On Reconstructing Tone in Proto-Niger-Congo

Larry M. Hyman
University of California, Berkeley

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"It is generally believed that Proto-Niger-Congo had at least two tones, but no serious reconstruction has yet been done." (Williamson & Blench 2000:38)

1. Introduction

In preparing this talk my original motivation was to address the question of how far outside of Narrow Bantu the widely accepted reconstructed tones of Proto-Bantu (PB) lexical morphemes correspond (Greenberg 1948; Meeussen 1969[1980]; Bastin, Coupez, Mumba & Schadeberg 2002). The various possibilities include languages/language subfamilies at different levels of Niger-Congo (NC): (i) Bantoid; (ii) East Benue-Congo (Cross-River, Central Nigerian); (iii) Benue-Kwa; (iv) Volta-Congo.... (v) Niger-Congo (Williamson & Blench 2000:18). It is generally assumed that an early proto language, e.g. Proto-Niger-Congo (PNC) was tonal and had two tones, *H and *L (cf. Hombert 1984:119):

> "Tone can be reconstructed for Proto-Niger-Congo... but also represents an areal phenomenon...." (Childs 1995a:13)
>
> "... at least two basic tonemes, marked by a high and a low pitch respectively, existed in PWN [Proto-Western Nigritic—roughly Atlantic, Gur, and old Kwa]" (Mukarovsky 1977:168)

There are several reasons behind this "intuition":

First, almost all NC languages are tonal, including those controversial inclusions such as Mande, Dogon, and Ijoid.

Second, non-tonal NC languages are geographically peripheral and are generally assumed to have lost their tone via natural tone simplification processes (cf. Childs 1995b) and/or influence from neighboring non-tonal languages (cf. Hombert 1984:154-5). This includes not only Swahili in the East, but also Northern Atlantic (Fula, Seereer, Wolof etc.), Koromfé (Northern Central Gur; Rennison 1997:16) and (outside NC) Koyra Chiini (Songhay; Heath 1999:48), which could be the effect of contact with Berber or Arabic, either directly or through Fula (Childs 1995b:20). The only geographic exception concerns certain zone M and N Bantu languages (e.g. Nyakyusa, Tumbuka).

Third, possible pathways for Niger-Congo tonogenesis are unsupported and can only be speculative. There is no evidence of a transphonologization from, say, breathy or glottalized stops, for instance. If I had to speculate myself, I would wonder if some ancient ancestor had consonant clusters (CC) which might have become hC and/or ʔC, these latter then triggering tonogenesis. Most NC languages do not have complex syllables, so this does not see far-fetched. However, there is no evidence for it that I am aware of.

Finally, languages with 3, 4 or 5 tone heights are generally assumed to have innovated them either from the effect of depressor consonants or tonal interactions, as can be extrapolated from more recent developments, e.g. in Kru and Bantoid, respectively. Thus:

> "No mid tone has been reconstructed for PUC [Proto-Upper-Cross] so far. The mid tone in eg., KoHumono seems to be the result of a secondary split of high, in most cases because of some depressor consonant...." (Dimmendaal 1978:185)

This having been said, there are both methodological and practical issues in actually reconstructing tone at the PNC level:

First, PNC presents a huge time depth during which tones will have likely changed, perhaps dramatically, due to mergers, splits, and contextual tonal interactions with other morphemes.

Second, for nouns, the stem tone is often affected by the noun class marker, either a prefix or suffix; in PB the initial augment morpheme had a *H tone which often shifts onto the L tone noun class prefix or stem. In addition, given de Wolf's (1971) reconstruction of different tones on Proto-Benue-Congo noun class prefixes, if noun classes have merged here and there, with *H or *L fusing onto the noun stems, this could complicate our ability to detect regular tonal correspondences. Additional problems will occur in languages which have lost the second syllable of the mostly bisyllabic Proto-Bantu noun stem. (It is important in this context that we avoid undue Bantu-centrism.)

