Two tones may not be better than one:
Attempting a privative analysis of Kwanyama tone

Introduction: Privative vs. Binary Tone Systems
In her 2004 book *A Tonal Grammar of Kwanyama*, Halme analyzes Oshikwanyama (R.21) as having a binary H-L tone system, stating that this is necessary to explain many of the tonal phenomena she describes for the language (25).

As noted by Kisseberth and Odden (2003:59), “the vast majority” of Bantu languages have two tones (H and L); in addition, many of these should be analyzed as having a privative H feature that is either present or absent for each mora. The privative analysis is motivated by the fact that H behaves quite differently from L in many languages, and is subject to different restrictions and distributions.

In this paper, I will evaluate each of the tonal rules posited by Halme for Kwanyama, noting the advantages and disadvantages of the alternative, privative H analysis, as well the assumptions that would be needed to sustain it.

Hyman (2000:3-7) notes various characteristics that are expected in a tonal system with privative H, including the following:

i. There will be no contour tones.
ii. There will be no floating L tones.
iii. There may be underlying restrictions of the distribution of H, but not of L (because there can’t be restrictions on Ø).
iv. There may be morphological rules under which H is assigned to a specific mora; these will not be seen for L.
v. There may be surface restrictions on the distribution of H, but not of L.
vi. Rules governing tonal interactions will only refer to H.
vii. Non-adjacent H tones may interact with each other – this would be expected if the nodes between them are empty, but not if they are occupied by L.

As a preliminary note, Kwanyama does not allow for contour tones (Halme 2004:52, *cf.* characteristic (i)). Halme does, however, posit several rules that she claims crucially hinge on the presence of a floating L. Regardless of whether Halme’s analysis is correct, these two criteria cannot be considered conclusive; as Hyman notes (2000:3-4), characteristics (i) and (ii) depend somewhat on the choice of a simple autosegmental over a more complex feature geometric representation of tone. For this paper, however, I will attempt to explain Kwanyama tonal processes without any reference to L, floating or otherwise.

Halme proposes fourteen major tone rules for Kwanyama, applying in various contexts and at various levels (e.g. word vs. phrase level). I will take each of these in turn, first stating the rule as Halme proposes it, then describing its alternate representation in a privative H system and the ramifications thereof. Rules are given exactly as Halme presents them, with page numbers in parentheses after the statement of each rule.
Rule #1: Tone Shift (TS)
Shift all tones one mora to the right (26; 143).

\[
\begin{array}{c}
V \\
T
\end{array}
\quad
\begin{array}{c}
V \\
T
\end{array}
\]

Within a Privative-H System: This rule does not pose any difficulties within a privative-H analysis, as it does not refer to H or L tones at all:

\[
\begin{array}{c}
V \\
V \\
V \\
H
\end{array}
\]

Rule #2: High Doubling (HD)
A High tone spreads to the next mora, even across a word boundary, provided the affected mora is followed by at least one Low tone and no High tone in the same word. (26;144).

\[
\begin{array}{c}
V (##) \\
H (##)
\end{array}
\quad
\begin{array}{c}
V \\
L \\
L
\end{array}
\]

Within a Privative-H System: This rule appears to favor a privative-H analysis, as H tones interact across L tones (cf. characteristic (vii) of privative-H systems above). However, there are situations in Kwanyama in which H can spread to the following mora, regardless of the presence of another H within the word (cf. rule #4 and all rules involving floating H below).

\[
\begin{array}{c}
V (##) \\
H (##)
\end{array}
\quad
\begin{array}{c}
V \\
V
\end{array}
\]

Rule #3: Augment High Spread (AHS)
The underlying High tone of the augment spreads onto the following Low-toned mora, whose tone is delinked (49; 144).

