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Title

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Journal

UC Berkeley PhonLab Annual Report, 14(1)

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Publication Date

2018

DOI

10.5070/P7141042472

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Causative and Passive High Tone in Bantu: Spurious or Proto?

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The high tone of [the Proto-Bantu] suffixes -í- and -ú- is set up tentatively, and in any case its manifestations seem to have been very much limited. (Meeussen 1967: 92)

1. Introduction

The purpose of this study is to survey and evaluate the tonal effects of the two Bantu vocalic verb extensions *-i- ‘causative’ and *-u- ‘passive’ in order to determine whether they carried a H in Proto-Bantu (PB), as Meeussen considers in the above brief quote from his “Bantu grammatical reconstructions” (BGR).¹ Meeussen was quite clearly concerned about this issue which he referred to in work both prior and subsequent to BGR:

“Dans quelques langues, les extensions vocaliques remontant à -i- (caus.) et -u- (passif) ont un ton haut dans certaines formes verbales à finale basse. Ce phénomène est manifestement archaïque, mais il faudra plus de matériaux avant de pouvoir entamer une étude vraiment comparative sur ce point.” (Meeussen 1961: 426)

“Nothing is said [in Guthrie 1967-71] about the high tone of -u- and -i- attested in some languages, e.g. Lega.” (Meeussen 1973: 11)

Examples of current-day causative-passive high tone (CPH) from Nyala-West [JE18] are seen in (1), where H(igh) tone is marked with an acute accent and L(ow) tone is unmarked (Ebarb & Marlo 2010: 3, 9):

- | | | | | |
|-----|-----------------|------------------------------|--------------|--------------------|
| (1) | si-βa-mú-βek-a | ‘they are not shaving him’ | xw-áa-βek-a | ‘we shaved’ (rem.) |
| | s-aa-mú-βek-í-a | ‘he is not making him shave’ | y-áa-βek-ú-a | ‘he was shaved’ |
| | H | (causative) | H | (passive) |

In the first example of each pair the verb stem *-βek-a* ‘shave’ ends L-L. In the second example of each pair, there is a H tone on causative *-í-* and passive *-ú-*. If reconstructed to PB the CPH would be quite exceptional, since Meeussen otherwise considered post-radical vowels, including all other verb extensions, to be toneless, subject to a regressive assimilation of the contrastive *H or *L (or first tone of *HL and *LH) reconstructed on the final vowel (FV):

“... dans un thème verbal, c’est-à-dire la partie du verbe qui commence par le radical, les syllabes comprises entre la première et la finale ont le même ton que la finale.” (Meeussen 1961: 425)

He cites the following examples from Ombo [C76] (Meeussen 1961: 425):

- | | | | | |
|-----|---------|----------------|-------------------|--------------------------------------|
| (2) | | -folot- ‘pull’ | -kóngɔl- ‘gather’ | |
| a. | to-/tɔ- | folotak-a | kóngɔlak-a | ‘we pull/gather’ (pres.hab.) |
| | tá- | folotak-i | kóngɔlak-i | ‘we used to pull/gather’ (past hab.) |

¹ This paper was originally presented at the International Conference on Reconstructing Proto-Bantu Grammar, Ghent University, November 19-23, 2018.

- | | | | | | |
|----|----------|---------|----------|----------------------------|--------------|
| b. | tátándá- | folót-á | kóngól-á | ‘we are pulling/gathering’ | (present) |
| | to-/tɔ- | folót-í | kóngól-í | ‘we pulled/gathered’ | (today past) |

As seen, the post-radical vowels are L before the L final vowel (FV) in (2a), but H before the high FV in (2b), which I will refer to as an inflectional suffixal H (ISH). The general case of no tonal contrast on verb extensions continues in most Bantu languages, sometimes violated only by CPH, as in Fuliiru [JD63]:

“Verbal extensions are all toneless with the exception of Passive (PS), Causative (CS) and CS + PS, any of which contributes a single floating H tone.” (van Otterloo 2014: 386)

Unraveling the tonal properties of *-i- and *-u- thus potentially requires an understanding of the relation between the FV and inflectional stem (a.k.a. melodic) tones—in fact, even beyond tone, as we will see. There are two logical explanations for the exceptional CPH: (i) CPH occurred in PB; (ii) CPH was innovated subsequent to PB. Of the two hypotheses, the first is the easy way out: All instances of CPH would be from PB; where not attested, the CPH has been lost. If adopting the second hypothesis, we have the more difficult task of explaining how CPH came into being, i.e. why would only *-i- and *-u- acquire a H tone—and, as it turns out, only in certain inflectional contexts?

In what follows I will first present arguments in §2 that CPH was innovated (cf. Hyman & Katamba 1990). Then, in §3 I present other cases of H tone extensions which I do not think are related to CPH. I conclude in §4 by considering morphological and phonological scenarios by which *-i- and *-u- might have acquired H tone.

2. Arguments in favor of the innovation of CPH

In this section I outline six facts about CPH that would seem best to be explained if we assumed that the H tone was not originally a property of the causative and passive extensions themselves.

2.1. Argument #1

The first argument is that CPH is found on both -i- and -u- only in (some) interlacustrine (JD, JE) languages. Those that have been so identified to show H tone effects from both extensions are listed in (3) along with their revised Guthrie referential classification (Maho 2009).²

- | | | | | | |
|-----|----|------------|---------|----------------------------------|-------------|
| (3) | a. | Kinande | [JD42] | (Mutaka 1994) | HTA |
| | b. | Shi | [JD53] | (Polak-Bynon 1975) | HTA (+ HTI) |
| | c. | Tembo | [JD531] | (Shigeki Kaji, pers.comm.) | HTA (+ HTI) |
| | d. | Fuliiru | [JD63] | (van Otterloo 2011) | HTI |
| | e. | Luganda | [JE15] | (Hyman & Katamba 1990) | HTA |
| | f. | Lusoga | [JE16] | (Hyman, personal notes) | HTA (+ HTI) |
| | g. | Nyala-West | [JE18] | (Marlo 2007, Ebarb & Marlo 2010) | |
| | h. | Wanga | [JE32a] | (Chris Green, pers.comm.) | HTI |

² Thanks to Michael Marlo for help in identifying the Luyia CPH languages. Also indicated are languages which have H tone anticipation (HTA) and can be analyzed with H tone inversion (HTI), changing the original *H to /L/. I return to this below.

