

# African Tone Systems and Intonation: Some Generalizations and Modeling Thoughts

## Simple Declaratives

<b>Shekgalagari</b>	Penultimate Lengthening (PLL) Final L-L → L%-L; Final H-H → HL-%L; No change in Final H-L, L-H
<b>Moro</b>	Final L% (Lowers final L or H). scope?
<b>Konni</b>	Downtrending f0 due to Downtrend but no boundary tone or length
<b>Akan</b>	Downtrend due to downstep or declination? (K. says down step, but applies to like-tones). h-register at beginning and l-register at end for declination. (exp decay of r in LP model?) Additional final lowering which neutralizes H-L distinction. How not a boundary tone?
<b>Mambila</b>	Downtrend due to downstep and/or declination? (applies to like-tones). Additional lowering of final syllable (boundary L% ?)
<b>Bàsàá</b>	Downstep, but no downtrend of like tones. No final lowering. No L% No lengthening
<b>Embosi</b>	No down step Final L% (extra-low). Lowers both H and L within its scope (blending). Scope appears to be Any sequences of Hs followed by sequence of Ls (e.g. HHHLL) → smoothly falling f0 at end.
<b>Chichewa Tumbuka</b>	C-Sentence final L%; Downstep T—PP: Penult long and H; IP: Penult extra long and H is lower (due to L%);
<b>Bemba</b>	L% at the end of subject phrase and finally (blending with lexical? Unclear) downstep
<b>Shingazidja</b>	Downstep (but may be suppressed non-finally). Final L% Can blend with final H in Mo Wa, or be suppressed by H in Mb or Fu) Scope of L% can vary depending on tone sequence and dialect

# Simple Declaratives

- Some lowering over the course of sentence and/or locally at end occurs in every language. Mechanisms vary:
  - Downstep or Declination (lowering pitch range (r))
    - All lgs except Embosi (Shekgalagari? Tumbuka—no lexical tones)
    - **Only** mechanism of lowering in: Konni, Bàsàá
  - Final L%
    - Shekgalagai, Moro, Embosi, Chichewa, Bemba, Shingazidja
    - Mostly can be analyzed as blending with lexical tones
    - Complex interactions with tones (particularly with respect to locus and scope of lowering) in: Shekgalagari, Embosi, Shingazidja  
[mostly conspire to produce smooth lowering at end, preserving contrasts]
  - Final lowering
    - Akan, Mambila (why aren't these L% ??)
    - Can neutralize H,L in Akan, but not Mambila
  - Penultimate Lengthening (might contribute in some way to smooth lowering at end?):
    - Shekgalagari, Tumbuka
- No Final Lengthening in any language

# YNQ

<b>Shekgalagari</b>	None, except PLL suspended
<b>Moro</b>	Pitch range expansion early in sentence; Possible pitch range compression before final word Final L% (conspire to produce high falling pattern)
<b>Konni</b>	Lengthen Final V or N Create high falling patterns in one of three ways; insert !H, add L, replace final L with HLH (Cahill-“no boundary tone”), but patterns could result from HL% that blends with Lexical tones
<b>Akan</b>	Sentence-final L%: syllable lengthening, lowering of f0, increased intensity. h-pitch register over entire sentence.
<b>Mambila</b>	No difference from declaratives
<b>Bàsàá</b>	Not systematically different from declaratives but one speaker shows slight downtrend in YNQ. No boundary tones or lengthening
<b>Embosi</b>	HL% boundary tone. Affect both H and L within temporal scope. Creates High falling pattern. Goes above H level seen in declaratives, so YNQ are distinct form Dec.
<b>Chichewa Tumbuka</b>	C: LHL% over the last two syllables (only if they are L-L); down step suspended T: Same as C (without the lexical condition) Penults are still long,
<b>Bemba</b>	Final L%, Pitch-range expansion; suspension of Downstep (lexical contrasts remain)
<b>Shingazidja</b>	(LH* L%) Superhigh tone on the penult of IP Downstep suspended if more than two H surface Superhigh is retracted to antepenult if final tone is H (conspire to produce fall)