\[
\begin{array}{c}
V \\
H_{[\text{aug}]}
\end{array}
\quad
\begin{array}{c}
V \\
L
\end{array}
\]
Within a Privative-H System: According to Halme, this rule creates a floating low tone. The ramifications of this will be dealt with below in the rules that deal with floating lows (cf. rules #6-10). AHS, at any rate, is easy to represent in a privative system:

\[
\begin{array}{c}
\text{V} \\
\text{H}_{\text{[aug]}} \quad \text{V}
\end{array}
\]

**Rule #4: Augment High Copy (AHC)**

* A word-final High tone spreads to the augment of the following word and delinks its Low tone, which is deleted. (46; 145)

\[
\begin{array}{c}
\text{V} \\
\text{H} \quad \text{L} \\
\text{V}_{\text{[aug]}}
\end{array}
\]

**Notes:** Halme (2004:144) argues that this rule must be ordered after rule #3, because only underlyingly H augments trigger AHS; H created by AHS does not spread.

Within a Privative-H System: This rule also works well in a privative-H analysis; it is expected that the “delinked” L would be “deleted” if it were never present in the first place:

\[
\begin{array}{c}
\text{V} \\
\text{H}_{\text{[aug]}} \quad \text{V}
\end{array}
\]

A question that arises at this point (under both analyses) is whether AHC can potentially lead to an OCP violation. However, no data seem to be available that would answer this question: AHC appears to apply only to noun augments\(^1\) and Kwanyama noun prefixes are all underlyingly L (or Ø) (Halme 2004: 35). An example involving a mono- or non-moraic prefix (i.e. from class 1a, 5, or 9) would shed light on the issue, but I was unable to find any such example in Halme’s book.

Halme does note, however, that AHC applies even if there are other H tones within the word (2004:46); this differentiates it from rule #2 (HD) above and shows that HD’s failure to apply when followed by another H within the word must have some other motivation besides merely to avoid an OCP violation.

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\(^1\) Note that at least all positive verb augments are underlyingly H (Halme 2004:83);
Rule #5: Augment High Doubling (AHD)

A High tone spreads from the augment to the next mora, provided the affected mora is followed by at least one Low tone and no High tone in the same word. (47; 145)

\[
\begin{array}{c}
V_{[\text{aug}]} \quad V \quad V \\
H \quad L \quad L
\end{array}
\]

Notes: This rule is exactly the same as rule #2 (HD), but Halme repeats it so that it can be ordered after AHS.

Within a Privative-H System: Since this rule is for all intents and purposes the same as HD, the notes under rule #2 apply here as well.

\[
\begin{array}{c}
V_{[\text{aug}]} \quad V \quad V \\
H
\end{array}
\]

Rule #6: Floating Low Deletion (FLD)

A floating Low tone is deleted whenever it occurs next to a linked Low tone. (28; 145).

\[
\begin{array}{c}
V \quad \text{AND} \quad V \\
L \quad L \quad L
\end{array}
\]

Notes: Halme notes that this rule applies globally (145).

Within a Privative-H System: This effect is exactly what would be expected under a privative-H analysis, since “floating” lows are not presumed to be present at all. A question for Halme’s binary analysis will be whether floating H’s similarly delete when adjacent to linked H’s. Examples of floating/linked H interaction will be shown in rules #9-13 below.

Another question is what happens when a “floating L” occurs between two linked H’s. A privative system will need to explain any effects in terms of the OCP. Examples of this process are seen in rule #7 below.

It is almost meaningless to express the “rule” of FLD in a privative-H system, where it would not be a rule at all, but its expression might look like this:
Rule #7: High Lowering (HL)
A floating Low tone links to a following mora whose High tone is delinked and deleted (49; 145).

\[
\text{\textbf{L}} \quad \text{\textbf{H}}
\]

Within a Privative-H System:

Again, this rule appears to work out beautifully if the language has privative H. An OCP violation caused by two adjacent H’s (created by spreading or the linking of a floating H) can be avoided by deletion of the second H (or by delinking it from the second mora, if it is a multiply-linked H).

\[
\text{V} \quad \text{V} \quad \text{or} \quad \text{V} \quad \text{V} \quad \text{V}
\]

Halme also notes that “[a] lowered High is reinterpreted as a real Low tone, which is confirmed by the absence of Augment High Copy across the word boundary” (2004:111). This is exactly what is expected if privative H delinks to avoid an OCP violation.