Third, for verbs, it is well-known that many NC languages do not have a lexical tonal contrast on verb roots, e.g. Kisi (Atlantic), Konni, Kulango (Gur), Ejagham (Edoid), Cicipu (West Kainji), Zande (Ubangi), not to mention many Bantu languages, where tones are assigned by the inflectional morphology (tense-aspect-mood-negation)—these languages will be largely irrelevant in the search for tonal correspondences with PB lexical verb tones.

Finally, it should be noted that for both word classes, it is easier to identify cognates in languages which have CVC roots vs. those which have shortened them to CV, e.g. Yoruboid, Nupoid, and Igboid, where most nouns are V-CV, and verbs are CV.

Despite the above problems, there is a belief that a tonal correspondence strengthens the likelihood of cognacy: "Despite the rare attestations the similarity of forms and tone argues that this is reconstructed to South Bantoid." (Blench 2004[2016]:155). There thus are quite a number of problems to overcome in reconstructing tone at the NC level.

2. The strategy in this study

The proposal for the current study is to look exclusively at verbs, where the task might be expected to be both easier and more interesting. It may be easier since most PB verb roots are reconstructed with only one syllable (vs. mostly bisyllabic nouns). There is some generality to this in various NC subbranches, e.g. "Igboid roots, as seen in verbs, are uncompromisingly monosyllabic" (Williamson, Blench & Ohiri-Aniche 2016:2). This means that we would be comparing verbs roots for their correspondence to a single proto *H or *L tone. Looking at verb tones might also be more interesting, since verb roots often do not occur in isolation. In particular, the suffixal morphology (e.g. verb extension tones) may provide important hints as to the nature of earlier states, ultimately PNC vs. noun morphology, which is presently much more under control.

What this means is that we now have THREE goals, namely to see (i) if non-Bantu verb root tones correspond with PB; (ii) if anything can be said about the tones of cognate verb extensions; (iii) if (ii) can tell us more concerning what the nature might have been of early verb structure in NC. (We also would ultimately be interested in the inflectional marking of tense, aspect, mood and negation, but reconstruction of specifics has proven to be excessively rich and complicated enough, even within Bantu (see Nurse 2008).)

To get started I started by consulting Mukarovsky (1976-7), who had already claimed that Bantu verb tones correspond to his Proto-Western-Nigritic (PWN), i.e. as far away as (tonal) "Atlantic" languages. Importantly, it should be noted that Mukarovsky draws mostly from Guthrie's (1967-71) Common Bantu (CB), and cites earlier (often incorrect) suggestions for PB, i.e. from studies preceding Meeussen (1969[1980]), to which he apparently did not have access. Among his 653 proposed reconstructions are 287 verbs, i.e. 44.0%. Of these 58 have a tonal reconstruction. Although these allow for a comparison with PB, many of the correspondences are of questionable cognacy (see below). In addition, some of the cited CB/PB forms are not reliably reconstructed—I have checked their "fiabilité" scores in Bastin et al (2002). Finally, many reconstructed PWN tones are based only on a few languages. What the comparison yields is seen in Table 1:

PWN	*CB/PB*		*PWN*	*CB/PB*		*PWN Totals*
*H	*H	24	*H	*L	11	35 *H
*L	*L	20	*L	*H	3	23 *L
corresponding:		44	non-corresponding:		14	

Table 1. Corresponding tones between PWN and CB/PB (Mukarovsky)

By about a 3 to 1 ratio (44 vs. 14), the tones of PWN and CB/PB correspond. However, in some cases I could not see from the cited examples, why one vs. another tone was reconstructed. It is likely that Mukarovsky was influenced by the tones in Guthrie's CB forms, i.e. Bantu-centrism.