# Yes-No Questions

- Three lgs show no pitch differences from Declaratives:
  - Shekgalagari (PLL suspended), Bàsàá, (slight downtrend in one speaker), Mambila
- For lgs that show a difference, there is a tendency to produce a **high falling F0**, by one of several methods (or a combination):
  - High register (pitch range) early in sentence:
    - Moro, Akan, Bemba
  - Suspension of Downstep
    - Chichewa, Bemba, Shingazidja
  - Final Lengthening
    - Konni, Akan (also increased intensity)
  - Boundary Tone
    - HL% or LHL%: Embosi, Chichewa, Tumbuka, Konni (though not in Cahill analysis)
    - %L: Moro, Akan
    - Interactions of boundary tone with lexical tones can involve seemingly complex constraints, but effects can potentially be modeled by:
      - Overlap of boundary tone with lexical tones
      - Location of overlap is determined so as to produce high falling pattern on surface, while preserving lexical contrast

# Boundary Tones: overlap with lexical tones

- Focus on YNQ, consequences of overlap
- Overlap with blending can account for the preservation of lexical contrasts while producing extreme falls
  - Particularly if the boundary tone aligns with compatible lexical tones, which appears to be what the various rules or constraints seem to do.
- Overlap can also perhaps account for lack of final lengthening.
  - There is no “extra” tone gesture to add, so no need to lengthen to accommodate them.  
NOTE: (TaDA would automatically lengthen the last vowel somewhat and sustain phonation if there were an extra tone gesture sequentially coupled to the last lexical tone gesture.
  - Why these languages choose not to add the boundary tones to the end and lengthen the syllable is not clear. But that is what happens. Perhaps it is just the attraction to like tones.
  - Perhaps the lack of an extra pitch movement or lengthening is what leads authors of papers on Konni and Akan to analyze the final lowering in declaratives **not** as boundary tones.
- Check:
  - Extra tones may occur on long penult in Chichewa??
  - Revisit lengthening in Akan, Konni

# Model Revisions

- Mambila-type model and Liberman-Pierrehumbert model:
  - Exponential decay of reference level ( $r$ ) rather than H and L targets will be subject to competitive dynamics?
  - In other languages (e.g. Chichewa, Shingazidja?), exponential decay as a model of downstep.
- Embosi
  - Not currently an explicit part of model that the system is looking to overlap boundary tone with most compatible lexical tones (though implicitly it is doing that). Make more explicit?

## Subordinate Clauses, Lists

<b>Shekgalagari</b>	PLL suspended but <u>Final</u> lengthening
<b>Moro</b>	H% and lengthing
<b>Konni</b>	Compound sentences: Pause. No pitch reset but pitch range of first clause higher than second (conspire to produce continuation rise?)
<b>Akan</b>	Pitch reset in : complex declaratives, left-dislocations, complementizer clause
<b>Mambila</b>	Not discussed. (tonal replacement in imperatives).
<b>Bàsàá</b>	Not discussed
<b>Embosi</b>	Juxtaposed declaratives: Extra High H% near end of IP. Attracted to H nearest the end of IP. Right dislocations, the main clause ends with a L% boundary as well as the dislocated part. Left dislocations have pauses but no L%
<b>Chichewa Tumbuka</b>	C: H% (continuation rise) after preposed phases T: H% at the end of sentence internal IP (domain?) & higher pitch
<b>Bemba</b>	Subordinate clauses can have H% (continuation rise), pitch-range compression,
<b>Shingazidja</b>	H% at the end of non-final clause (appears even when tones are L).



## Phrasing

Shekgalagari

?

Moro

?

Konni

Downdrift occurs, but phrasal scope is not clear

Akan

Pitch reset in : complex declaratives, left-dislocations, complementizer clause

Mambila

?

Bàsàá

H spreading applies between a verb and a phrase that immediately follows it, evidence they form a single phonological phrase

Embosi

No downtrend in Embosi

Chichewa  
Tumbuka

C: Downstep but apparently reset.

Bemba

Shingazidja