i.	Marama	[JE32c]	(Kris Ebarb, pers.comm.)	HTI (?)
j.	Kabarasi	[JE32e]	(Ebarb 2016: e136)	HTA
k.	Marachi	[JE342]	(Marlo 2007)	
l.	Idakho	[JE411]	(Ebarb 2014)	HTA
m.	Isukha	[JE412]	(Kris Ebarb, pers.comm.)	
n.	Tiriki	[JE413]	(Marlo 2013: 182)	HTA

While CPH is widespread in zones JD and JE, it is not present in all interlacustrine languages. Thus, CPH is absent in Kirundi-Kinyarwanda [JD60], Nkore-Kiga [JE13/14], Lulamogi (and presumably Lugwere) [JE17], the Haya-Jita group [JE20], Bukusu [JE31c] and Llogooli [JE41]. While not a knock-out argument, it would seem more likely that CPH was innovated in this area rather than inherited from PB and lost everywhere else.

The above cited zone J languages are those that have H tone on both causative and passive extensions. Although non-interlacustrine Holoholo [D28], Lega [D25], and Herero [R30] have been cited in this context, these do not show the same CPH phenomena. Coupez's (1955: 30) brief discussion of *-y-* and *-w-* concerns infinitives, where H tone shifts one mora to the right, then spreads an additional mora, forming a HL contour on the FV:³

(4)	<i>underlying</i>		<i>H tone shift</i>		<i>H tone spreading</i>	
a.	/kù-kálik-à/	→	kù-kàlík-à	→	kù-kàlík-â	'se couper' (p.72)
	/kù-tégelel-à/	→	kù-tègélel-à	→	kù-tègélel-â	'entendre' (p.24)
b.	/kù-món-à/	→	kù-mòn-á			'voir' (p.22).
	/kù-món-i-à/	→	kù-mòn-í-à	→	kù-mòn-y-â	'faire voir' (p.74)
c.	/kù-kúat-à/	→	kù-kúát-à	→	kù-kwàt-â	'tenir' (p.24, 30, 32)
	/kù-kúat-i-à/	→	kù-kúát-i-à	→	kù-kwàt-y-â	'faire tenir' (p.30)

Since the above tonal differences are not specifically tracked in the different tense-aspects, I conducted a search through all of the examples in Coupez (1955) and did not find CPH in any of his 18 "tiroirs". Re Lega, Meeussen (1971: 21, 25, 27) only mentions that certain tenses with a final H are instead realized with final HL in the presence of *-i-* or *-u-*. If this is all, then H on final CVV is realized HL, which Meeussen writes either *-í-ê* or *-y-ê*, e.g. *ku-lí-â ~ ku-ly-â* 'to eat' (p.3):

(5) a.	tw-ã-kúbul-é	'nous allons verser'	vs.	tw-ã-súbán-í-ê	'nous allons retourner' (p.21)
b.	tú-kúbul-é	'versons'	vs.	tú-súban-y-ê	'retournons' (p.23)

What Meeussen apparently had in mind was that the FV H shifts onto the *-V-* extension:

"Les suffixes vocaliques *-i-* (caus.) et *-u-* (pass.) ont, à l'imminent, au subjonctif et à l'impératif, un ton haut comptant comme ton de finale et suivi de ton bas." (p.27)

However, it is not enough to show that the presence of *-i-* and *-u-* cause a tonal difference, since this may simply be due to the extra tone-bearing unit (mora) they add. In Lungu [M14], tenses which have H tone spreading to the penult realize the H on the FV if the word ends in CwV or

³ There is a regular tone absorption rule by which LH-H is simplified to L-H, as in (4c).

CyV (Bickmore 2007: 165). This however also applies if the final syllable is from a CV- root + FV, as in (6c).

- (6) a. /tú-ku-ful-a/ → tú-kú-fúl-a ‘we are washing’ (p.150)
 /tú-ku-ful-il-a/ → tú-kú-fúl-íl-a ‘we are washing for’
 b. /tú-ku-ful-u-a/ → tú-kú-fúl-w-á ‘we are being washed’ (p.167)
 /tú-ku-ful-is-i-a/ → tú-kú-fúl-ísh-á ‘we are washing a lot’ (< -is-i-a)
 c. /tú-ku-lu-a/ → tú-kú-lw-á ‘we are fighting’ (p.171)
 /tú-ku-zu-a/ → tú-kú-zw-á ‘we are bleeding’
 d. /tú-ku-lu-il-a/ → tú-kú-lw-ííl-a ‘we are fighting for’ (p.171)
 /tú-ku-zu-il-a/ → tú-kú-zw-ííl-a ‘we are bleeding for’

The contrast between H vs. HL on the final syllable clearly correlates with final vowel shortening (*Cwáa*, *Cyáa* → *Cwá*, *Cyá*) (p.232). Many other Bantu languages exhibit final CGV-conditioned tonal differences which have nothing to do with CPH, including Shimakonde [P23] (Liphola & Odden 1999), Ciyao [P21] (Hyman & Ngunga 1994), and Namwanga [M22] (Bickmore 2000), among others. However, in order to be considered a case of CPH, there has to be a H present somewhere that can only be attributed to *-i-* and *-u-*, as was seen in Nyala-West above in (1).

2.2. Argument #2

The second argument for innovation is that the CPH does not invert to L in languages which have inverted PB *H to L. This is seen in the following Kitembo [JD531] examples (Shigeki Kaji, pers.comm.), where the H and L verb roots reconstruct as PB **-dĩmb-* ‘catch’ and **-kód-* ‘work’, respectively (Bastin et al 2002):

- (7) a. /n-á-símb-a/ → n-á-símb-a ‘I am catching (sth./s.o.)’
 /n-á-símb-í-a/ → n-á-símb-y-á ‘I am making (s.o.) catch (sth./s.o.)’
 /n-á-símb-ú-a/ → n-á-símb-w-á ‘I am being caught’
 b. /n-á-kol-a/ → n-á-kol-a ‘I am working’
 /n-á-kos-í-a/ → n-á-kos-á ‘I am making (s.o.) work’
 /n-á-kol-el-ú-a/ → n-á-kol-el-w-á ‘I am being worked for (assisted in my work)’

As seen, despite the tonal inversion, the CPH is still realized on the FV. If the CPH had been present in PB (or an early branch of PB), we would have expected it to invert to L as well.