Another long-range reconstruction effort is Stewart's (2002:214-223) Proto-Potou-Akanic-Bantu (PPAB), which 54 verb roots out of 109 reconstructions, or 49.5%. Although tone is not reconstructed, of the 54 verb roots, 36 have PWN correspondences. Of these, 26 are reconstructed without tone by Mukarovsky (including PWN **kual* 'cough'). The remaining 10 are equally divided: 5 are reconstructed with *H by Mukarovsky (including PWN **kwác* 'cough'), and 5 are reconstructed with *L. These 10 forms are provided in Tables 2 and 3, where I have also added correspondences to Proto-Upper-Cross (PUC) (Dimmendaal 1978) and Proto-Igboid (PIgb) (Williamson, Blench & Ohiri-Aniche 2016):

PWN	*PPAB*	*PB (BLR)*	PUC	PIgb	
*khwú	*k^{w}u	*kú	*k^{w}á	*ŋúú	'die'
*bíl	*ɓĩĩĩ	*bíd		*wé	'become cooked'
*dád	*ɗa	*dáad	*DáBí	*ɗãã (HL)	'lie down, sleep'
*kwác	*k^{w}apɪ	*kócɪd		*k^{w}á	'cough'
*ní	*ñĩ	*nì	*nɛ̀	*ñĩõ (HH)	'defecate' (with tonal discrepancies)

Table 2. PWN *H tone correspondences

PWN	*PPAB*	*PB (BLR)*	PUC	PIgb	
*pìn	*pĩńĩ	*pìn		*pǐ	'press, squeeze'
*kì	*k'ĩ	*ké		*í-ŋ̀-kí (n.)	'dawn' (with tonal discrepancies)
*gìl	*gili	*gìd		*ɟɛ̃ (H)	'abstain, avoid'
*lùk	*l̃õŋkʊ	*dùk	*nòkà	(*kpă)	'plait'
*mìl	*mĩĩĩ	*mèd	*mèn	(*ɲo [?], *ɗîwɛ̃)	'swallow'

Table 3. PWN *L tone correspondences

There will of course be many more tonal correspondences with languages in groups that are more closely related to PB. Proto-Grassfields Bantu works almost perfectly (Hyman 1979; Elias, Leroy, & Voorhoeve 1984), as does Noni (Bantoid: Beboid). Noni has /H, M, L/, but verb roots show only a binary contrast, which I indicate below as H vs. L (Hyman 1981). Working from Mukarovsky's PWN, I found 85 Noni verbs with PB correspondences:

Noni	*PB*		*Noni*	*PB*		*Totals*
H	*H	46	H	*L	4	35 *H
L	*L	26	L	*H	4	23 *L
corresponding:		72	non-corresponding:		8	(plus 5 where the PB tone is uncertain)

Table 4. Corresponding tones between Noni and Proto-Bantu

As seen, the tones overwhelming correspond. (Five of the 85 correspondences are not represented in Table 4, since the PB tone is uncertain.)

Moving a little further away, drawing from a 1485 entry lexical database of Leggbo (Upper Cross) created with Imelda Udoh, I found 45 verbs which correspond to PWN/PB Although Leggbo has /H, M, L/, verb roots show only a binary contrast indicated as M vs. L:

Leggbo	*PB*		*Leggbo*	*PB*		*Totals*
M	*H	22	M	*L	Ø	22 *H
L	*L	15	L	*H	3	16 *L
corresponding:		37	non-corresponding:		3	

Table 5. Corresponding tones between Leggbo and Proto-Bantu

Again, the consistency of the correspondences is encouraging (37 vs. 3).

