Class 3.1-3.2: Introduction to tone: phonology

1.0 Administrative

(1) Agenda

a. Follow-up from last week: "terraced level" tone languages

b. Overview of tonal phonology

c. (If time, we'll come back to voice quality a little)

(2) Assignments

a. Project: "homework" due Friday

b. Reading: [Goldsmith (1976), questions] due Tuesday, 02/12 by class time

1.1 Characteristics of tonal phonology

(3) Phonological properties of tone

> Tone differs from many other phonological features in the following ways, rarely or never observed in more familiar consonantal or vocalic features:
> a. Mobility: movement away from point of origin
> b. Stability: survival after loss of original host segment
> c. One-to-many: a single tonal feature shared by two or more segments
> d. Many-to-one: multiple tonal features surfacing on a single host segment
> e. Toneless segments: potentially tone-bearing segments that never acquire phonological tone
>
> (Yip, 2002, p. 65) [further-reading/3/yip2002-autoseg-OT.pdf]

1.1.1 Mobility

(4) Demo: Spreading in Bole (Chadic, Nigeria, bol) [mat/tone/mobility/bole/]

a. /án něm máwo/
owner hippo return.PAST
'The owner of the hippo returned.' Tone Raising?

b. See Schuh and Gimba (2005) for more details on what conditions spreading [further-reading/3/schuhgimba2005.pdf]

> Bole has a tonal process, referred to as Low Tone Raising (LTR) in this paper, first described by Lukas (1969) with additional information added by Gimba (1998), whereby a high tone spreads from the final syllable of a word and replaces a low tone on the initial syllable of a following word. LTR is blocked if the L-bearing syllable begins in a voiced obstruent. LTR is licensed only in certain syntactic environments, notably N+N genitives, V+nominal direct object, and clitic+host... (Schuh and Gimba, 2005)

Exercise 1.1 ***(Low tone raising in Bole).*** Compare the different utterances of 'The owner of the hippo returned.' Do they sound the same? Do they look the same in Praat? Do you notice any utterances with low tone raising? □

(5) Demo: Spreading in Luganda (Bantu E.15, Uganda, lug) [mat/tone/mobility/luganda/]

(6) Demo: Spreading in Bade (Chadic, Nigeria, bde) [mat/tone/mobility/bade/]

Exercise 1.2 ***(H tone spreading in Bade).***
Open [B1_Hspread_1_SubjCl_LHverb.aif] and [B1_Hspread_1_SubjCl_LHverb.TextGrid] in Praat. (Key: see handout, page 6 from [2007_bade_tone_testing.pdf]). *Describe the process of H tone spreading in Bade.*

□

(7) omg mobility examples

Exercise 1.3 ***(Chizigula (Bantu: (Kenstowicz and Kisseberth, 1990)) (Yip, 2002, p. 66)).***

Consider the verb roots /damany/ 'to do' and /lómbez/ 'to request' and look at the paradigm below. Note: L tones are analyzed to be unspecified (so any toneless syllable surfaces as a default L, unless otherwise noted). Can you explain the distribution of tones?

Toneless verbs		*H-tone verbs*	
ku-damany-a	'to do'	ku-lombéz-a	'to request'
ku-damany-iz-a	'to do for'	ku-lombez-éz-a	'to request for'
ku-damany-iz-ana-a	'to do for each other'	ku-lombez-ez-án-a	'to request for each other'

Further reading: Downing (2011) for overview on Bantu tone [further-reading/3/downing-2011/] □

1.1.2 Stability

Two examples, a diachronic one and a synchronic cone, from Grassfields Bantu languages spoken in Southwestern Cameroon

The associative construction in Bamileke-Medumba (Medumba)

(8) Vowel deletion and tonal reassociation of orphaned tones as source of the genitive tonal morpheme and other floating tones in Grassfields Bantu (Hyman, 2004, (23))

a. Proto-Bantu reconstruction

*kì - júmà + kí-á + mù - jánà
L - H L + H + L - H L
'thing of child'

b. Bamileke-Medumba

jú !!mɛ́n
L H L H L H L
'thing of child'

