

HIGH TONE SEQUENCING IN BAULE

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1. *Introduction.*

This talk deals with a curious phenomenon in Baule, a Volta-Comoe language of Ivory Coast. Baule has phonological Low and High tones. A sequence of High tones is *never* realized as level High. In contrast to what seems to be the prevailing trend in downdrift languages like Baule, there is no declination in High tone sequences. Rather, tones tend to move upward.

2. *Pattern 1 vs. Pattern 2.*

The most common realizations of High tone sequences in Baule are represented in (1) and (2) below.

(1) **Pattern 1:**

a. bólf kpángbán bólf kpángbán 'many goats' (Noun - Adj)

[- - - -] ~ [- - - -]

b. bólf nónón bólf nónón 'goat milk' (Compound)

[- - - -] ~ [- - - -]

c. Ákfsí 'Akissi' (Noun)

[- - -] ~ [- - -]

(2) **Pattern 2:**

a. bólf mángún 'goat's friend' (Possessor-
Possessed)

[- - -]

b. Áyá tí bólf ~ Áyá bólf 'Aya is a goat' (Subject - Pred)

[- - -]

Pattern 1 involves a gradual upsweep, as in the left-hand realization of (1a), which begins with a phonetically Mid-level tone and moves in gradual steps to a final Super-High phonetic level. Or alternatively Pattern 1 may involve a flat sequence of Mid-level tones up to but not including a final Super High. There are probably additional phonetic shapes to the upsweep that are intermediate between the two representations in (1a). We are currently aware of no reliable difference in meaning or stylistic value between the two variants depicted in (1a), and we assume that they are produced by a phonetic rule which perhaps sets the two endpoints, Mid and Super-High respectively, and then plots the intermediate H tones on a scale that is either level or ascending.

Pattern 2 is different. Each separate word has its own upward contour. As shown in (2a) and (2b), after the first word reaches its peak on the final syllable, the second word returns to the lower level and repeats the upsweep process. Auditorially the peaks are similar in height; possibly the final peak is a little higher. This question needs to be studied instrumentally. To give a clearer picture of the phenomenon, we include pitch tracks of utterances (1a) and (2a) in Figures 1 and 2.

Nothing in the literature on Baule tone¹ explains the difference between these two upward patterns, but the glosses on the right in (1) and (2) suggest a good first approximation to the generalization. Pattern 1 tends to occur in more tightly knit constructions (such as Noun - Adj and N-N compounds as in (1a) and (1b) and in single words (as in (1c)). Pattern 2 is found in constructions like (2a) and (2b), i.e. Possessor-Possessed, and equational sentences consisting of a Subject and a Predicate Nominal.

3. A phonological factor in High tone sequences.

While this holds true across many examples of the form in (1) and (2), it does not hold true in constructions involving a monosyllable. As shown in (3), wherever we would expect Pattern 2, a construction containing a monosyllable will instead have Pattern 1. This is true whether the monosyllable is on the left or on the right, whether it is a pronoun or a full noun.

- (3) a. Possessor-Possessed or Subject-Predicate, when one or both elements are monosyllabic:

Pro+N:	f bólf	'its goat'
N+ N:	bólf tf	'goat's head'
	[- -] ~ [- -]	
N+ N:	Ákísf tf	'Akissi's head'
	[- -] ~ [- -]	

- b. Noun - Adjective Phrase or Compound, when one or both elements are monosyllabic:

N+Adj:	flá kpángbán	'many fellas'
N+Adj:	tf kpángbán	'many heads'
N+Num:	bólf blú	'ten goats'
	[- -] ~ [- -]	

Thus syntactic differences do not suffice to characterize the environments in which the different H sequencing rules apply. We also need to know how many syllables each constituent has. This suggests that the difference between Pattern 1 and Pattern 2 is a difference in prosodic constituents, where the prosodic constituents are defined using both syntactic and phonological criteria, as in (Selkirk 1984), (Nespor and Vogel 1986), and many of the works in (Inkelas and Zec 1990).

¹The literature includes two monographs devoted exclusively to tone in Baule: Creissels and Kouadio 1979 and Ahoua 1993, plus several detailed treatments making reference to tone: Quaireau 1981, Timyan 1979, and Creissels and Kouadio 1977.