In an ideal privative-H world, all OCP violations created by adjacent H’s would be resolved in this way; this, unfortunately, is not the case, as will be seen in rules #12 and #13 below. We will therefore need additional stipulations about H interactions if we are to sustain our privative H-analysis. To do so seems desirable in consideration of the rules presented thus far, as they can be explained rather more simply and naturally than they can under a binary analysis. Whether this position will be ultimately tenable, however, remains to be seen.

Rule #8: Contour Transfer (CTr)
A word-initial floating Low tone of a locative noun in the special tone case links to the final mora of a preceding verb (58; 146).

Within a Privative-H System: Since Kwanyama does not allow surface contours (Halme 2004:62), the effects of this putative rule will be explored in rule #13, which, along with rules #9-12, deals with the surface forms of underlying contour tones in a binary L-H system.

**Rule #9: Floating Contour Simplification (FICS)** (110; 146).

\[
\begin{array}{cc}
V & V \\
L & H & H & L \\
& & L & H & L
\end{array}
\]

Notes: FICS “applies to floating (L)(H) sequences created by mergers of TAM markers and SC’s in certain negative verb forms” (Halme 2004:146). Halme describes the TAM marker of nearly all negative verb forms as being underlyingly H(L). The H(L) TAM is followed by an underlyingly H subject concord (SC). In most cases, this leads to HL (rule #7), but when, as with 2nd singular and class 1 SC’s, the SC merges with the TAM, it results in what Halme represents as H(L)(H), apparently necessitating the kind of “floating-contour” simplification seen in this rule.

Within a Privative-H System: First, let us examine examples of the operation of this rule, both under Halme’s binary system and the alternative privative-H analysis. All examples are given before TS (rule #1) takes place.

(1) HH verb stem

(a) binary analysis (Halme 2004:110):

\[
\begin{array}{cccccccc}
& & & & & & & \\
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& & & & & & & \\
\end{array}
\]

(b) privative analysis

\[
\begin{array}{cccccccc}
& & & & & & & \\
& & & & & & & \\
& & & & & & & \\
\end{array}
\]

2 The “special tone case” occurs after some verb forms (e.g. “focused” verbs; cf Halme (2004:104)) and is analyzed by Halme as having the form ³L(H)- (2004:53). Other possibilities for the shape and effects of this form will be explored in subsequent sections.
In (1b), the floating H, with no unlinked mora on which to surface, causes the adjacent H to delink from the following mora. Alternately, the floating H may be assumed to merge with the preceding linked H in this case, with the following mora delinking to avoid an OCP violation.

(2) LH verb stem
   (a) binary analysis (Halme 2004:110):

   \[
   \begin{array}{cccccc}
   \text{UR} & \text{L} & \text{H(L)(H)} & \text{L} & \text{H} & \# & \text{H} \\
   \text{FICS} & \text{L} & \text{H(H)} & \text{L} & \text{H} & \# & \text{H} \\
   \text{HGr}^3 & \text{L} & \text{H} & \text{H(L)} & \text{H} & \# & \text{H} \\
   \text{HL} & \text{L} & \text{H} & \text{H} & \# & \text{H} \\
   \end{array}
   \]

   (b) privative analysis

   \[
   \begin{array}{cccccc}
   \text{i} & \text{ta} & \text{ko} & \text{fa} & \# & \text{mo} \\
   \text{H} & \text{H} & \# \\
   \end{array}
   \]

To make the privative analysis tenable, we must assume that the floating H will link to the following mora if it is unlinked. (For the behavior of a floating H when the following mora is linked, but the previous is not, see rule #10.) The newly-linked H will subsequently need to merge with the preceding H, if an OCP violation is to be avoided, but this merger is not shown here.

