Berkeley Tone Workshop
University of California, Berkeley
February 18-20, 2011

On Discovering Contrastive Tone Melodies

Keith Snider (SIL International)

The ideal tone analysis discovers the inventory of contrastive melodies assigned to each grammatical category of morphemes (e.g., noun roots, verb, roots, person markers, tense/aspect markers, etc.) and identifies and explains any phonological alternations these melodies undergo in the different phonological and grammatical environments in which they are found.

Such an analysis ensures that all of the factors that can affect the surface realization of an underlying tone melody be the same for all of the words being compared. The factors that need to be controlled for include:
a) grammatical category of word
b) stem type (e.g., simple, compound, complex, borrowed)
c) noun and/or verb class (if present)
d) syllable profile of morpheme
e) consonant type (if consonant/tone interaction is know or suspected to be present)

Once all factors that can affect the surface realization of tone melodies are controlled for, any differences in surface melodies that the comparison reveals will be due to differences in the underlying melodies of the morphemes themselves and will not be due to any differences induced by external factors.

Comparisons of melodies of comparable words must be carried out in:
a) isolation forms
b) different lexical environments (e.g., singulars, plurals, infinitives, imperatives, different tense/aspects, differents persons, etc.)
c) different syntactic environments (e.g., associative constructions, verb-object constructions, etc.)

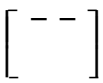
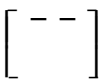
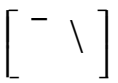
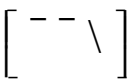
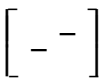
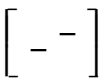
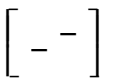
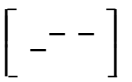
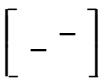
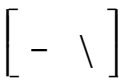
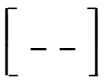
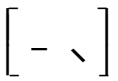
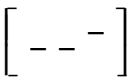
1 Contrastive tone melodies in Chumburung

The following chart of Chumburung data resulted from:
a) extracting nouns from the rest of the data
b) extracting only nouns with simple (monomophemic stems)
c) extracting only nouns belonging to the A–Noun Class
d) seeing what melodies were in contrast with respect to each syllable profile.

Not all of the contrasts resulted from comparing words in isolation. There is no evidence of consonant-tone interaction in Chumburung.

The A– prefix has surface realizations of [ə–] and [a–]. [ə–] occurs before +ATR stems, and [a–] occurs elsewhere.

Chumburung, Kwa language, Ghana (personal field notes)

	A– Noun Class			
U. Melody	CV	CVʔ	CVN	CVCV
/L/				
	a–bɔ	a–jaʔ	a–laŋ	ə–keri
	necks	legs	hips	lizards
/H/				
	a–wɔ	a–t͡ʃɪʔ	ə–suŋ	a–fʊrɪ
	snakes	women	works (n)	deer (pl)
/HL/	SYSTEMATIC GAP			SYSTEMATIC GAP
		ə–teʔ	a–baŋ	
		feathers	paddles	
/LH/	SYSTEMATIC GAP			
		a–saʔ	a–paŋ	a–kɔtɪ
		nests	cutlasses	monkeys

2 Surface realizations of melodies affected by different stem syllable profiles

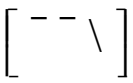
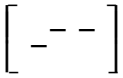
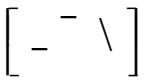
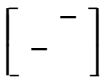
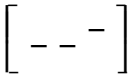
Mende, Mande language, Sierra Leone (Leben 1978: 186)

	One Syllable		Two Syllable		Three Syllable	
						
/H/	kɔ́	war	pɛ́lɛ́	house	háwámá	waistline
						
/L/	k͡pà	debt	bèlɛ̀	trousers	k͡pàkàlì	tripod chair
						
/HL/	m͡bû	owl	n͡gílà	dog	félàmà	junction
						
/LH/	m͡bă	rice	fàndé	cotton	n͡dàvúlá	sling
/LHL/	m͡bâ	companion	nyàhâ	woman	nìkílì	groundnut

Notice how identical underlying melodies can appear so different in their surface realizations when they are assigned to stems with different syllable profiles.

3 Surface realizations of melodies affected by different stem types

Chumburung, Kwa language, Ghana (personal field notes)

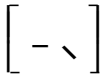
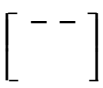
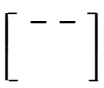
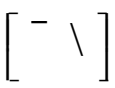
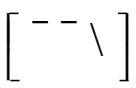
U. Melody	CVCV	CV–CV	
/L/			
	ə–keri		
	lizards		
/H/			
	a–fʊrɪ		
	deer (pl)		cf.
/HL/	SYSTEMATIC GAP		
		ə–bu–d͡ʒi	ə–bu
		grindstones	stones
/LH/			
	a–kɔtɪ		
	monkeys		

Comparing compound stems with simple stems would result in the recognition of an incorrect fourth melody for the CVCV profile. Although this might be an expected melody, it only exists for words with compound stems. Once the complete system is understood (no time to explain here), there are very good reasons why this surface melody does not exist in words with simple stems.