2.3. Argument #3

The third argument for innovation is that CPH is typically (always?) restricted to certain tense-aspects which have an inflectional suffixal *H (ISH), known also as “melodic tone” in the literature (Odden & Bickmore 2014). This is seen in the following Kinande [JD42] examples (Mutaka 1994: 114-5), as realized phrase-internally:

- (8) a. /tu-kánda-mu-hum-ir-a/ → tu-kánda-hum-ir-a ... ‘we will hit for him’
 /tu-kánda-mu-hum-is-ĩ-a/ → tu-kánda-mu-hum-is-y-a ... ‘we will make him hit’
 /tu-kánda-mu-hum-u-a/ → tu-kánda-hum-ir-w-a ... ‘we will be hit for’

- b. /mó-tu-a-mu-hum-ir-a/ → mó-tw-a-mú-húm-ir-a ... ‘we hit for him’
 /mó-tu-a-mu-hum-is-ɨ-a/ → mó-tw-a-mú-húm-ɨs-y-a ... ‘we made him hit’
 /mó-tu-a-mu-hum-ir-u-a/ → mó-tw-a-mú-húm-ɨr-w-a ... ‘we were hit for him’

In (8a) there is no ISH and the verb form ends all L, even in the presence of *-ɨ-* and *-ú-*. In (8b) the ISH is realized on *-mú-húm-* (object marker + root), and the H of *-ɨ-* and *-ú-* is anticipated onto the preceding vowel by a general rule in the language (see (9d) below). It cannot be an accident that CPH correlates with the ISH reconstructed as *H on the FV by Meeussen (1961). Of course, if the H remains on the FV, then the effect of the CPH may not be visible:

“The basic generalization is that if the FV is otherwise occupied, the H of the causative or passive suffix does not surface [in Marachi JE342].” (Marlo 2007: 255)

In other words CPH will not be realized if the verb doesn’t have an ISH, and it may not be detectable if the ISH is realized on the final C-V-V syllable.⁴

2.4. Argument #4

The fourth argument for innovation is that CPH sometimes needs to be inserted “late” in a synchronic or diachronic derivation. It can be noted in (8b) that the suffixal H on *-mú-húm-* is realized to the left of the CPH, which is easier to explain if the introduction of the CPH post-dates suffixal H. Otherwise the question arises as to why CPH does not block migration of the melodic *H of the FV to the root and pre-root syllables. That CPH must often be inserted late in a synchronic derivation is also noted Marachi [JE342]:

“... it appears that the H of the causative or passive is linked by rule onto the FV after all other rules have applied, rather than being underlyingly linked to *-y-* or *-w-*.” (Marlo 2007: 255)

To see why this is so, first consider the following derivation of the non-CPH form from (8b) which mirrors the diachronic development in Kinande (Hyman & Valinande 1985):

- (9) a. *mó-tu-a-mu-hum-ir-a
 b. H H *H on FV à la Meeussen
 c. H H H copying of H from FV to second stem mora
 d. H H H H H tone anticipation (HTA)
 e. H H L L Meeussen’s Rule (MR): H-H → H-L
 f. H H H L L Second HTA (doubling)
 → mó-tw-a-mú-húm-ɨ:r-à ‘we hit for him’

First the final H is copied onto the preceding syllable as per Meeussen (1961). Then H tone anticipation (HTA) spreads this H one more syllable to the left. At this point Meeussen’s Rule (MR) applies, lowering any H to L after a L. It is crucial that when FV *H undergoes MR, it must

⁴ If the language simplifies /H-H/ sequences as H-L (or H-Ø), CPH may also not be detectable if there is a H tone on the penult: “The failure of H of the causative/passive to surface after H can be analyzed as the result of Meeussen’s Rule [in Nyala-West]” (Ebarb & Marlo 2010: 6).

leave a L tone trace in order to block the assignment of phrasal %H declarative boundary tone. This phrasal H% can only be assigned if the FV is toneless, e.g. /tu-kánda-hum-ir-a/ → *tu-kánda-hum-í:r-à* ‘we will hit for him’.⁵ In the following derivation, the H of the FV also has to reach the root and pre-root syllables despite their being a following CPH tone is anticipated from causative -i- and passive -u-. (Recall the examples in (8b).) As seen, the CPH is inserted late in the derivation in (10f).

- (10) a. *mó-tu-a-mu-hum-ir-u-a
 b. H H *H on FV à la Meeussen
 c. H H H H copying of H from FV to second stem mora
 d. H H H H H H tone anticipation (HTA)
 e. H H L L L Meeussen’s Rule (MR): H-H → H-L
 f. H H L H L Insertion of CPH
 g. H H H H (L L)⁶ Second HTA (doubling)
 → mó-tw-a-mú-húm-ír-w-à ... ‘we were hit for him ...’

The two questions are: (i) If the PB forms were H tone *-í- and *-ú- in PB, why don’t they undergo Meeussen’s Rule? (ii) Failing to undergo MR, how did the H of the FV spread through the CPH? As seen in the next section, there are more anomalies concerning the FV.

2.5. Argument #5

The fifth argument concerns unexpected tonal and segmental effects on the FV. Continuing with Kinande, I have put the final L-L in parentheses in (10g) because of an irregularity discovered by Mutaka (1994: 115-6). After H tone copying and anticipation in (10c,d), all but the first H becomes L by MR in (10e), exactly as in (9e). This L on the FV blocks the assignment of the phrase-final H% boundary tone, as seen in (11a).

- (11) a. /mó-tu-a-mu-hum-ir-á/ → mó-tw-a-mú-húm-ì:r-à ‘we hit for him’
 b. /mó-tu-a-mu-hum-ir-u-a/ → mó-tw-a-mú-húm-í:r-w-â ‘we were hit for him’
 c. /mó-tu-mu-hum-is-i-a/ → mó-tw-a-mú-húm-í:s-y-â ‘we caused him to be hit’
 H%L//

In (11b,c), however, where the CPH is anticipated onto the preceding -í:r- and -í:s-, respectively, the FV fails to show the L derived from *H on the FV. Instead the phrase-final H% and declarative L// boundary tones are both realized on the last syllable. We know this from the fact that the final HL is lacking if something follows, e.g. *mó-tw-á-húm-ís-y-à Vâlíná:ndè* ‘we caused s.o. to hit Valinande’ (Mutaka 1994: 115). For further discussion, see Mutaka (1994: 115-6), who proposes a rule of final L tone deletion, as well as Jones (2014: 227-233).