**Rule #10: Initial Contour Simplification (ICS)**

A word-initial Low mora followed by a floating High (which in turn is followed by a floating Low tone) becomes High (52;146).

\[
\begin{array}{c}
\text{V} \\
\text{L} & \text{H} & \text{L} \\
\end{array}
\]

Notes: ICS applies on a negative predicate ha- (analyzed as °L(H)- by Halme (2004:51) when followed by a noun with a monomoraic prefix (with which it merges) and a H-initial stem.

Within a Privative-H System: Again, let us examine the operation of this rule as it applies to real examples:

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3 High Grounding. See rule #11
(3) HH noun stem
(a) binary analysis (Halme 2004:53):

<table>
<thead>
<tr>
<th>Ur</th>
<th>ICS</th>
<th>HL</th>
</tr>
</thead>
<tbody>
<tr>
<td>L(H) (L) H H</td>
<td>H</td>
<td>L L H</td>
</tr>
</tbody>
</table>

ha mo na ('it isn’t the son’)

(b) privative analysis

In (3b), the floating H from the negative predicative ha- (assumed to preferably surface on a following low tone, as occurs in nouns with bimoraic prefixes as well as on nouns with stem-initial Ø; cf Halme 2004:51-52) cannot link to the next mora, which is already linked, so it links to the preceding mora, which has no underlying tone. The resulting H-H sequence is repaired by the delinking of the H tone from the following mora. The analysis is the same for HL-stemmed nouns, except that the delinked H, having been linked to a single mora, is deleted.

Here, too, the privative analysis seems to work well, and does not contradict the privative analysis for rule #9 if the floating H tone is assumed to surface on the following mora if possible, on the preceding mora if necessary, and to delete (or merge with the preceding H) if both the following and preceding moras are already linked.\(^4\)

**Rule #11: High Grounding (HGr)**

*A floating High tone links to a following Low mora and delinks its Low tone (51;147).*

Within a Privative-H System: HGr is the expected result of a floating H followed by Ø in a privative tone system, if it is assumed that a floating H prefers to link one mora to its right. An instance of HGr is seen in example (2) above.

\(^4\) The possibility of analyzing the negative augment in negative main clause verbs (cf. Halme 2004:108) might also be explored.
Taking Stock: Can these rules be simplified?
The behavior of floating H tones can greatly simplify at least some instances of rules #2-5 above. Halme argues that the ordering of these rules must be

\[
\text{HD (#2)} > \text{AHS (#3)} > \text{AHC (#4)} > \text{AHD (#5)} (2004:144).
\]

Namely, I propose that the predicative augment (found on predicative nouns and on verbs) has a floating H tone.

Floating H on the predicative augment explains a host of tone effects in verbs with the augment and predicative nouns. Halme analyzes the verbal augment as having underlying H(L) whenever it appears before a morpheme with underlying H, and H(H) when it appears before underlying L (see chart of tone in affirmative tenses in Halme 2004:83). The effects of this fall out naturally assuming the behavior of floating H as outlined above (linking to the following toneless mora if possible as in (2b), delinking the following H-toned mora if unable to link, as in (1b)). Although these rules for floating H may seem as stipulative as Halme’s floating tones on the verbal augment, it seems rather fishy that an otherwise identical morpheme would have a floating L whenever followed by a mora with underlying H, and vice versa. The same analysis explains all effects seen with a predicative augment on nouns. We now return to Halme’s proposed rule ordering.

It is clear that HD must apply before the linking of the floating H because the H tone created by AHS does not spread to the following mora, even if the word in question satisfies the conditions for HD (no following H tone within the word):

\[
(4) \text{Predicative Augment on all L stem; analyzed with floating H (example taken from Halme 2004:49)}
\]

\[
\begin{array}{ccc}
\text{e} & \text{e} & \text{ngo} \\
\text{H} & \text{H} & \text{be}
\end{array}
\]

(‘it is (the) cattle’)

If HD were to apply at this point, we would expect the H tone on the second mora to spread one mora to the right; however, this is not the case; before tone shift, the tone on \(\text{e}\text{e}\text{ngòbe}\) is HHLL.