When we get further out into Igboid, it gets a little harder. Part of the problem is that the group has reduced most proto forms to CV roots. Among more than 600 proposed Proto-Igboid reconstructions, Williamson, Blench & Ohiri-Aniche (2016) provide potential PB analogues for 174 verbs. Without critically evaluating them (some appear to be listed perhaps only to show that the PB root is not cognate), the tonal correlates appear to be problematic (note how few PIgb *L verbs are reconstructed):

		Proto-Igboid					
		*H	*L	*LH	*HL	*HH	*Totals:*
Proto-Bantu *H	:	51	3	13	11	11	89
Proto-Bantu *L	:	36	5	25	11	8	85
Totals:		87	8	38	22	19	

Table 6. Corresponding tones between Proto-Igboid and Proto-Bantu

In Table 6 I have underlined the numbers where the PIgb first tone corresponds to PB, which turns out to produce 103 corresponding vs. 71 non-corresponding tones or 59%, hence not extremely impressive. Since some of the resemblances may not indicate a common proto form, I identified 41 PIgb reconstructions which look the most likely to be cognate with PB:

		Proto-Igboid						
		*H	*L	*LH	*HL	*HH	*Totals:*	*Corresponding:*
Proto-Bantu *H	:	13	0	5	2	5	25	20 vs. 5
Proto-Bantu *L	:	6	0	5	3	2	15	5 vs. 11
Totals:		19	0	10	5	7	41	25 vs. 16

Table 7. Corresponding tones between most likely Proto-Igboid and Proto-Bantu cognates

As seen, this produces 25 out of 41 or 61% corresponding tones, hence no significant improvement. Either many of the PIgb reconstructions are not cognate with PB, or there have been significant changes in Igbo verb tones. Some of the best PIgb/PB correspondences are shown in Table 7 (where ˷ = nasalization):

*H/*H	:	*ɗí / *dí	'eat'	*ŋ̰ / *ŋ̰ó~ɲó	'drink'	*t'ṵ / *tóng	'build'
*H/*L	:	*gwɔ / *gòn	'snore'	*tí / *tì	'tell/say'	*cú / *còb	'rub'
*LH/*H	:	*pŭ / *púm	'exit'	*ɗyă / *dóad	'be ill'	*pwŭ / *púd	'blow w/mouth'
*LH/*L	:	*lìCi̯ / *dìık	'bury'	*lòwṵ / *dò	'fight'	*kpŭ / *kòd	'scrape'
*HL/*H	:	ɗa̰a̰ / *dáád	'sleep'	*tô / *tó	'pound'		
*HL/*L	:	*ɟô / *jòd	'buy'	*díù / *dì	'be'	*lṵ / *dòd	'be bitter'
*HH/*H	:	*nḭ́ŋ́ / *nínk	'give'	*ɗúá / *dóót	'dream'	*bíú / *bá	'be'
*HH/*L	:	*nḭ́ŋṵ / *nè	'defecate'	*lúCú / *dùng	'marry'		

Table 8. Some of the best Proto-Igboid and Proto-Bantu cognates

It should be noted that there are at least three tonal classes of verb roots in certain Igbo lects (Williamson, Blench & Ohiri-Aniche 2016:2), and that the second syllable/tone of verbs may either be archaic, or Igboid innovations. The question is whether we have moved too far away from Bantu for the tones to correspond—or is something else going on.

3. Second syllable tone

Up to this point I have been operating under the following three related assumptions: (i) NC verb roots are monosyllabic; (ii) NC verb roots can be studied in morphological isolation; (iii) NC verb roots contrast only two tones (*H and *L). With respect to this last point, no evidence has been found for more than two tones (*H, *L) in PNC. The four tonal configurations in PIgb, are potentially predictable from the structure of NC stems: (non-derived) nouns have monomorphemic, mostly bisyllabic roots (=stems), e.g. *CVCV, while verbs have monomorphemic, monosyllabic roots + a suffix or suffixes, e.g. *CVC-V. Exceptions to this dichotomy are found, e.g. in Mande and Ijoid, where bisyllabic (and potentially longer) verb stems are monomorphemic as well: "So far, there is no reason to postulate for the verb in Proto-Mande root structure different from the noun" (Valentin Vydrin, pers.comm.). There are at least three alternative explanations for this: (i) this might be an archaic feature of PNC preserved in these early branches, with verb suffixes developed later; (ii) these subgroups could have lost the verb morphology; (iii) these subbranches are not NC.