(9) Double downstep?! cf. Miya tones [mat/tone/miya/miya_tones.pdf] (open in Adobe Reader), item 20 (two downsteps), 24 (five downsteps).[1]

[1] Notation: In items 24–27, acute accent á = H, grave accent à = L, unmarked = same pitch as previous, and an acute following another acute = downstepped H

The associative construction in Bamileke-Dschang (Yemba)

See [further-reading/3/bird1999-bamileke-dschang/bird1999-bamileke-dschang.html] for examples (Examples 6, 7, 9–11), although unfortunately there's no example of a L tone associative marker followed by a H tone.

(10) 'N_1 of N_2' constructed as N_1 (e) N_2, where the associative marker /e/ can be L or H, depending on the class of N_1 (for one noun class, the marker is /a/)

(11) Hyman (1985, fn. 4) remarks that the associative marker /é/ or /è/ "usually drops out in running speech, though it is possible for it to be heard in slower pronunciations"

a. Example: alternation in /sə́ŋ è sə́ŋ/ 'bird of bird' (Hyman, 1985, fn. 4)

i. /sə́ŋ è sə́ŋ/

ii. /sə́ŋŋ́ ˈsə́ŋ/ (assimilation)

iii. /sə́ŋ ˈsə́ŋ/ (deletion)

1.1.3 One-to-many

(12) Odden (1980)[further-reading/3/odden1980-shona-multiple-tone-association.pdf] on "Associative Lowering" in Shona (Bantu, Zimbabwe, sna)

(13) Prefix né 'with' (and two other prefixes) cause the following alternations in tone of the following noun stem:

mbwá	'dog'	né-mbwà	'with dog'
hóvé	'fish'	né-hòvè	'with fish'
mbúndúdzí	'army worms'	né-mbùndùdzì	'with army worms'
hákátá	'diviner's bones'	né-hàkàtà	'with diviner's bones'
bénzíbvùnzá	'inquisitive fool'	né-bènzìbvùnzá	'with inquisitive fool

Table 1.1: Tonal assignment in Shona for noun stems and with cliticized elements.

Exercise 1.4 ***(Shona tone-segment mapping).*** Describe the phonological process that occurs upon cliticization of ne. What is the target of the tonal alternation? □

1.1.4 Many-to-one

(14) Tonotactics in Hakha Lai (or Haka Chin, Baungshe; China, Burma, Sino-Tibetan, cnh) (Hyman and VanBik, 2004) [further-reading/3/hymanvanbik2004.pdf]. The authors note that CV syllables are toneless, while CVV, CVD, and CVVD syllables bear all licit lexical tones.

	$+F$	$+R$	$+L$
$F+$	tlaàŋ zuu	tlaàŋ tsaán	tlaàŋ saa
$R+$	thlaán zuù	thlaán tsaàn	thlaan saa
$L+$	koom zuu	koom tsaán	koom saa

Table 1.2: Tonotactics in Hakha Lai for N1+N2 sequences (nominal compounds) after *ka* 'my'. Notation: à := F(all); a := L(ow); á := R(ise), following Hyman and VanBik (2004). Boxed nouns indicate tonal changes from the underlying form. tlaàŋ := 'mountain'; *thlaán* := 'grave'; *koom* := 'corn'. *zuù* := 'beer'; *tsaán* := time; *saa* := 'animal'. (Hyman and VanBik, 2004, (7))

	$+F$	$+R$	$+L$
$F+$	$F+F \rightarrow F+$ L	$F+R \rightarrow F+R$	$F+L \rightarrow F+L$
$R+$	$R+F \rightarrow R+F$	$R+R \rightarrow R+$ F	$R+L \rightarrow$ L $+L$
$L+$	$L+F \rightarrow L+$ L	$L+R \rightarrow L+R$	$L+L \rightarrow L+L$

Table 1.3: Tonotactics in Hakha Lai for N1+N2 sequences. F := fall; R := rise; L := low; + := morpheme boundary. Boxed tonal sequences indicate noun compounds where the surface tones differ from the underlying tones.