4 Surface realizations of melodies affected by being in different noun classes

4a Noun class prefixes

Chumburung, Kwa language, Ghana (personal field notes)

		Ø– Noun Class		
U. Melody	CV	CVʔ	CVN	CVCV
/L/				
	sɔ	saʔ	lɔŋ	keri
	scent	in-law	house	lizard
		kI– Noun Class		
/L/				
	kɪ–bɔ	kɪ–jaʔ	kɪ–laŋ	kɪ–fʊrɪ
	neck	leg	hip	rock

The (simple) stems of both sets of words have identical underlying melodies; however, the presence of the *kí–* noun class prefix vs. its absence for the *Ø–* class renders impossible any meaningful comparison between otherwise comparable words from the two classes.

4b Noun class concord markers

Bamileke Dschang, Grassfields Bantu language, Cameroon (Hyman 1985)
The associative marker is /è/ for Classes 1 and 9, and /á/ for Class 7

/L L/					
è–fɔ	è	mən–d͡ʒwì	→	èfɔ mənd͡ʒwì	chief of leopards
à–zɔ̀b	á	mən–d͡ʒwì	→	àzɔ̀b ɔ ˈmənd͡ʒwì	song of leopards
/L H/					
ɲ–ɲí	è	mən–d͡ʒwì	→	ɲɲǐ mənd͡ʒwì	machete of leopards
à–sáŋ	á	mən–d͡ʒwì	→	àsáŋ á mándʒwì	tail of leopards

Notice that the associative marker is different for the head nouns of the first and second phrases and for the third and fourth phrases. This difference in phrasal environments makes it impossible to compare the melody of the first phrase with that of the second phrase and that of the third phrase with that of the fourth phrase, even though in each case, the underlying melodies are identical.

5 Surface realizations of melodies affected by different consonants

Kera, Chadic language, Chad (Pearce 1999)

Depressor consonants	b d d͡ʒ g v z h
Neutral consonants	m n ŋ l y w
Raiser consonants	p t t͡ʃ k f s ɓ ɗ r

5a) Kera nouns

1st consonant non-raiser (depressor/neutral)

	CVC		CVCCV	
	[¯]		[¯ ¯]	
/H/	nus	a bit	manta	salt
	[_]		[_ _]	
/L/	dol	hard ground	hoyna	spirit
			[¯ _]	
/HL/			lampa	lamp
			[_ ¯]	
/LH/			hanji	snake

1st consonant raiser

	CVC		CVCCV	
	[¯]		[¯ ¯]	
/H/	soŋ	bucket	ɗarka	anthill
	[−]		[− −]	
/L/	kan	water	kormə	child
			[¯ −]	
/HL/			farta	wrap around skirt
			[− ¯]	
/LH/			seŋka	earth

In Kera, the underlying /L/ tones of nouns are realized as [M] when the first consonant of the stem is a “raiser” consonant.

5b) Kera verbs

The surface melody of all verbs is totally predictable once the consonants of the word are known. This means, then, that the underlying melody of all verbs is toneless.

When the verb has a single depressor consonant in initial position, the surface melody is [LL].

bèlè	to love	gòlè	to look at
dèfɛ̀	to prepare	hòlè	to skin
d͡ʒèŋè	to break	zèlè	to cook

When the verb contains two depressor consonants, the surface melody is [LH].

bàadé	to wash	hərgí	to dance
d͡ʒèbré	to listen	vəəgí	to pardon
gèlgé	to tickle	zàldé	to hit

When the verb begins with any consonant other than a depressor consonant, the surface melody is [HH].

ɓélé	to nail	lóɗé	to dampen
ɗóké	to manage	mélé	to place
kósé	to approach	sété	to wipe

The surface melodies of nouns are not comparable with those of verbs because:
a) the two grammatical categories of words don't necessarily share the same set of underlying melodies (as demonstrated immediately above), and
b) it is impossible to compare verbs and nouns in identical environments.

References

Hyman, Larry M. 1985. Word domains and downstep in Bamileke-Dschang. *Phonology Yearbook* 2:85-138.

Leben, W. 1978. The representation of tone. In V. Fromkin (ed.), *Tone: a linguistic survey*, 177-219. New York: Academic Press.

Pearce, Mary. 1999. Consonants and tone in Kera (Chadic). *The Journal of West African Languages* 27.1:33-70.