There are other NC languages which look like they have monomorphemic CVCV verb roots, but the second (C)V may have once been a suffix. Evidence for this can be derived from the fact that many NC languages restrict the second vowel of CVCV verbs. For example, Leggbo allows only /i/ and /a/ (the latter assimilating to a preceding non-high vowel), which can be traced back to Proto-Upper-Cross (Dimmendaal 1978). Of his 100 reconstructed verbs, 45 are monosyllabic, 55 bisyllabic, with the following V1+V2 distributions:

V1 →	*i	*e	*ɛ	*u	*o	*ɔ	*a	*Totals*
V2 = *i :	4	2	1	2	5	0	9	23
V2 = *a :	9	2	0	3	8	0	7	29
Totals :	13	4	1	5	13	0	16	52

Table 9. V1/V2 distributions in Proto-Upper-Cross

As seen, 52 out of the 55 bisyllabic reconstructions have either **i* or **a* as their second vowel. The three exceptions are **ppénè* 'return', **bene* 'remember' and **kwùŋ(ede)* 'open'.

There are three possible explanations for why a language may allow only CVCi and CVCa bisyllabic stems: (i) All other *V2 vowels have fallen out, leaving the verb monosyllabic; (ii) All other *V2 vowels have merged with **i* and **a*; (iii) V2 vowels may be relics of suffixes which may have been limited to **i* and **a*. That suffixes can fail to exploit all of the vowel possibilities of the initial root syllable is dramatically seen in Kulango (Gur), where the 18 verb extensions have only *i~ɪ, u~ʊ* and *a* (Elders 2008:195). This contrasts with the vowel combinations in 424 Kalabari (Ijoid) bisyllabic verbs drawn from a lexicon of 764 verbs collected with Otelemate Harry, whose gaps do not suggest a suffixal origin

V2 →	I	U	E	O	A	Totals:
I	42	0	20	9	19	90
U	0	26	4	10	18	58
E	38	1	38	0	3	80
O	37	11	0	49	7	104
A	36	7	1	1	47	92
Totals:	153	45	63	59	94	424

Table 10. V1/V2 distributions in Kalabari

In the above table I, U, E, O, A stand for [±ATR] vowels. All five of these lexically contrast in both V1 and V2 positon. The gaps that appear look like "normal" morpheme-structure conditions, perhaps also found in nouns: (i) *I-U, *U-I, *E-U, *U-E (with four exceptions); (ii) *E-O, *O-E; (iii) *A-E, *A-O. Kalabari thus clearly allows bisyllabic, monomorphemic verb stems. The only unambiguous verb suffix is *-ma* 'causative': 102 out of 210 trisyllabic verbs and all 20 quadrisyllabic verbs end *-ma*. See however Blench & Williamson (2015) for evidence of extensions in related Izon, none of which show clear cognacy with the rest of Niger-Congo.

4. Verb extension tone

In most subbranches of NC there is evidence of (sometimes extensive) verb suffixation. If a verb stem consists of a root + suffix, and if each morpheme had a tone, then this predicts four verb tone patterns: H+H, H+L, L+L, L+H. The question is whether we find this in NC, and if so, where and at what proto stage. First, it is quite common for there to be H vs. L inflectional suffix tones marking tense-aspect. These tones rarely become lexicalized in the sense of becoming part of the lexical tone of some roots vs others. On the other hand we find occasional H vs. L derivational suffixal tones ("verb extensions"), which can be more readily lexicalized, ultimately losing their independent morpheme status. This likely is the story for Upper Cross. However, PB is clearly reconstructable with tripartite verb stems consisting of a root + extensions + final inflection. According to Meeussen (1967): (i) H and L contrasted on final inflectional endings **-a, *-e, *-ɪ, *-il-e*; (ii) verb extensions were toneless, e.g. **-ɪc-* 'causative,