An alternate analysis, without the need for any ordering, would be to say that floating H’s do not spread after linking.

We can now turn to the ordering of AHC (rule #4). Halme reasons that AHC applies after AHS because the H tone copied to the augment from the H-toned final vowel of the previous word does not spread to the next mora, while the underlying H of the predicative augment does (2004:144). If, however, so-called AHS is the effect of a floating H tone on the predicative augment, AHS would not be expected to occur after the non-predicative (underlyingly toneless) augments to which AHC applies, which have no floating H.
Because high doubling (rule #2) does occur on augments after AHC, Halme is forced to posit a separate (but identical) process (rule #5, AHD) to avoid an ordering paradox (2004:144). If, as I propose here, floating H tones do not spread after linking, there is no need for AHD. AHC feeds HD, and is unrelated to the processes that deal with floating H’s.

A floating H will also explain the behavior of “polarized forms without the initial vowel” (2004:106-7).

Rule #12: Possessive Contour Reduction (PCR)

In nominal possessives of nouns with a monomoraic prefix, the floating High [p]receding the stem delinks and deletes a stem-initial Low tone; in the case of a stem-initial High tone it delinks and deletes the Low tone of the prefix (61; 147).

\[
\begin{align*}
\text{V} & \quad \text{V} \\
\text{L} & \quad \text{H} & \text{[stem]} & \quad \text{L} & \quad \text{H} & \text{[stem]} & \text{H}
\end{align*}
\]

Notes: Somewhat similarly to her analysis of the negative predicative, Halme analyzes the underlying possessive tone as being °LH (Halme 2004:60). The H normally links on the second mora of the noun prefix, but in the case of monomoraic prefixes, the H links as detailed in this rule.

Within a Privative-H System: Once again, we are best served by examples.

(5) HL noun stem

(a) binary analysis (Halme 2004:61):

<table>
<thead>
<tr>
<th>yo</th>
<th>tu</th>
<th>ndi</th>
</tr>
</thead>
<tbody>
<tr>
<td>UR</td>
<td>L(H)</td>
<td>H</td>
</tr>
<tr>
<td>PCR</td>
<td>H</td>
<td>H</td>
</tr>
</tbody>
</table>

(b) privative analysis

\[
\begin{align*}
\text{yo} & \quad \text{tu} & \quad \text{ndi} \\
\text{H} & \quad \text{H}
\end{align*}
\]

This appears to pose a problem for the privative-tone hypothesis, as the linking of the floating H does not cause delinking of the adjacent H (as it does in example (3)). Halme’s binary system accounts for this by positing a floating L in (3), which is not present in (4). In a privative system, we would need to stipulate that the floating H from a possessive +
monomoraic prefix construction merges with a following H, but that such a merger is not possible with a floating H from the negative predicative ha-. The same discrepancy in behavior is seen between the instrumental na- (°LH in Halme (2004:62)) and the comitative na- (°L(H)- in Halme (2004:62)).

An alternative analysis could be that the possessive morpheme functions as a proclitic that does not function as part of the word and does not trigger OCP violations. It seems reasonable to posit that clitics do not function as if they were a part of the word to which they attach; the underlying H on enclitics does not block HD, as seen in Halme’s example (316) (2004: 90). Thus, we should probably represent examples such as (2b) as follows:

(6)

\[
i\quad ta\quad ko\quad fa\quad \#\quad mo
\]

\[
\begin{array}{ccc}
H & H & H
\end{array}
\]

Rule #13: Final Contour Simplification (FCS)

A word-final HL contour simplifies to High after Low and to Low after High (60; 147).

Notes: As far as I can glean from Halme’s book, the need for FCS only arises when

⇒ the high tone on the final vowel is followed by a locative in the special tone case (59) (cf. rule #8 (CTr)), or

⇒ a verb in the general past tense is followed by an enclitic (99). This is shown in examples (7) and (8) below.