While Kinande only shows a tonal irregularity on the FV, both Luganda [JE15] and Lusoga [JE16] show additional effects of the CPH. First, the H tonal effects of the CPH are found only when there is an ISH (as in other languages) but also requires that the tense-aspect be marked by the perfect(ive) *-il-e ending, realized post-consonantly as /-i-e/, i.e. with deletion of the

⁵ In this example the phrase-final H% boundary tone is “pushed” to penult by the L// declarative utterance boundary tone (Hyman 1990). The output in (9) also undergoes intonational phrase-final penultimate lengthening. For more stream-lined synchronic accounts avoiding the above diachronic steps, see Mutaka (1994) and Jones (2014).

⁶ The reason for putting the LL of the final syllable in parentheses is explained in the next section.

/l/. Second, when co-occurring with the causative or passive, the FV is surprisingly realized with the FV *-a* instead of *-e* (Hyman & Katamba 1990: 145-6). This is seen in Lusoga in (12), which has undergone a diachronic process of HTA shift onto the preceding mora which is most visible in (12a) (Hyman 2018) (cf. PB **-tí-* ‘fear’):

- | | | | |
|---------|-------------------|-----------------------------|------------------------------------|
| (12) a. | ò-kú-ty-à | ‘to fear’ | (cf. Luganda ò-kù-ty-â < /-tí-a/) |
| b. | tù-tì-ìl-é | ‘we have feared’ | (-il-e ending after a CV- root) |
| c. | tù-tì-ìs-íị́z-à | ‘we have caused to fear’ | (< -iiz-y-a < -iiz-i-a) |
| d. | tù-tì-ìl-íị́b-w-à | ‘we have been feared’ | (< -iib-u-) |
| e. | tù-tì-ìs-íị́b-w-à | ‘we have been made to fear’ | |

In (12b), the perfect(ive) ending *-il-e* is seen to occur after a CV verb. Since all of tone-bearing units were originally H, MR applies to all but the first, hence intermediate tú-tì-ìl-è, followed by the initial H undergoing HTA shift, and the FV receiving a H% tone. In (12b) and (12c) the CPH is anticipated from the mora of the /-i-/ and /-u-/ which glide (with the intermediate *-y-* being absorbed into the preceding [z]). The CPH is realized all H on *-íị́z-i-* and *-íị́b-w-* rather than LH, since rising tones are prohibited in Lusoga (and Luganda). The long vowel itself is attributed to an extra “imbricated” (fused) *-il-* morph, and the [z] in (12c) due to the degree 1 **-i-*: *-ilil-i-a* > *-iil-i-a* > *-iiz-i-a* > *-iiz-y-aa* > *-iiz-a* (with absorption of the *-y-* and final vowel shortening). While there are many cases in Bantu where the FV is different after a bare vs. extended root, e.g. ROOT-*i* or *-e* vs. ROOT-EXT-*a* (cf. Grégoire 1979), such variation of the FV on perfective **-il-e* is (almost) unique to Luganda and Lusoga.⁷ Note in (12e) that the CAUS-PASS sequence introduces only one extra H. We would expect two H tones if **-i-* and **-u-* each carried an independent **H* tone in PB.

2.6. Argument #6

The last argument for innovation is the fact that the CPH is always realized locally, either on the syllable with **-i-* or **-u-* or on its neighbor (e.g. when HTA has applied). If this H has been there from the days of PB, why hasn’t it migrated or been subject to the major changes that the root and inflection stem tones have undergone (other than loss, of course)? It would only have to have been innovated before HTA shift in Kinande and Lusoga. At least in the case of Lusoga, HTA shift is extremely recent, since the language is near-mutually intelligible with Luganda, which lacks HTA shift.

In fact, besides being closely tied to the **-i-* or **-u-*, the general assumption has been that the CPH always originates in the final syllable of the verb stem.

“The causative *-y-* and passive *-w-* suffixes surface in pre-final position in Lumarachi, immediately before the FV. As a result, when the H of the causative or passive suffix surfaces, it surfaces on the FV.” (Marlo 2007: 255)

“... I propose that there is a morphologically conditioned rule that assigns a H on the causative or passive vowel in the penultimate position [in Kinande].” (Mutaka 1994: 115)

⁷ One intriguing similarity is Chimwiini [G412], which replaces the *-e* of **-il-e* with *-a* in the passive (Kisseberth & Abasheikh 1975: 251), but without *-u-* appearing: *bush-il-e* ‘s/he hit’, *bush-il-a* ‘s/he was hit’ (Charles Kisseberth, pers.comm.).

However, there are two environments that allow **-i-* and **-u-* to occur earlier than the final syllable in the verb stem in some CPH languages, but have not been tonally scrutinized: (i) verb stem reduplication; (ii) sequences of **-i-* or **-u-* + reciprocal *-an-/-agan-* + FV. While variations in total vs. partial verb-stem reduplication and a widespread requirement that reciprocalized causatives be realized *-i-an-i-* limit the interest of these two contexts in some CPH languages, they both potentially occur in Luganda and Lusoga. Let us begin with reduplication.

In languages that truncate and prepose the “frequentative” reduplicant tone is usually not copied. Typically the root H is only in the reduplicant while an ISH is assigned to the whole reduplicated stem, as in Kinande [JD42] (Mutaka & Hyman 1990; Philip Mutaka, pers.comm.), where the source moras of the H tones are underlined.⁸

- (13) a. *Ø FV (e-ri) hum-ir-an-a... → (e-ri) hum-a + hum-ir-an-a...
 ‘to hit for e.o.’
 b. *Ø FV (e-rí) tùm-ir-an-a... → (e-rí) tùm-a + tum-ir-an-a...
 ‘to send to e.o.’
 c. *H FV (mó-tw-a-mú-) húm-ir-à ... → (mó-tw-a-mú-) húm-a + hum-ir-à...
 ‘we hit for him’
 d. *H FV (mó-tw-á-mú-) túm-ír-à ... → (mó-tw-á-mú-) tùm-a + túm-ír-à...
 ‘we sent to him’
 e. *H FV (mó-tw-á-) húm-w-a... → (mó-tw-á-) húm-w-a + húm-w-a...
 ‘we were hit’
 f. *H FV (mó-tw-a-) túm-w-á... → (mó-tw-a-) tùm-w-a + túm-w-á...
 ‘we sent to him’

(13c) has the output of the derivation in (9). The root /-túm-/ ‘send’ has an historical H which is anticipated onto the prefixes in (13b,d), but deleted after the tense marker *-a-* in (13f). (13e) crucially shows the suffixal *H shifting to *-á-húm-* plus another H on the second *-húm-* from passive *-w-*. The CPH causes the FV *-a* to lose its L tone in (13e) (Mutaka 1994: 116). Cf. (8b).