**-ɪd-* 'applicative', **-an-* 'reciprocal'; (ii) the tone of the final inflectional morpheme was copied onto preceding toneless extensions. This last point is shown in the following Lingala examples from Guthrie, cited by Schadeberg (1977:198):

		'to get confused'		'to stagger'		
		pre-stem	*stem*	*pre-stem*	*stem*	*final V*
a.	infinitive:	kò-	kàk-àt-àn-à	kò-	tél-èng-àn-à	/-à/
	future:	nà-kò-	kàk-àt-àn-à	nà-kò-	tél-èng-àn-à	/-à/
	subjunctive:	ná-	kàk-àt-àn-à	ná-	tél-èng-àn-à	/-à/
b.	past:	nà-	kàk-át-án-í	nà-	tél-éng-án-í	/-í/
	remote past:	nà-	kàk-át-án-á	nà-	tél-éng-án-á	/-á/
	imperative:		kàk-át-án-á		tél-éng-án-á	/-á/

Table 11. Extension tones in Lingala

As seen, all of the tones that follow the L root *-kàk-* 'get confused' and H root *-tél-* 'stagger' are identical. The derivational sequences *-at-an-* and *-eng-an-* copy their tone from the final vowel, which in this case is either /-à/, /-í/ or /-á/, depending on the inflectional TAM.

I am aware of two exceptions of contrastive tone on extensions in Bantu. For still unexplained reasons Chichewa distinguishes /H/ and toneless (< *L) extensions (Hyman & Mtenje 1999):

Toneless extensions		
mat-a	'plaster/glue'	
mat-il-a	'plaster/glue for/at'	{applicative}
mat-its-a	'cause to plaster/glue'	{causative}
mat-an-a	'plaster/glue each other'	{reciprocal}
mat-ul-a	'unplaster/unglue (tr.)'	{reversive tr.}
H tone extensions (the /H/ is realized on the final vowel)		
mat-ik-á	'be plasterable/gluable'	{stative}
mat-its-á	'plaster/glue a lot/well'	{intensive}
mat-uk-á	'become unplastered/unglued'	{reversive intr.}
Dialectal toneless ~ H tone extension		
mat-idw-a	'be pastered/glued' [Ntcheu]	{passive}
mat-idw-á	" " " [Nkhotakota]	

Table 12. Extension tones in Chichewa

The second exception concerns causative **-i-* and passive **-ʊ-* which sometimes impose a H tone. Meeussen (1967:92n) suggests the H may be archaic, that these two suffixes were *H. On the other hand, Hyman & Katamba (1990) argue for Luganda and Kinande that the extra H is inflectional: when **-i-* or **-ʊ-* is present in an appropriate tense-aspect with a final inflectional H, a second enclitic =H is assigned. My speculation has been that **-i-* and **-ʊ-* were originally verb-final "grade" suffixes (Hyman 2007:161) marked by an inflectional H (vs. toneless derivational VC extensions in the "prosodic trough"). This may explain why they are implicated in longer **-ɪc-i-* and **-ɪC-ʊ-*. The issue, however, is still unsettled. (For recent work on the tonal effects of **-i-* and **-ʊ-*, see Ebarb & Marlo 2010 and Ebarb 2012). What can be said is that most verb extensions (and lexicalized second syllables) do not contrast in tone in Bantu (and Bantoid) languages.

When we move outside of Bantu and Bantoid, we find two different situations. First, extensions are mostly toneless in some NC languages:

(i) At the west end of NC, Kisi ("Atlantic") causative *-i* and benefactive *-lul*, as well as plural extensions are toneless vs. the "middle" suffix *-nŭŋ* (Childs 1995a:171-194). Childs (1995b:207) sees the toneless extensions as lacking accent: "Verb extensions cause the verb root to be analyzed as accented since the extensions are without tone...."