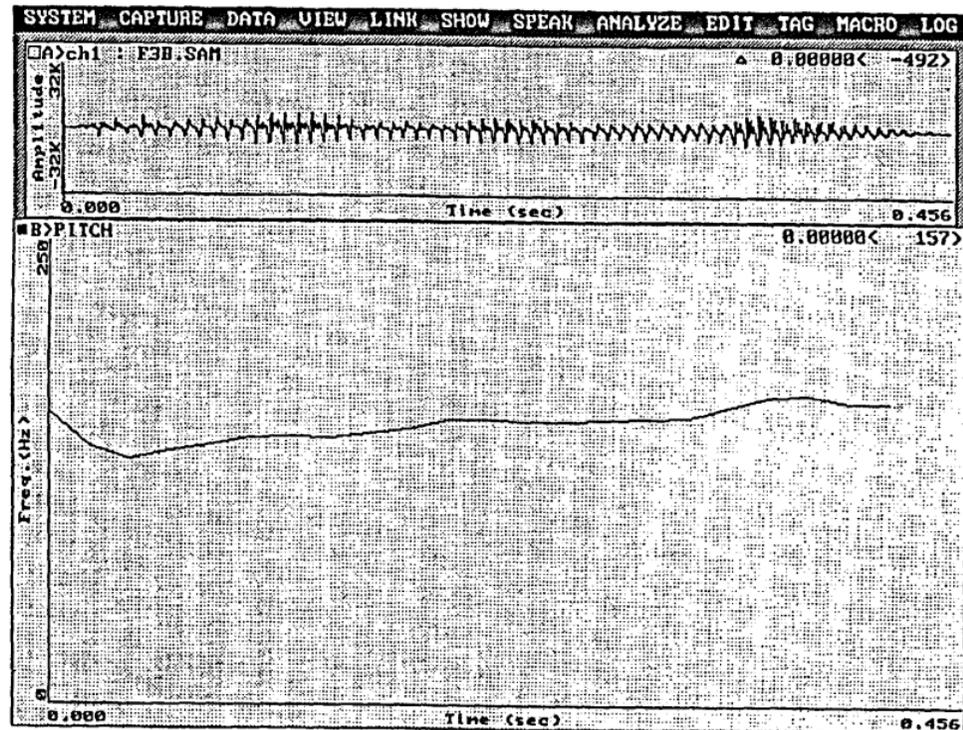


Figure 1. bólf kpángbán 'many goats' (Pattern 1)

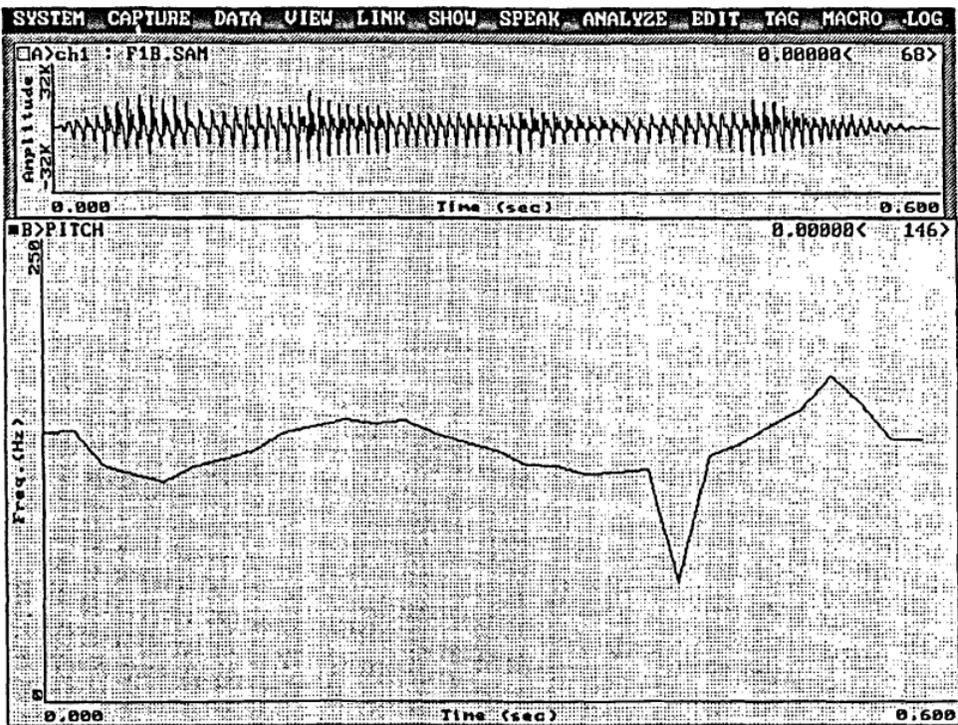


Figure 2. bólf mángún 'goat's friend' (Pattern 2)