However, a different picture emerges from Lusoga [JE16], which has full verb stem reduplication.⁹

- (14) a. (ò-kú-) ty-à ‘to fear’ (ò-kú-) ty-àà-ty-á
 b. (tù-) tì-ìl-é ‘we have feared’ (tù-) tì-ìl-è-tì-ìl-é
 c. (tù-) tì-ìs-íí^z-à ‘we have caused to fear’ (tù-) tì-ìs-íí^z-à-tì-ìs-ìì^z-á
 d. (tù-) tì-ìr-íí^w-à ‘we have been feared’ (tù-) tì-ìr-íí^w-à-tì-ìl-ìì^w-á
 e. (tù-) tì-ìs-íí^w-à ‘we have been made to fear’ (tù-) tì-ìs-íí^w-à-tì-ìs-ìì^w-á

As seen, the CPH effect is on the FIRST stem in reduplication. This would be expected if the /H/ were from the root—but is different from ISH which is calculated from the end. Thus compare the above with (15a) and its reduplication in (15b).

⁸ For discussion of some of the tonal variation occurring in Bantu reduplication, see Downing (2003). This variation can depend on the type of reduplication even within the same language, as in Citonga [N15] (Mkochi 2017).

⁹ Again, the final H on the base form of (14b) and all of the reduplicated forms is from H%.

- (15) a. è-bíí-ntú by-é tw-áá-sékwîl-é ‘the things that we pounded’ (general past)
 b. è-bíí-ntú by-é tw-áá-sékwîl-é-sékwîl-é (-sèkul- + -il-e → -sekwiil-e)

In both cases the ISH is assigned to the penultimate mora of the full stem. The fact that the CPH is realized on the first stem in (14c,d) suggests that it is behaving similarly to the realization of the root H in the first stem of the reduplication, or is at least assigned to the first stem.

The second potential non-final effect of CPH is found with reciprocal *-agan-* in Luganda and Lusoga. In this case CPH is realized only when **-i-* or **-u-* locally “interfixes” between perfect(ive) **-il-* and the FV *-a*. In the following examples, the *-il-* of *-il-a* imbricates (fuses) within the second syllable of reciprocal *-agan-*, i.e. /-agan-il-e/ → *-again-e*, as in (16a).

- (16) a. no CPH tù-lùm-y-àgàin-é ‘we hurt each other’¹⁰
 b. CPH tù-lùm-y-àgáin-y-à (idem)
 c. no CPH tù-bá-kùb-y-àgàin-é ‘we made them hit e.o.’
 d. CPH tù-bá-kúb-ágáin-y-à (idem)

As seen in (16a,c), if causative *-i-* is separated from the perfect(ive) ending, there will be no CPH, and **-il-e* will be realized with final *-e*. On the other hand, in (16b,d), where *-i-* is realized right after imbricated *-again-*, there is a CPH and the form ends with *-a*. The same facts are found with passive *-u-*. Although it’s rare to get the reciprocal co-occurring with the passive, compare the following with /-fumb-il-u-/ ‘marry’ (lit. ‘be cooked for’):

- (17) a. no CPH bà-fúùmb-il-w-àgàin-é ‘they married each other’
 b. CPH bà-fúúmb-íl-w-ágáin-w-à (idem)

A lot of this has to do with an innovative reparsing of **-ag-an-* as *-a-gan-* (Hyman & Inkelas 2017), as seen in (18).

- (18) a. original tù-ty-àgàin-é ‘we feared each other’ < /tù-tì-agan-il-è/
 b. innovated tù-tì-ìl-è-gàin-è (idem) < /tù-tì-il-e + gan-il-è/

While the inherited situation was one where **-il-e* followed *-agan-*, with which it imbricates, as in (18a), the alternate form in (18b) shows the inflectional ending being spelled out before before and after the reciprocal, reparsed as *-gan-*.¹¹ The important thing that the above shows is that for there to be a CPH, the causative or passive extension must locally co-occur with perfect(ive) **-il-* i.e. be combined, rather than being suffixed in separate positions within the verb stem. Be that as it may, the details found in Luganda, Lusoga or other languages likely modify and potentially obscure the possible origins of CPH. It is however unlikely that what we see in Lusoga, Kinande,

¹⁰ In (16a,b), ‘hurt’ has the underlying form /-lùm-i-/, literally ‘cause to bite’ (PB **-lúm-* ‘bite’). /-kúb-i-/ ‘make hit’ is transparently derived from PB **-kúb-* ‘bite’.

¹¹ Note in this context that besides the two forms in (17a,b), *bà-fúúmb-íl-w-àgàin-á* is also attested, suggesting that *-gan-a* may be coming to be a constituent by itself, i.e. *bà-fúúmb-íl-w-à + gàn-á*. In recent work on Luganda I found that *o-ku-láb-àgan-a* ‘to see each other’ can not only reduplicate as *o-ku-láb-agan-a + lab-agan-a* with expected full stem reduplication, but also as *o-ku-láb-àgan-a + gan-a*. I haven’t found any other verb extension that can reduplicate in this way.

Kifuliiru, etc. would have occurred as such in PB. We now turn to consider other cases of H tone extensions in the next section.

3. Other cases of H tone extensions

In the preceding section I enumerated six reasons why I think CPH was probably not a property of PB. A major reason in §2.1 was that CPH is found only in certain interlacustrine languages. Recall Meeussen's (1961, 1967) reconstruction of all other extensions as *L or toneless. It would certainly be a strong argument in favor of reconstructing CPH in PB, or at least earlier than Proto-Interlacustrine, if CPH could be found outside the JD and JE zones. While most Bantu languages do not contrast tone on any verb extensions, three non-J Bantu languages have been identified with contrastive H tone extensions. While I will argue that these H tones must have a different origin, I briefly consider each of these in turn.

