

1. General Point

- the study of tone in African lgs. raised serious conceptual problems for the representation of the phoneme as a bundle of distinctive features.
- the solution to the problem (autosegmental representations) became a model for all other features
- tone exhibits the widest range of phonological behavior

2. Phonetic correlates of tone

- F0; stiffen and slacken vocal folds
- realized on modal voicing
- domain: often larger than single segment (syllable, word)
- can be affected by laryngeal features of consonants (tonogenesis)

3. notation

- Two-way contrast: á vs. à (or a)
- Three-way contrast: á vs. ā (or a) vs. à
- Contours: ǎ (rise) â (fall)
- Features for H, M, L
- Goldsmith: [+highpitch, -lowpitch], [-highpitch, -lowpitch], [-highpitch, +lowpitch] (3-way height contrast)
- Yip: [+upper, -high], [-upper, +high], [-upper, -high] ([+upper, +high] for raised H) (4-way height contrast)

4. descriptive problems motivating novel conception of feature organization

- decomposition of contour tones Rise into LH and Fall into HL
- tonal melodies and tonal polarity

5. Margi (Chadic, Nigeria): H, L, R (Williams 1973, Hoffmann 1963)

- rising tone behaves phonologically as combination of Low plus High
- derivational source

sál	sál-árì	'man'
kùm	kùm-árì	'meat'
tágú	tágw-árì	'horse'
ú?ù	ú?w-ǎrì	'fire'

- tonal melody verbs

sá	ndábyá	H	HH
ghà	dzà?ù	L	LL
hǔ	ŋgùsú	R	LH

in a language with tonal melodies, the number of tonal contrasts does not increase with the length of the lexical item; rather the melody is extended to encompass additional syllables

- tonal polarity: affix takes the opposite tone from the root: [tense-root-subject]

à sá gù 'you go astray'
 á wì gù 'you run'
 á vǎl gù 'you fly'

5. adding features of [±rise], [±fall] does not express the equivalence with LH and HL

6. Goldsmith (1976) *Autosegmental Phonology*

- tonal features are represented on a separate level (**tier**) from segmental features
- the temporal relation between the tonal tier and the segmental tier is represented by **association** lines
- rules of tonal phonology define and modify the associations as well as changing the feature coefficients

7. Margi analyzed autosegmentally

devocalization

u ? u - a r i	u ? w - a r i	->	u ? w - a r i	segmental tier
			/	
H L H L	H L H L		H LH L	tonal tier

- tonal stability: while vowel deletes or devocalized to a glide and hence loses its ability to hold a tone, the tone does not disappear but is reassociated with an adjacent syllable

8. Goldsmith's (1976) **Well-Formedness Condition** on autosegmental representations (rules apply to maximally satisfy it; early example of rules driven to satisfy a constraint)

- every tone is associated with a tone-bearing unit (TBU = syllable, mora)
- every tone-bearing unit is associated with a tone
- association lines do not cross (for locality)

9. Margi tonal melodies

- verb roots belong to one of three tonal "conjugations": H, L, LH
- tones are associated with tone-bearing units (syllable) one-to-one, left-to-right
- tones spread to satisfy the first condition of the WFC

Angas (Nigeria)

Citation	Case	Modified	
tɛŋ	tɛŋ	tɛŋ	rope
mús	mús	mús	cat
ʔàs	ʔàs	ʔàs	tooth
jóli	jóli	jóli	ape

12. automatic downstep

- high tone is realized at a lower F0 value than a previous H when preceded by a L
- found in many diverse languages: Japanese, English list notation

Yoruba: Laniran & Clements (2003)

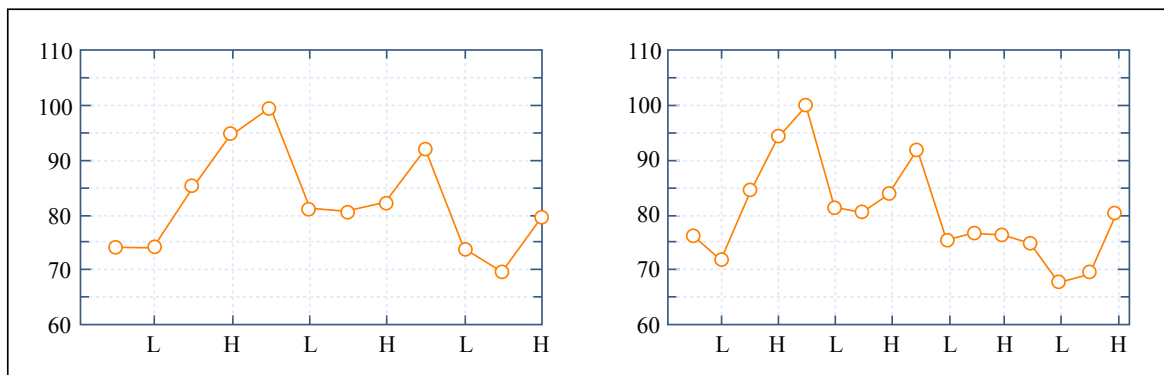


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- phonetic value of H could be lower than value of preceding L
- grammaticalization of natural lowering of subglottal pressure across breath group as speech is articulated from "left-to-right"