4. *A prosodic account.*

We propose that Pattern 1 corresponds to the prosodic word and Pattern 2 to a larger unit which for present purposes we take to be the phonological phrase, though future work may show it to be an intermediate unit, smaller than the phonological phrase but larger than the prosodic word.

Our reasoning is that monomorphemic nouns like (1c), repeated in (5) below, being *morphological* words, are natural candidates for being *prosodic* words. This is bolstered by the fact that we have found no smaller prosodic unit that serves as the domain of rules. Since Noun-Noun compounds behave like monomorphemic nouns with respect to High Tone Sequencing rules, they too are natural candidates. Finally, since Noun - Adjective constructions like (1a) also behave like the other candidates for prosodic wordhood, we can surmise that they are prosodic words as well. On the other hand, Pattern 2 always involves more than one prosodic word, and so we refer to the Pattern 2 constructions as phonological phrases.

(5)

(1) **Pattern 1:**

a. bólf kpángbán bólf kpángbán

[- - -] ~ [- - -]

c. Ákísf

[- -] ~ [- -]

(2) **Pattern 2:**

a. bólf mángún

[- - -]

*Analysis:***Prosodic words:**[Akísf]_{pw}[N+Adj]_{pw}[N+N]_{pw} (compound)**Phonological phrases**[[N]_{pw} [N]_{pw}]_{pp}[[Subject]_{pw} [Predicate]_{pw}]_{pp}

Why do monosyllables behave differently from longer words? Our conjecture is that they are too short to constitute prosodic words by themselves and so always form prosodic words with their immediate neighbor, whether to the left or to the right. Thus, though the following examples, repeated from (3a), involve Possessor-Possessed constructions, they are not prosodically phrasal.

(6)

Pro+N:

N+N:

f bólf

bólf tí

'its goat'

'goat's head'

[- -] ~ [- -]

We can explain this behavior by positing a rule of prosodic word formation that creates prosodic words out of morphological words that are two syllables or greater in length. Monosyllables do not meet this requirement and are instead incorporated into the prosodic word of their immediate constituent, either to the left or to the right. Also, Noun-Adjective sequences and compounds, which we noted earlier to behave tonally like monomorphemic nouns, must also form single prosodic words. Finally, we posit a rule of phonological phrase formation that creates phonological phrases out of syntactic major phrases.

Thus we derive the structures below:

- | | | |
|-----|--|---|
| (7) | Prosodic words:
[N] _{pw}
[N + Adj] _{pw}

[N + N] _{pw}] (compound) | Phonological phrases
[[N] _{pw} [N] _{pw}] _{pp}
[[Subject] _{pw} { Predicate } _{pw}]
PP |
|-----|--|---|

Here are some illustrations of prosodic units that examples discussed previously would

form:

- | | | |
|-----|--|--|
| (8) | Prosodic words:
[Akissi _N] _{pw}
[boli _N + kpangban _A] _{pw}
[boli _N + nonon _N] _{pw}] (compound)
[ip _{ro} + boli _N] _{pw}] (possessive phrase)
[boli _N + ti _N] _{pw}] (possessive phrase) | Phonological phrases
[[boli _N] _{pw} { mangun _N } _{pw}] _{pp}
(possessive phrase)
[[Aya _N] _{pw} [boli _N] _{pw}] _{pp}
(subject - predicate) |
|-----|--|--|

This permits us to explain the different realizations of High tone sequences in Baule. Let us suppose that in a prosodic word a sequence of High tones is realized either as a gradual upsweep starting with Mid and ending with Super-High or as a sequence of Mid tones ending with a single Super-High. Then this process will occur exactly once in the cases on the left in (8), but twice in the cases on the right. As the data in (1) and (3) show, this is exactly right.

If this approach is correct, we would expect to find other phonological rules that similarly class the examples on the left in (8) together, to the exclusion of the cases on the right. This is the subject of current work, which we hope to report on in the near future.

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