sara-Bagirme subgroup (29 languages) doesn't have them – EXCEPT Lutos (Olson pc) which either developed it independently or borrowed it.
- A useful tool was released in 2014 – the WALS Sunburst Explorer (http://th-mayer.de/wals/). Designed to make comparison of areal and genealogical features more accessible – exactly the question here. Looking at display #19A ("Presence of Uncommon Consonants"), displaying only labial-velars and "none," and limiting it to Africa, we have:

[1] East Sawabantu = Mongo, Pondo, Duala, Mulimba, Batanga, Banɔh, Bapuku. West Sawabantu = Bubia, Kolɛ.

Figure 1 WALS Sunburst Explorer image of labial-velars in Africa

KEY: Outer circle is individual languages; lighter cells have KPs.
Next inner circle is subfamilies, and the next inner circle is families.



Notes: KPs are rare in Afro-Asiatic, uncommon in Nilo-Saharan (except for Central Sudanic), but *extremely common* in Niger-Congo:

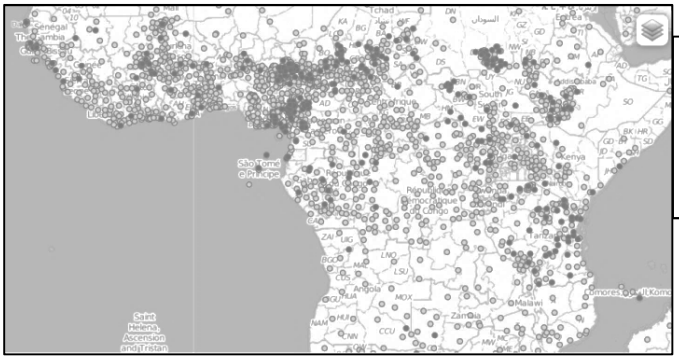
- Northern Atlantic and most of Bantoid have no KPs
- *Southern* Atlantic, Kru, Ubangi, and Cross River have all KPs (along with the single-example subgroups Defoid, Edoid, Ijoid, Igboid, Nupoid, Kainji)
- Other families (Kwa, Gur, Adamawa, Western & Eastern Mande) have 1-2 languages without KPs. Some of these families are explicitly reconstructed with *KPs.

- It is not an unreasonable notion that *KP goes back to Proto-Niger-Congo

4. Concluding remarks

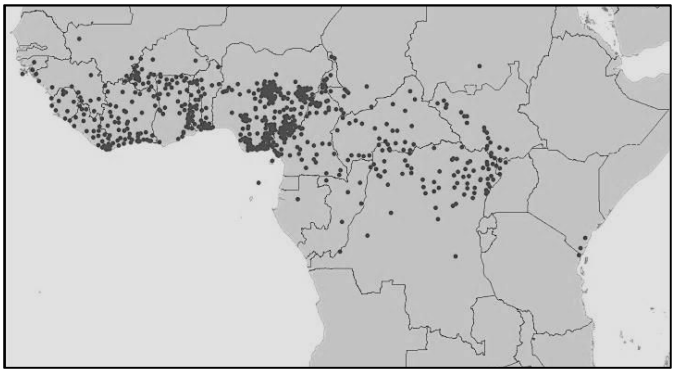
- Sound change and genetic inheritance as the source of KPs have both been proposed not only for Africa, but also for Pacific languages (Lynch 2002, Ross 1998, Blust 1981), and Ross notes the possibility of reconstructing *KP in Proto-Oceanic. In other words, behavior of KPs is not limited to Africa.
- Also, asserting that the "Sudanic Belt" is where the highest concentration of Africa-specific properties exists overlooks the fact that this is also where most of the languages of Africa exist:

Map 2



Languages of Africa
http://www.sil.org/worldwide
(light dots are vigorous languages; dark are endangered.)

Map 3



Languages of Africa
which have labial-velars
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Also, note that languages to the south of KP languages are mostly Bantu

- While historical data is not available for every language, it appears that KP in Africa arose from *sound change* in several dozen languages (or *proto*-languages), from *language contact* in several dozen cases, and from *genetic inheritance* in several hundred languages. Thus the existence of KP in the majority of African languages is not attributable to language contact.

- So if a linguistic area is defined by a) relatively unusual features which cannot be explained by b) genetic relationship or c) constraints on language development, then both the relative abundance of KP and its common sources in genetic relationship and regular sound change weaken the argument for including KP as one of the critical diagnostics for a linguistic area in Africa.
- Does this negate the idea of a linguistic area for Africa? No, it only removes one of the features used to determine this. It may be fruitful to examine other diagnostics for Africa as a linguistic area.

bɪtá-bɪtá yíŋinine ŋmaamíŋ jôŋ
'small-small catches monkey's tail'
Bit by bit you'll accomplish your goal (Konni proverb).