The best known such case is Chichewa [N31] (Mtenje 1986, Kanerva 1989, Hyman & Mtenje 1999a,b, Downing & Mtenje 2017) which shows the following contrasts between toneless and H tone extensions:

(19) a.	∅ tone extensions:	applicative	mat-il-a	'plaster/glue for'
		causative	mat-its-a	'cause to plaster/glue'
		reciprocal	mat-an-a	'plaster/glue each other'
		reversive tr.	mat-ul-a	'unplaster/unglue (tr.)'
		<i>dial.</i> passive	mat-idw-a	'be plastered/gluded' (Ntcheu)
b.	H tone extensions:	stative	mat-ik-á	'be plasterable/gluable'
		intensive	mat-its-á	'plaster/glue a lot/well'
		reversive intr.	mat-uk-á	'become unplastered/unglued'
		<i>dial.</i> passive	mat-idw-á	'be pastered/glued' (Nkhotakota)

As seen in (19a) both the verb root *-mat-* 'plaster/glue' and the indicated extensions are toneless. In (19b) the the second set of verb extensions assigns a H tone to the verb stem which by general rule links to the FV. Note that intensive *-its-* assigns a H, while segmentally homophonous causative *-its-* does not.

The second language is Citonga [N15] which, based on personal communications from Lee Bickmore and Winifred Mkochi, also contrasts causative *-is-* with intensive *-ís-*. More intriguing is the segmentally homophonous toneless stative */-ik-/* vs. passive */-ík-/* exemplified in (20).¹²

(20)	<i>medial</i>	<i>phrase-final</i>	
	kù-júl-à	kù-júùl-à	'to open'
<i>stative</i>	kù-júl-ìk-à	kù-júl-ìk-à	'to be open'
<i>passive</i>	kù-júl-ìk-á	kù-júl-ìk-à	'to be opened'

As Bickmore & Mkochi (pers.comm.) put it:

¹² Citonga passive *-ík-*, although intriguingly H tone, is clearly not cognate with PB **-u-*.

“The H on the stem-initial TBU in each case is a M[elodic]H, which in stems with toneless roots, lands on V1.... In the Passive you see a second H, from the extension. We analyze the extension H as docking onto the FV, and then shifting one mora to the left when the verb is phrase-final.”

The third language is Herero [R30], which is clearly more intricate. Although I had some trouble interpreting the effects in the two sources, I believe the following table summarizes the extension tone patterns (omitting the extra L of the FV which the authors cite with the extension tone):

Köhler (1958: 101ff)			Möhlig & Kavari (2008: 146ff)		
causative	-ek-	L	L	-iṣ-	causative I
causative	-is-	L	L	-ek-, -ik- (-e)	causative II
			L	-ṣ(a)	causative III
applicative	-ir-, -er-, -in-, -en-	L	L	-er-, -ir-, -en-, -in-	
iterative	-or-, -uk-	L	L	-or-, -ur-, -ok-, -uk-, -oror-, -urur-, -orok-, -uruk-	reversive-intensive
inversive	-orok-, -oror-	L	L		
intransitive	-ák-	(H)	L	-ak-, -ek-, -ok-, -uk-	intransitive
intr.-medial	-ík-, -ók-, -úk-	(H)	HL	-ík-, -ik-	neutro-passive
reciprocal	-asan-	(H)	(H)	-áṣan-	reciprocal
passive	-u-	H	H	-w-, -éw-, -íw-	passive

Table 1. Herero Verb Extension Tones

In the above table (H) indicates that the extension will be H if the root is H, otherwise L. Setting these aside, this leaves the passive as consistently H, as shown in (21) (Köhler 1958: 108):

- (21) a. rw-a ‘fight’ → ru-w-á ‘be fought’
 hong-a ‘teach’ → hong-w-á ‘be taught’
 haam-a ‘sit’ → haám-w-á ‘be sat’
 hakurur-a ‘make hungry’ → hakúrúr-w-á ‘be made hungry’
 b. nw-á ‘drink’ → nú-w-á ‘be drunk’
 hír-a ‘water’ → hír-w-á ‘be watered’
 hínd-á ‘send’ → hínd-w-á ‘be sent’
 hépek-a ‘make poor’ → hépék-w-á ‘be made poor’
 húkúr-a ‘undress’ → húkúr-w-á ‘be undressed’
 hívírik-a ‘praise’ → hívírík-w-á ‘be praised’
 játátúrur-a ‘unstitch’ → játátúrúr-w-á ‘be unstitched’

In (21a) the verb root is L, while in (21b) the verb root is H. As seen, the H induced by the passive extension begins with the second syllable much as an ISH would be realized according to Meeussen (1961).

Despite any similarity, I would argue for several reasons that the H tone effects in Chichewa, Citonga and Herero are not related to CPH. First, the causative extension is consistently not H. Second, in Herero, the (H) effects might be interpretable as spreading of the root H (which in other cases is sensitive to whether the vowel of the H root was long or short in PB). Concerning the passive, could the H have come from the agentive marker *í*? E.g. *etemba má¹rí nan-éwá í ókasíno* ‘the car is pulled by the donkey’ (Möhlig & Kavari 2008: 148). Could something similar

be behind the H tone passive *-ídw-* in dialectal Chichewa and *-ík-* in Citonga? Finally, the H tone extensions seem to correlate with intransitivity in all three languages. I doubt that this is an accident. Rather, it suggests that there could have been an earlier H% boundary tone that became associated with intransitive verbs, since they are more likely to occur clause-finally than transitive verbs. Unless passive **-u-* could have analogized its H tone to causative **-i-*, based on the exclusive *-V-* shape of the two extensions and the tendency for both to occur in the last syllable (see below), it is not likely that the above effects are related to CPH. Of course the similarity between nearby Chichewa [N31] and Citonga [N15] may not be coincidental, or even Herero [R30], if Möhlig (2009) is correct in assuming an origin of the language in Southeastern Malawi. The differences and sporadicity convince me, however, that CPH likely had an independent source, to which I now turn in the final section.