(ii) In the far northeast, in Moro (Kordofanian) the benefactive applicative *-ə̰t̰*, locative applicative *-a̰t̰*, passive *-ən* and anti-passive *-əð* extensions are all underlyingly toneless: "...the tone pattern of the basic stem applies to the forms with extension affixes, too." (Rose 2013:45). However, Rose adds: "... the causative requires a H tone on the preceding stem in default verbs, and allows no H tone on the causative marker" (p.47). Given the Bantu situation, it is intriguing to note that the shape of the H-imposing causative suffix is *-i*.

(iii) In between the above two geographical extremes, Cicipu (Kainji)) extensions such as causative *-is-* and applicative *-wA-*, are underlyingly toneless, taking mostly the L tone of the different melodies assigned by mood, e.g. realis LHL, irrealis HL, imperative LH (McGill 2009).

However, in other NC languages, verb extensions have their own inherent tone:

(i) In Konyagi (Atlantic), of 21 verb extensions 15 are H (e.g. *-nə́n* 'causatif'), two are L (e.g. *-ì* 'rapprochant'), three are HL (e.g. *-ə̂l* 'réciproque'), and one is toneless (*-ət* 'intensif') (Sachot 1996:314).

(ii) In Guébié (Kru), which has four tone heights 1-4 (4 = highest), passive *-o/-ɔ* has 1 tone, while causative *-a/-ə*, applicative *-li/-lɪ* and reciprocal *-li/-lɪ* have 2 tone (Sande 2016). (The reciprocal causes the verb to reduplicate and also take 2 tone.)

(iii) In Kana (Lower Cross) causative *-(r)ɛ* has M tone, while anticausative *-a* is toneless; intensive *-gara* ~ *-ga* ~*-gi* cause a M tone verb root to become L and place a H on the last (or only) vowel of the suffix (Ikoro 1996:153-4). In closely related Gokana causative -(C)ɛ̀ is L tone, while anticausative *-a* is toneless (personal notes).

(iv) In Katla (Kordofanian) some extensions have independent tone, e.g. comitative *-óŋ/-ʌ́ŋ* and goal *-àŋ* (Hellwig 2013:241), while causative *-kɑ/kʌ* and applicative *-tɑŋ/tʌŋ* "copy their tone from the preceding syllable" (Birgit Hellwig, pers.comm.).

Mande languages generally do not have verb extensions. However, where suffixes do occur, they appear to undergo a general process of tonal reduction ("compacité") which normally applies to compounds, e.g. in Maninka du Niokolo:

> "A l'exception du suffixe résultatif *-ɾ́iŋ* ~ *-l̀iŋ* ~ *-d́iŋ* et du suffixe causatif *-ńdiŋ*... les suffixes dérivatifs ont un comportement tonal qu'on peut décrire très simplement en posant qu'ils ne comportent structurellement aucun ton haut et que la base à laquelle ils s'attachent est modifiée exactement comme dans une construction à compacité tonale" (Creissels 2013:28)

However, it should be noted that of the 22 derivational suffixes listed by Creissels (2013:54-57), only two are shown to uniquely involve V → V derivation, namely, causative -ˊndiŋ and antipassive *-ri* ~ *-li* ~ *-diri,* the latter of which is mostly used to set up a verb for nominalization (p.56)

5. Discussion

It is clear that extension tones have to be considered in any attempt to establish the tones of PNC and their reflexes in the different subbranches. Assuming the normal grammaticalizatoin scenarios by which suffixes come from free morphemes (which in turn carry tone), two

outstanding questions are: (i) What causes derivational suffixes to lose their tone? (ii) Why should this affect derivational suffixes more than inflectional? The answer I would like to propose is lexicalization: Derivational morphology creates new lexical items, which speakers may ultimately store, rather than productively generate, as is also the case with compounding. What is stored ultimately undergoes fusion, erosion, and other reduction processes, including the loss of the suffixal tone. On the other hand, inflectional morphology, unless irregular, is generally not lexicalized, rather is expected to apply across the board to the appropriate bases, e.g. tense, aspect, mood marking on verbs. Of course inflectional morphemes can become toneless as well, or even lost in the case of languages which do not inflect verbs morphologically, but this is not driven by lexicalization.