(15) Another way to describe the data is to denote the tones with "tone letters":

	$+$˥˩ (F)	$+$˧˥ (R)	$+$˩
˥˩ $+(F)$	˥˩ → ˥ ˩	˥˧˥ → ˥˧˥	˥˩ → ˥˩
˧˥ $+(R)$	˧˥˩ → ˧˥˩	˧˥˧˥ → ˧˥ ˥	˧˥˩ → ˩ ˩
˩+	˩˥˩ → ˩ ˩	˩˧˥ → ˩˧˥	˩˩ → ˩˩

Table 1.4: Table 1.3 rewritten with tone-letters proposed in Chao (1930) and adopted in IPA. I have no information about the phonetic realization about tones in Hakha Lai, so these iconic representations should be taken seriously only to illustrate the rough shape of the tonal contour.

(16) Or there's the 5-point scale representation for tones we could use to represent the tones numerically, as in Table 1.5:

	$+51\,(F)$	$+24\,(R)$	$+11\,(L)$
$51+(F)$	$51+51 \rightarrow 51+$ 11	$51+24 \rightarrow 51+24$	$51+11 \rightarrow 51+11$
$24+(R)$	$24+51 \rightarrow 24+51$	$24+24 \rightarrow 24+$ 51	$24+11 \rightarrow$ 11 $+11$
$11+(L)$	$11+51 \rightarrow 11+$ 11	$11+24 \rightarrow 11+24$	$11+11 \rightarrow 11+11$

Table 1.5: Table 1.3 rewritten with a 5-point scale in the "Asianist" tradition, 5 = highest pitch; 1 = lowest pitch (Chao, 1956; Fon and Chiang, 1999). I have no basis for assigning the particular numerical values I did, but the exact values don't matter for capturing the general shape of the tonal contour.

(17) Or we might go in a more abstract direction and work with $\Sigma = \{L, H\}$:

	$+HL$	$+LH$	$+L$
$HL+$	$HL + HL \rightarrow HL + \boxed{\text{L}}$	$HL + LH \rightarrow HL + LH$	$HL + L \rightarrow HL + L$
$LH + (R)$	$LH + HL \rightarrow LH + HL$	$LH + LH \rightarrow LH + \boxed{\text{HL}}$	$LH + L \rightarrow \boxed{\text{L}} + L$
$L+$	$L + HL \rightarrow L + \boxed{\text{L}}$	$L + LH \rightarrow L + LH$	$L + L \rightarrow L + L$

Table 1.6: Table 1.3 rewritten with $\Sigma = \{L, H\}$.

Exercise 1.5 ***(Tonotactics in Hakha Lai).***

a. Look at the four tables, Tables 1.3-1.6. Can you make any generalizations about tonotactic restrictions? What structure is banned?

b. How do the different representations for tone affect your formulation of generalizations?

□

1.2 Addenda

(18) **Terraced level** tone systems

In such a system, there are two contrasts after low: low and nonlow, with the actual pitch of the nonlow determined by the preceding nonlow if there is one. There are three contrasts after any nonlow: the same pitch, a slightly lower pitch, and low. Arbitrarily, the first nonlow could be identified wiht either a same or a lower pitch after nonlow.
(Welmers, 1973, p. 82)

1. Miya Tones and Tone Marking

1.1. Miya tone basics. Miya has what Welmers (1973:82) refers to as a "terraced level" tone system. As in most such languages, when contiguous syllables bear different tones, there are two possible descending contrasts, from H(igh) to downstepped H or from H to L(ow), but there is only one ascending contrast, from L to (downstepped or downdrifted) H. Thus, over two tone utterances in isolation, only the tonal patterns in (i-v) are possible; the patterns in (vi) are excluded. The tone marking diacritics are explained in §1.2; !H = downstepped H after H:

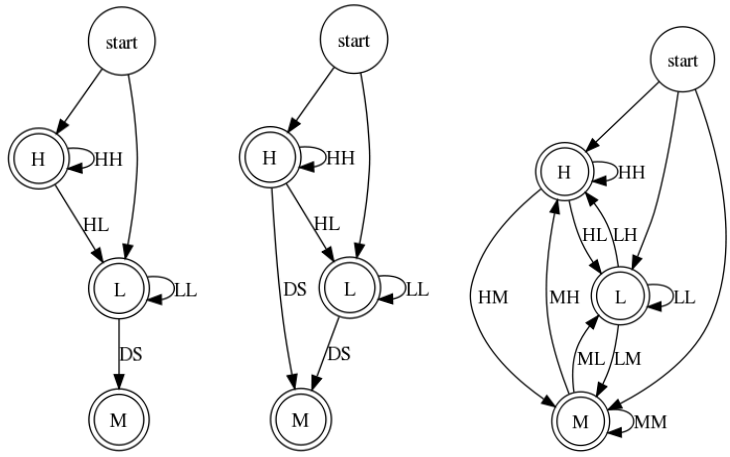
(i)	láahə	[‾ ‾]	(H H)	'jackal'
(ii)	mbə̀rgu	[_ _]	(L L)	'ram
(iii)	dlə́ntə́	[‾ —]	(H !H)	'lion'
(iv)	wútə̀	[‾ _]	(H L)	'one'
(v)	ɗùrɗúr	[_ —]	(L H)	'heron'
(vi)[1]	*[— —], *[— _], *[— ‾], *[_ ‾]			

As in other terraced level languages, there is no limit in principle on the number of H !H sequences which may appear in an utterance. Utterances of two or three H !H sequences are common in Miya, and it is possible to construct even longer sequences, such as the following, though the pitch changes tend to flatten out after a few downsteps, for obvious physiological reasons:

H H H H H H
'án ta dérwétli má və́na kámuw — 'the wife of the leopard is not in front of the house'

[‾ ‾ ‾ ‾‾ ‾ ‾‾ ‾ ‾]

(19) "Three level" tone systems



Bole Igbo Yoruba

Bibliography

Chao, Yuen-Ren. 1930. A system of tone-letters. *Le Maître Phonétique* 45:24–27.

Chao, Yuen Ren. 1956. Tone, intonation, singsong, chanting, recitative, tonal composition and atonal composition in Chinese. In *For Roman Jakobson: essays on the occasion of his sixtieth birthday*, ed. Morris Halle, Horace Lunt, Hugh McLean, and Cornelis van Schooneveld, 52–59. Mouton.

Downing, Laura J. 2011. Bantu tone. In *The Blackwell companion to phonology*, ed. Elizabeth Hume Marc van Oostendorp, Colin Ewen and Keren Rice, 2730–2753. Wiley-Blackwell.

Fon, Janice, and Wen-Yu Chiang. 1999. What does Chao have to say about tones. *Journal of Chinese Linguistics* 27:13–37.

Hyman, Larry M. 1985. Word domains and downstep in bamileke-dschang. *Phonology Yearbook* 2:47–83. URL http://www.jstor.org/stable/4419952, ArticleType: research-article / Full publication date: 1985 / Copyright © 1985 Cambridge University Press.

Hyman, Larry M. 2004. Why describe African languages? In *Proceedings, 4th World Congress of African Linguistics, New Brunswick 2003*, ed. A. Akinlabi and O Adesola, 21–41. Koln: Rudiger Koppe.

Hyman, Larry M., and Kenneth VanBik. 2004. Directional rule application and output problems in Hakha Lai tone. *Language and Linguistics* 5:821–861.

Kenstowicz, Michael, and Charles Kisseberth. 1990. Chizigula tonology: the word and beyond. In *The phonology-syntax connection*, ed. Sharon Inkelas and Draga Zec, 163–194. Stanford, CA: CSLI.

Odden, David. 1980. Associative tone in Shona. *Journal of Linguistic Research* 1:37–51.

Schuh, Russell G., and Alhaji Maina Gimba. 2005. Low tone raising in Bole. *Afrika and Übersee* 88:229–264.

Welmers, Wm. E. 1973. *African language structures*. University of California Press.

Yip, Moira. 2002. *Tone*. Cambridge University Press.