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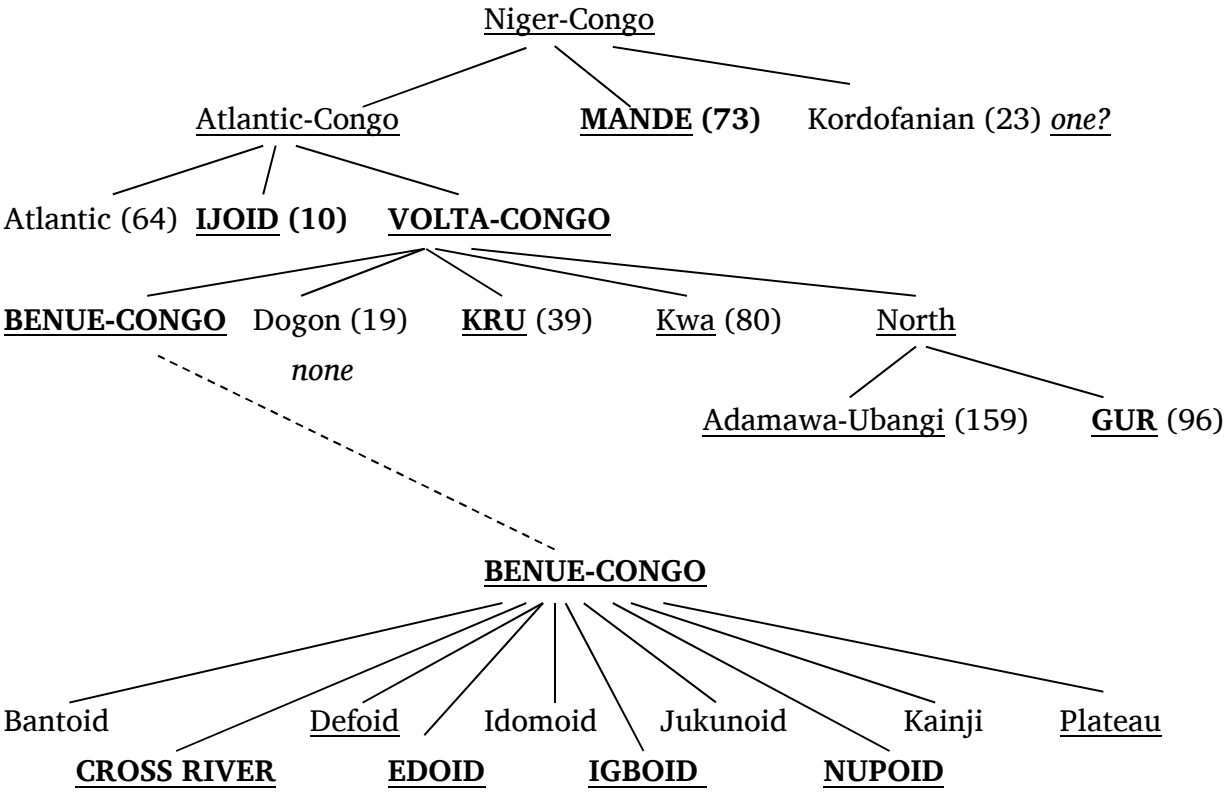
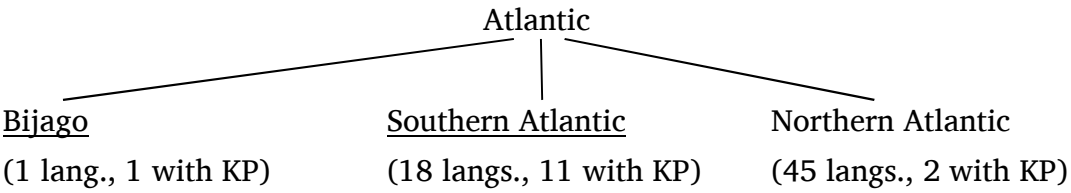
APPENDIX A: Language families with reconstructed labial-velars

Language families in **BOLD UNDERLINE** have been reconstructed with KP

Language families with underline I consider promising for reconstruction with KP



APPENDIX B: Atlantic – a sample case study



See also Fig. 1: WALS Sunburst Explorer

Hypothesis 1: Atlantic had *KP. Northern Atlantic lost it (2 languages re-aquired it); Southern Atlantic retained it (though some languages lost it)

Hypothesis 2: Atlantic did not have *KP (lost from Proto-Atlantic Congo). Proto-Southern Atlantic acquired it (through borrowing or sound change), Northern Atlantic did not.