Tone in Asian Languages

Lian-Hee Wee

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Univerzita Palackého v Olomouci, Czechia

Some examples

- Hainanese: Sister-in-law what are you doing locking the lock? Whatever you do you do wrong.

- Cantonese: Every nation has its own national anthem

- Cantonese: 30624700 30624770 534202 13942 431624

- Teochew: Close the windows! Close the windows! Close the windows! Close the windows!

Tone languages of the world?

- Sino-Tibetan: Tibetan, Bai,Thai,Burmese, ...
- India: Punjabi, Kalam Koistani, Meitiri, ...
- Africa: Yuroba, Kikerewe, Jita, Tonga, Mende, ...
- The Americas: Athapaskan, Iroquoian, Uto-Aztecan, Mixtec, Mazatec, Zapotec, Chinantec, Bora, Pirahã, Yagua, ...
- Europe: Lithuanian, Serbo-Croatian, Swedish, Basque, Norwegian,, ...

Yip (2002:1) reports that 60%-70% of the world's languages are tonal.

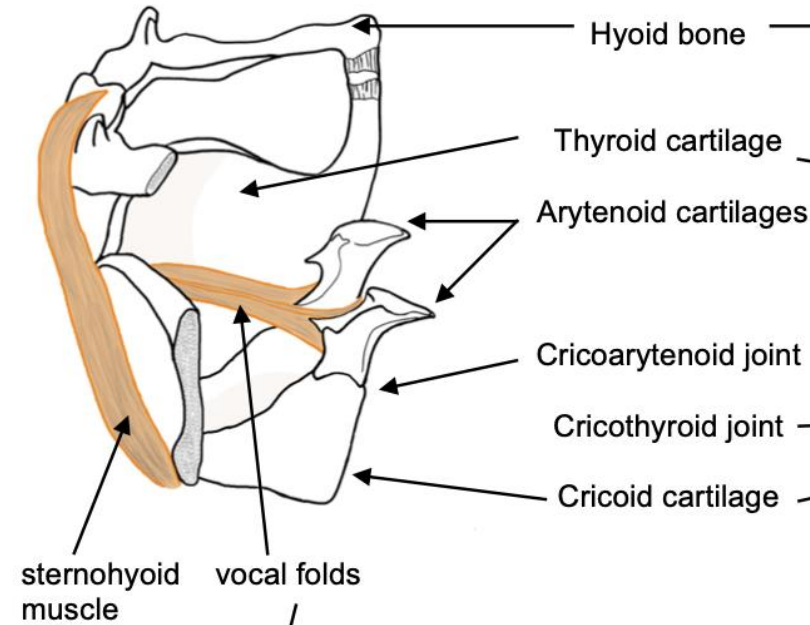| Syllable / Melody	[na]	[khaa]	[mai]
High	mother's younger sibling	to do business in	wood
Mid	paddy field	to be lodged in	mile
Low	(a nickname)	a kind of aromatic root	new
Falling	face	servant	no/not
Rising	thick	leg	silk

Thai

Hudak2005

What are tones?

- If you vibrate your vocal folds, you make a sound that you can change the pitch of.

- By keeping the pitch constant or changing it, you can make flat or contour melodies.
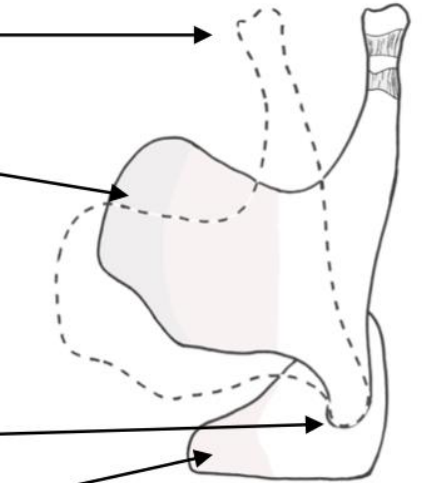
- Such melodies are called tones.

Pitch control mechanisms

a. Cross section showing the cartilages
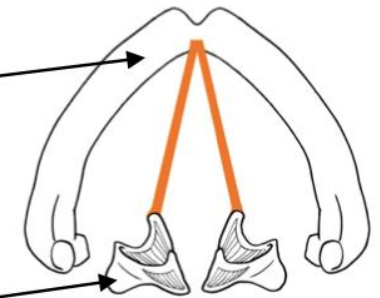
Hyoid bone

Thyroid cartilage

Arytenoid cartilages

Cricoarytenoid joint

Cricothyroid joint

Cricoid cartilage

sternohyoid muscle

vocal folds

b. Thyroid cartilage movement

Thyroid cartilage

Arytenoid cartilage

c. Adducted position of the vocal folds when arytenoid cartilages are tilted inwards
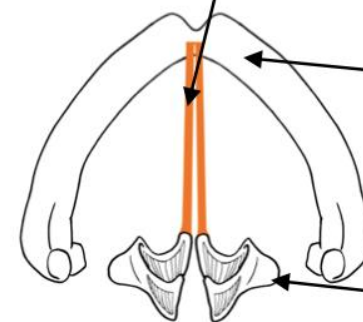
d. Abducted position of the vocal folds when arytenoid cartilages are tilted outwards