4. Possible sources of CPH

If CPH did not exist in PB, we are then left with the question of why it exists in the interlacustrine languages enumerated in (3)? Any solution must account first for why CPH is limited to **-i-* and **-u-* and second why CPH is dependent on there being an ISH (Meeussen's *H FV). There are potentially two types of explanations, one morphological, one phonological: (i) perhaps *-i-* and *-u-* had a different status or structure from other verb extensions; (ii) perhaps the *-V-* shape played a key role, since all other verb extensions have the shape *-VC-*. In my past work I have entertained two different morphological explanations: (i) **-i-* and **-u-* used to be voice suffixes only later acquiring a FV (Hyman 2007a: 161); (ii) **-i-* and **-u-* used to be enclitic with perfect(ive) *-il-* and the FV *-a* (Hyman & Katamba 1990: 153).

According to the first idea, **-i* was originally a FV. The potential relation is often noted to the subject-oriented (“agentive”) deverbal nominalizer **-i*, e.g. **-lm-* ‘cultivate’ → **mv-lm-i* ‘farmer’, although this **-i* was toneless (or *L) in PB. Within the verb system there is a FV *-i* in NW Bantu that often marks stative, but can also be impositive, e.g. in Eton [A71] (Van de Velde 2008: 122-3, 132): *búg* ‘break (tr.)’ → *búg-î* ‘break (intr.)’ vs. *són-bô* ‘squat’, *són-î* ‘make s.o. squat’. The stative FV *-í* is H tone in Abo [A42] and Basaá [A43] vs. the L tone verb extensions. I have noted 80 Basaá examples of derived *-í* verbs in Lemb & Degastine (1973), e.g. *sɔp* ‘pour’ → *sob-í* ‘be poured’ (cf. Bitjaa Kodi 1990: 423-4). Concerning the passive, it is tempting to compare **-u-* to degree 1 **-ú*, which derives stative adjectives from intransitive verbs in certain Bantu languages. For example, I have found 142 Luganda examples in Snoxall (1967), e.g. *-gum-* ‘be firm, solid’, *-gum-û* ‘firm, solid’; *-tamiira-* ‘get drunk’, *-tamûv-ù* ‘drunken’. The only way this hypothesis could be helpful is if the two *-V-* verb extensions were originally *H tone FVs, which goes against my basic contention that CPH is innovative. Since the above comparisons involve differences in tone or vowel height, not to mention grammatical and semantic differences, this approach remains at best highly speculative.

As a second morphological explanation based on Luganda, Hyman & Katamba (1990: 155) propose that to derive CPH, the perfective **-il-* + FV *-a* originally formed an enclitic in the presence of *-i-* and **-u-*. The basic idea is that the ISH would be assigned twice, once to the base verb, once to the enclitic, much as one finds in West African serial verb tone.¹³ This is illustrated

¹³ This suggestion would make the most sense if **-il-* were originally a verb, following Givón's (1971) general suggestion for Bantu verb suffixes. Although this remains to be confirmed, Voeltz (1977) suggested a pre-PB verb **-gid-* ‘finish’.

below in both Luganda and Lusoga, both of which would have the same trace of this alleged earlier structure:

(22)	a. <i>expected</i>	b. <i>actual</i>
	<i>Input:</i> tú- [lek-i- + il-e +H]	tú- [[lek-i- + el +H] il-a +H]
	Luganda: *tú-lés-íz-è	tú-lés-ézz-â
	Lusoga: *tù-lés-iz-è	tù-lés-éí-z-à
	‘we have caused to leave’	

As seen, the incorrect expected output is in (22a), where the spell-out of bimorphemic *-il-e surrounds the -i- of the causativized root: *-lek-i-* ‘make leave’ → *-les-i-* → *-les-il-i-e* → *-les-iz-y-e* → **-les-iz-e*). Instead, the *-lés-éí-z-à* sequence observed in (22b) requires an even more complex “cyclic” derivation of the sort discussed in Hyman (2003): *-lek-i-* → *-les-i-* → *-les-el-i-* → *-les-ez-i-* → *-les-eiz-i-a* (imbrication), where *-el-* is an extra morph known as a “stabilizer” elsewhere in Bantu. As also observed, the /l/ spirantizes to [z], causative /-i-/ glides to [y] and deletes, and the FV is -a.¹⁴ As shown, both the stem and the enclitic *-il-i-a* receive an ISH in (22b).

The bipartite structure in (22b) was designed to account not only for the double spell-out of the ISH, but also the fact that CPH perfectives do not form a tone group (TG) with what follows (Hyman & Katamba 1990: 151). Subject to a number of conditions, a TG in Luganda consists of the verb + the first clitic or phonological word that follows. Within the TG, a sequence consisting of any number of Hs + Ls + Hs plateaus to all H across the two words:

(23) a.	y-á-tú-síb-ídd-è	‘s/he tied for us’ vs.
	y-á-tú-síb-ídd-é =kí	‘what did s/he tie for us?’
b.	y-á-tú-kúb-ídd-è	‘s/he hit for us’ vs.
	y-á-tú-kúb-ídd-é =kí	‘what did s/he hit for us?’

However, H tone plateauing (HTP) is blocked by CPH:

(24) a.	y-á-síb-ídd-w-â	‘s/he was tied’
	y-á-síb-ídd-w-ââ =kí	‘what was s/he tied by’
b.	y-á-kúb-ídd-w-â	‘s/he was hit’
	y-á-kúb-ídd-w-ââ =kí	‘what was s/he hit by’

Note that the input tones are identical to those of the first line of (23b) which undergoes H tone plateauing, so it cannot be the final HL that blocks HTP. The fact that the final syllable is bimoraic in (24) is also irrelevant, since other final CVV syllables undergo HTP, e.g. *y-à-ly-â* ‘s/he ate’ vs. *y-à-ly-áá =kí* ‘what did s/he eat?’.

Importantly, blocking of TG-formation will take place only if the CPH occurs in the last syllable, and this only if *-i-* or *-u-* combines with **-il-* plus the FV *-a*, as in (25a) involving the causative verb /som-es-i-/ ‘teach, cause to learn’:

¹⁴ A full analysis would be more complex than this. It might also be tempting to view the second [e] of *-les-eiz-i-a* as a FV, hence *-les-e + iz-i-a*. Since a harmonizing *-il-/el-* “stabilizer” is found elsewhere in the language, I believe this is the better interpretation.

effect would be less surprising: While it is natural for the L of L-H to spread onto the H, a more common restriction is for L tone spreading not to affect L-HL. If MR started at the left with the resultant L spreading onto following Hs, we could therefore expect L tone spreading not to affect the H of final HL. What this would have to mean is that MR started out as a bounded left-to-right process first changing, say, H-H-H-H to H-L-H-H and only later reapplying to subsequent Hs. In this way we could obtain the derivation H-H-H-HL → H-L-H-HL → H-L-L-HL, as needed. While MR has been reported to apply left-to-right (and phrasally) in the Shona [S10] cluster (see e.g. Hyman & Mathangwane 1999), as well as bounded in Kinande between root and FV (Hyman & Valinande 1985), it would be good to find more evidence for or against this strictly phonological account.