13. Moore (Gur, Burkina Faso)

- H á vs. L a; has automatic downstep
- has non-automatic downstep: second of two high's realized at a lower level: á' á
- recall English vocative

ko sá:ga	'give a broom'	kor béda	'big sacks'
ko korgó	'give a sack'	kor ke:gá	'green sacks'
zá sá:ga	'bring a broom'	sá béda	'big brooms'
zá kór!gó	'bring a sack'	sá ké:!gá	'green brooms'

14. data from Lama problem (PGG 7.10)

7.10 *Lama* (Ourso 1989)

Lama is a two-tone language of the Gur family (related to Moore) spoken in Togo. Three contrasting surface tones occur before pause: high (e.g., *ná* 'see!'), low (e.g., *na* 'with'), and falling (e.g., *nâ:* 'cow'). Phrase-medially only high and low tones occur phonetically; falling tone is systematically barred except before pause. Monosyllabic nouns fall into four distinct classes in terms of their tonological behavior. However, before pause the four classes merge into three distinct phonetic types and phrase-medially into only two. Examples of the four distinct classes appear in (1).

- (1) a. ci 'father'
 ri 'mother'
 ra 'friend'
- b. wá:l 'husband'
 yír 'person'
 lé:l 'widow'
- c. nâ: 'cow'
 sî: 'sheep'
 tî: 'elephant'
- d. yal 'wife'
 ra:l 'brother'
 nun 'aunt'

A. Develop an analysis to account for the tonal effects of class (1a) and class (1b) nouns on the words *tɛ* 'under' and *ra* 'friend'.

- (2)
- | | | | |
|---------|--------------------|--------|-------------------|
| ci | 'father' | ri | 'mother' |
| ci tɛ | 'under father' | ri tɛ | 'under mother' |
| ci ra | 'father's friend' | ri ra | 'mother's friend' |
| wá:l | 'husband' | yír | 'person' |
| wá:l tɛ | 'under husband' | yír tɛ | 'under person' |
| wá:l rá | 'husband's friend' | yír rá | 'person's friend' |

B. Now consider class (1c) words in the same contexts; formulate a rule to account for the alternation between fall and high. Must this rule be ordered with respect to the one developed for (2)? If yes, why? If no, why not?

- (3)
- | | | | |
|--------|----------------|--------|---------------------|
| nâ: | 'cow' | tî: | 'elephant' |
| nâ: tɛ | 'under cow' | tî: tɛ | 'under elephant' |
| nâ: ra | 'cow's friend' | tî: ra | 'elephant's friend' |

C. The postposition *tɛ* means 'chez', 'at the house of'. Can you explain the downsteps in the following paradigms?

- (4)
- | | | | |
|-------------|--------------------------|---------|-----------------|
| ci tɛ | 'chez father' | ri tɛ | 'chez mother' |
| wá:l tɛ | 'chez husband' | yír tɛ | 'chez person' |
| nâ: t'ɛ | 'chez cow' | tî: t'ɛ | 'chez elephant' |
| wá:l rá | 'husband's friend' | | |
| wá:l rá tɛ | 'under husband's friend' | | |
| wá:l rá t'ɛ | 'chez husband's friend' | | |

D. The verb *sewá* 'ran' systematically varies its tone depending on the tone type of the preceding noun. Your analysis should be able to explain each example in (5).

- (5)
- | | |
|--------------|------------------------|
| ci sewá | 'father ran' |
| wá:l séw'á | 'husband ran' |
| nâ: sewá | 'cow ran' |
| wá:l rá sewá | 'husband's friend ran' |

E. Now consider nouns from class (1d). In what ways are they similar to and different from the other types? Develop an analysis to explain these differences.

- (6)
- | | | | |
|-----------|-----------------|------------|--------------------|
| yal | 'wife' | ra:l | 'brother' |
| yal tɛ | 'under wife' | ra:l tɛ | 'under brother' |
| yal rá | 'wife's friend' | ra:l rá | 'brother's friend' |
| yal tɛ | 'chez wife' | ra:l tɛ | 'chez brother' |
| yal séw'á | 'wife ran' | ra:l séw'á | 'brother ran' |

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