(7) H verb stem (Halme 2004:99)

5 This stipulation is in fact necessary for possessive constructions with bimoraic noun prefixes as well; when the floating H from the possessive links to the second mora of the noun prefix, a following stem-initial H is not deleted (cf. examples (174)-(175) in Halme 2004:60).

6 Note also that the OCP appears to function at the word level in Kwanyama. All H lowering across word boundaries can be analyzed as the effect of an underlying floating H. Also, since HD (rule #2) requires at least two L moras following it within the word, it will never have the opportunity to delink the initial H of an adjacent word.

7 The final vowel in this case is analyzed by Halme as having underlying HL tone (2004: 80).
Within a Privative-H System: FCS presents a problem for the privative-H analysis because the difference in realization of the stem-final tone seems to be explainable only by the presence of a HL contour (either derived or underlying). Simply positing a floating H tone does not work, as floating H’s have been shown in this system to delink a H directly to their right, and possibly merge with the preceding H (cf. rules #9 and #10, but not #12). At the same time, since this rule affects such a minute portion of the grammar, it might be worthwhile to try to come up with an explanation (or at least, a stipulation) for it within a privative-H analysis. This is perhaps more straightforward with the final syllables of the past-tense verbs; rather than analyzing these morphemes as having an underlying tone contour (which never surfaces), one could posit that before an enclitic, the final vowel of the general past tense – which is underlyingly H – is singly linked, therefore delinking after a high-toned verb:

(9)  nda  fu  da  #  po
     H  H  H

While such a linking is clearly stipulative, it seems no more so than Halme’s HL contour that appears in the same context.

The derived tone contour on a word-final H mora before a locative in the special tone case could be analyzed in the same way, with the final H being singly linked before said locative. Again, I do not know whether such a linking schema is at all natural (or why it only occurs in the cases mentioned), but it seems (to this tone novice) to be as natural as the backwards spreading of a floating L.

If these stipulations are accepted, PCR is challenging, but not deadly, to a privative-H analysis.

Rule #14: High Insertion (HI)
When an all-Low noun with more than three moras is preceded by a tonal sequence HL, a High tone appears on the second mora of that noun (47; 148).
L $\rightarrow$ H / H L ## L _ L L * ##

Notes: Halme gives this rule in SPE format because it does not appear natural, and an autosegmental representation “does not shed much light on what is going on in this process” (2004:47).

Within a Privative-H System: Formulating this rule with privative H does not seem to pose any more problems than does using a binary system.

Conclusions:
Analyzing tones with privative H allows for a natural understanding of the effects of most of the rules posited by Halme. Instances of AHS (rule #3) can be understood as the surfacing of a floating H. The effects of HL (rule #7) can be reduced to OCP repairs. AHD (rule #5) is not needed as a separate process; and FLD (rule #6) can be eliminated altogether.

Rules #8-12 present more of a challenge to a privative analysis, but can be accommodated by the following principles:

a. Floating H links, in order of preference,
   i. to the following toneless mora
   ii. to the preceding toneless mora
b. If neither mora is available for linking, floating H deletes (or merges with the preceding H), and the following H is delinked and deleted.

c. The OCP applies at word level.
d. Pro- and enclitics do not function as part of the word.

FCS (rule #13) requires even more stipulations, but its privative analysis does not seem any more complex than a binary analysis.

In addition, Halme notes that “a multiple-linked tone seems to behave like a sequence of equal tones and not like a single tone” (2004: 27). However, a privative-H analysis seems to employ multiply-linked tones without any disastrous consequences.  

The advantages of a privative-H analysis for Kwanyama, as outlined above, seem to make it preferable to a binary analysis, as long as the above stipulations can be accepted. If so, Halme’s extensive and meticulous observations about tonal phenomena in Kwanyama may be more neatly unified.

References:


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8 Assuming singly-linked tones under this analysis requires the additional stipulation that the OCP is only violated by derived H’s.