Before concluding, I want to mention another logical source of evidence for the tone of extensions in PB: nominalization. It would be significant if *-i- and *-u- were provide an extra H tone in nominalizations, especially if found in non-CPH languages. Although this has not been exhaustively researched, the data to date are mixed. As van Otterloo (2011: 260) notes, “... the H tones of CS and PS are not always present in nominal form”. In the following Fuliiru examples, (27a) shows the transfer of CPH into the noun, while there is no CPH transfer in (27b).

- (27) a. kú-fúú-sâ ‘to escape’ → í = kǐ-fúús-ô ‘means of escape’
 kú-tyábírí-z-â ‘to thunder’ → á = ká-tyábíríz-ô ‘thunder’
 b. kú-bùt-ír-w-â ‘to give birth’ → ú = mú-bútìrwà ‘native (of a place)’
 kú-bùgú-z-â ‘to pay fee’ → ú = mú-bùgùzà ‘tax collector’

Interestingly, of the 70+ nominalizations van Otterloo provides on pp.288-292 all end in L except for: *í-shùvy-ô* ‘answer’ and *kǐ-búúz-ô* ‘question’, and *ká-hùgw-ê* ‘loneliness’, all of which involve an input -i- or -u-.¹⁶

In Luganda class 1 deverbal agentives are generally derived with /-i/, but with /-á/ after the causative or passive extension. The following nominalizations are from Ashton et al (1954) and Snoxall (1967), which I cite without the augment:

- (28) a. ku-lim-a ‘to cultivate’ → mu-lim-i ‘farmer’
 ku-kól-à ‘to work’ → mu-kóz-ì ‘worker’
 ku-lagirir-a ‘to direct’ → mu-lagiriz-i ‘instructor’
 ku-lábìrir-a ‘to supervise’ → mu-lábìriz-i ‘overseer’
 b. ku-wooz-a ‘to exact dues’ → mu-wóóz-à ‘tax-collector’ (-wool-i-)
 ku-liran-a ‘to be next to’ → mu-liráànw-à ‘neighbor’ (-liraan-u-)
 ku-záàl-is-a ‘to assist at childbirth’ → mu-záális-à ‘midwife’ (-záal-is-i-)
 ku-yígìriz-a ‘to teach’ → mu-yígìriz-à ‘teacher’ (-yígìrir-i-)
 c. ku-gob-a ‘to drive’ → mu-gób-â ‘driver’
 ku-sik-a ‘to inherit’ → mu-sík-â ‘heir’
 ku-vubuk-a ‘to reach puberty’ → mu-vúbúk-â ‘adolescent’

As seen most clearly in the first two examples of (28b), the H of /-á/ has the same realization as the ISH, being realized as H on the second mora, followed by all Ls. (This is obscured in the third

¹⁶ I also note that none of them ends with final -a.

and fourth examples, where the root is also /H/, hence causing the H of /-á/ also to undergo MR.) A final HL falling tone is found on the *-a* in (28c), although without a causative or passive morpheme.¹⁷ While the *-i* vs. *-a* nominalizer is attested beyond the CPH languages—and may be PB (Meeussen 1967: 93), it interestingly parallels the Luganda/Lusoga perfect *-e* vs. *-a* facts. As for the transfer of the CPH to nominalizations, my suspicion is that more transparent derivations or recent nominalization may be more likely to parallel the tones of the input verb. In any case, a bigger corpus is needed from more languages.

5. Conclusion

To conclude I repeat the position of Hyman & Katamba (1990) that the CPH was innovated in the interlacustrine area, and that it had to do with the presence of a “melodic” tone, if not also the perfect(ive) suffix. In most of the interlacustrine CPH languages listed in (3) there is a noteworthy prevalence of HTA which ultimately leads to a H > L tone inversion. Since HTA is otherwise rather limited in Bantu (vs. perseverative tone spreading and tone shifting) this correlation should be borne in mind—even though it is not obvious whether or how it might feed into the CPH facts we have seen.¹⁸ In any case, the contrastive H tone extensions attested outside the interlacustrine area are likely a separate development, possibly having to do with marking intransitive verb finality or a H tone agent marker in the passive. It also striking how many minimal pairs there are among the extensions:

- (29) a. Chichewa [N31] *-its-* ‘causative’ vs. *-íts-* ‘intensive’, *-ik-* ‘impositive’ vs. *-ík-* ‘stative’
b. Citonga [N15] *-is-* ‘causative’ vs. *-ís-* ‘intensive’, *-ik-* ‘stative’ vs. *-ík-* ‘passive’
c. Herero [R30] *-ak-* ‘stative’ vs. *-ák-* ‘neutro-passive’, e.g. *zúv-ak-a* ‘be heard’ vs. *zúv-ák-a* ‘be hearable’ (Wilhelm Möhlig, pers.comm.)

Hopefully we will find more evidence that will lead with certainty to a solution for both groups of H tone extension languages. For now, perhaps the only definitive “moral” we can draw from all of the above comes from the great A.E. Meeussen himself:

As a general conclusion, one might suggest that future research in comparative Bantu should consist mainly in team work, in which all available evidence, examined critically, is taken into account.
Meeussen (1973: 18)

Time to get back to work!

¹⁷ The first three nouns in (28c) also have the regular variants *mu-gob-i* and *mu-sisi*, while the third has the variant *mu-vubúf-ù* derived via the deverbal adjectival suffix /-ú/ mentioned above.

¹⁸ Interestingly, many interlacustrine languages convert final H to HL and ultimately anticipate the H off the FV and onto the penultimate syllable. In Hyman (2007b: 22) I hypothesized that this “push” from the right edge sets more general HTA in motion. Perhaps the proposed change of final H tone C-V-V to HL could be the missing link between HTA and CPH.

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