The above natural history (rise and fall) feeds into the task of determining whether the extensions we find are ancient or relatively new. If they were obviously cognate, we could be certain. The problem is that they are small (typically one to two segments) and can easily give the false impression of cognacy—even across unrelated languages (Hyman 2014). The following table summarizes some of the clues to determining the age of an extension, including tone:

if relatively young, we expect an extension to ...	*if relatively old, we expect an extension to ...*
• have a transparent source in a verb or preposition	• have an opaque or no source in a verb or preposition
• have no cognates or only in closely related languages	• have cognate forms in distantly related languages
• be functionally/semantically transparent	• have multiple, unpredictable functions
• occur only where corresponding roots exists	• have frozen forms without any corresponding verb root
• be further from the root than other suffixes	• be closer to the root than other suffixes
• be syntactically dependent	• be syntactically independent
• be CV, easily segmentable from other forms	• be V(C), more fully integrated with the base
• not have allomorphs	• have allomorphs
• have its own contrastive tone (like enclitics)	• receive its tone from verb or inflection

Table 13. Clues to determining the age of a verb extension

The last point concerning tone can be illustrated by means of the following tonally contrastive verb extensions from languages from different African stocks, all of which have verb extensions:

Vute	(Bantoid)	-nà	applicative	<	nà	'to give'	(Thwing 2006:4)
		-lé	'in, into'	<	lé	'to enter'	(Thwing 2006:27)
Khoe	(Central Khoisan)	-mà	benefactive	<	mà	'to give'	(Kilian-Hatz 2005:130)
Margi	(Chadic)	-bá	'outward'	<	bà	'to go out'	(Hoffmann 1963:124)

Table 14. Recently developed verb extensions in unrelated languages

Since these extensions have recently been created from the verbs on the right, they still have an inherent tone. It is only with age that their tone will give way to the lexical tone of the verb or to the tone of the tense-aspect configuration.

6. Conclusion

So where we do stand? It is likely that PNC had two tones, *H and *L, as others have asserted, as there is no evidence of any more (or less). PNC verbs roots had a binary contrast, *H vs. *L, which some languages either lost or expanded. Finally, PNC verb extensions may have had contrastive tone, even though they appear to be toneless in most daughter languages (a more thorough survey is currently in progress). With respect to this last point, outside of the Chichewa and causative *-*i*- and passive *-*ʊ*- cases discussed in §4, I have found no evidence of contrastive tone on any of the cognate extensions that can be reconstructed back to PNC (or close to it), e.g. those Gur shares with PB:

Moore (Canu 1976)		*Proto-Bantu* (Meeussen 1967; Schadeberg 2003)	
-b	be in a state	*-ɪb-ʊ-	passive
-d	produce by putting into a state	*-ʊl-	reversive transitive (?)
-d	locative	*-ɪl-	applicative
-g	put into a state	*-ɪk-	impositive
-g	repeated action, intensive	*-a(n)g-	plural, durative
-g	inversive	*-ʊk-	reversive intransitive
-l	amplitude, certitude	*-ɪlɪl-	completive, intensive
-m	positional	*-am-	stative (positional)
-s	causative	*-ɪs-	causative

Table 15. Moore-Proto-Bantu verb extension correspondences

This raises the question of whether those extensions which do have independent tones have been independently innovated subsequent to the break-up of the NC sub-branches.

Where to go from here? It is easy to say, but more historical work is needed to determine if verb root tones in other branches further confirm PNC *H and *L and whether verb extension tones can be reconstructed, whether at the PNC or a pre- or post-PNC stage.

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