Images by Winnie H.Y. Cheung

The vibrating vocal folds

Source: UCLA
(http://hctv.humnet.ucla.edu/departments/linguistics/VowelsandCons
onants/vowels/chapter2/vibrating%20cords/vibrating.html)
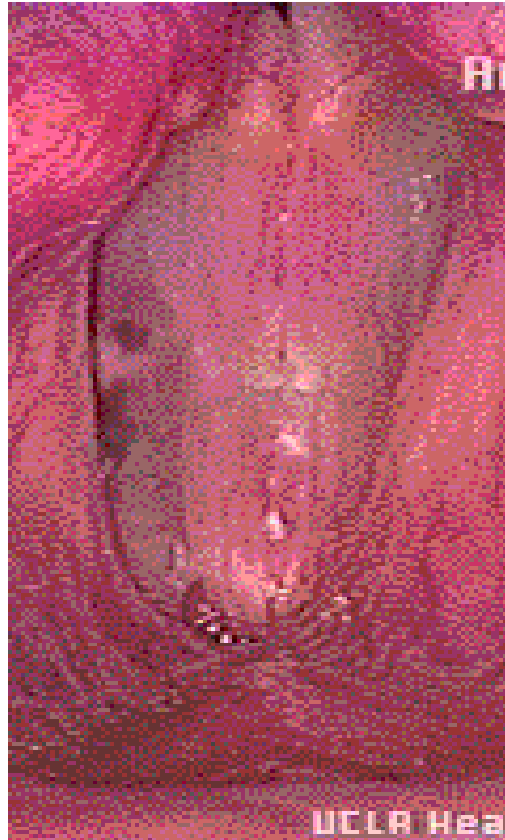
Photographs of the vocal folds producing a sound at three different pitches

120 Hz   **160 Hz**   **200Hz**

Mandarin Tones (Wee 2004)
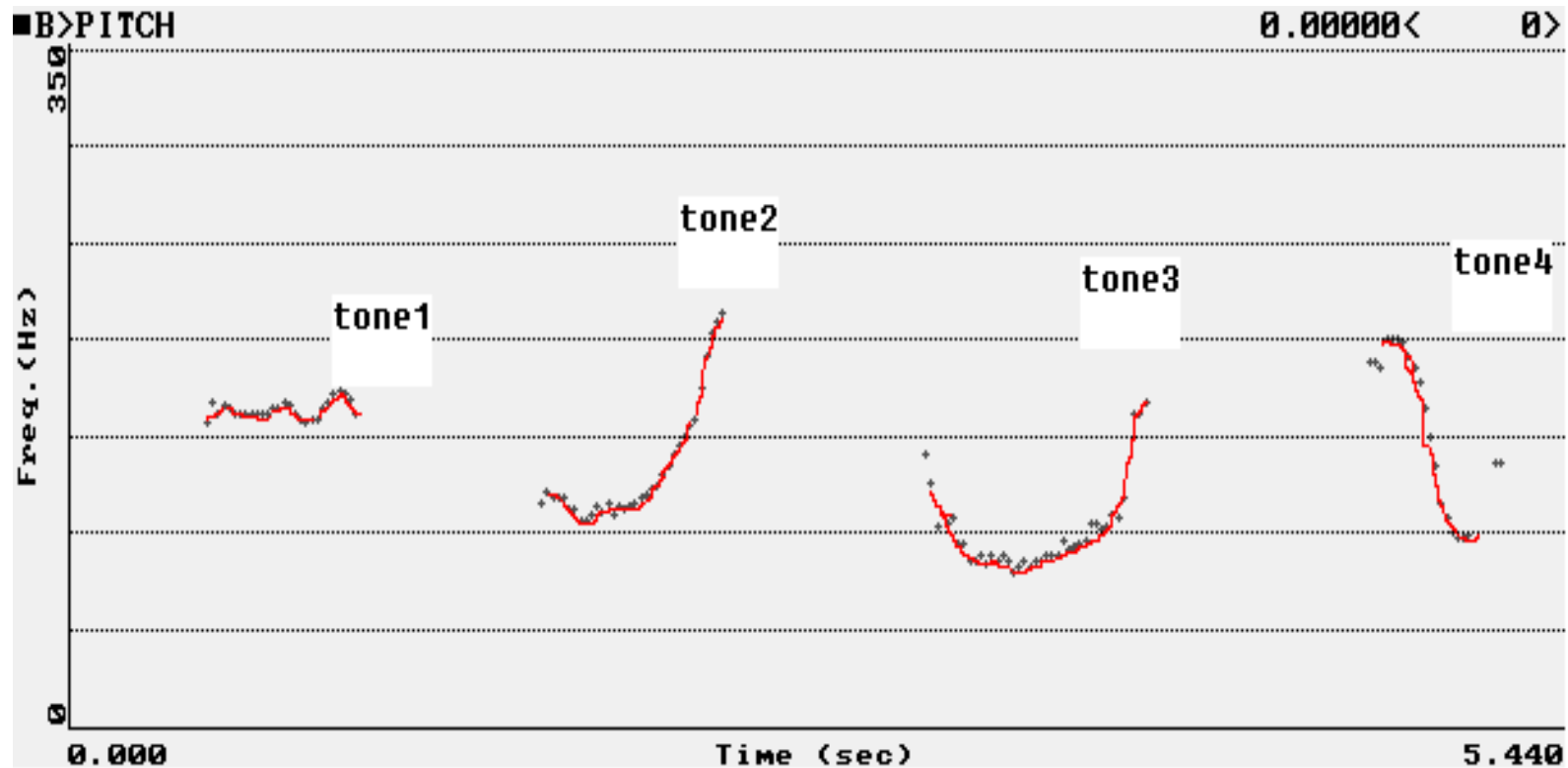
Tones in Mandarin

- Tone 1: High flat

- Tone 2: Rising

- Tone 3: Dipping

- Tone 4: Falling
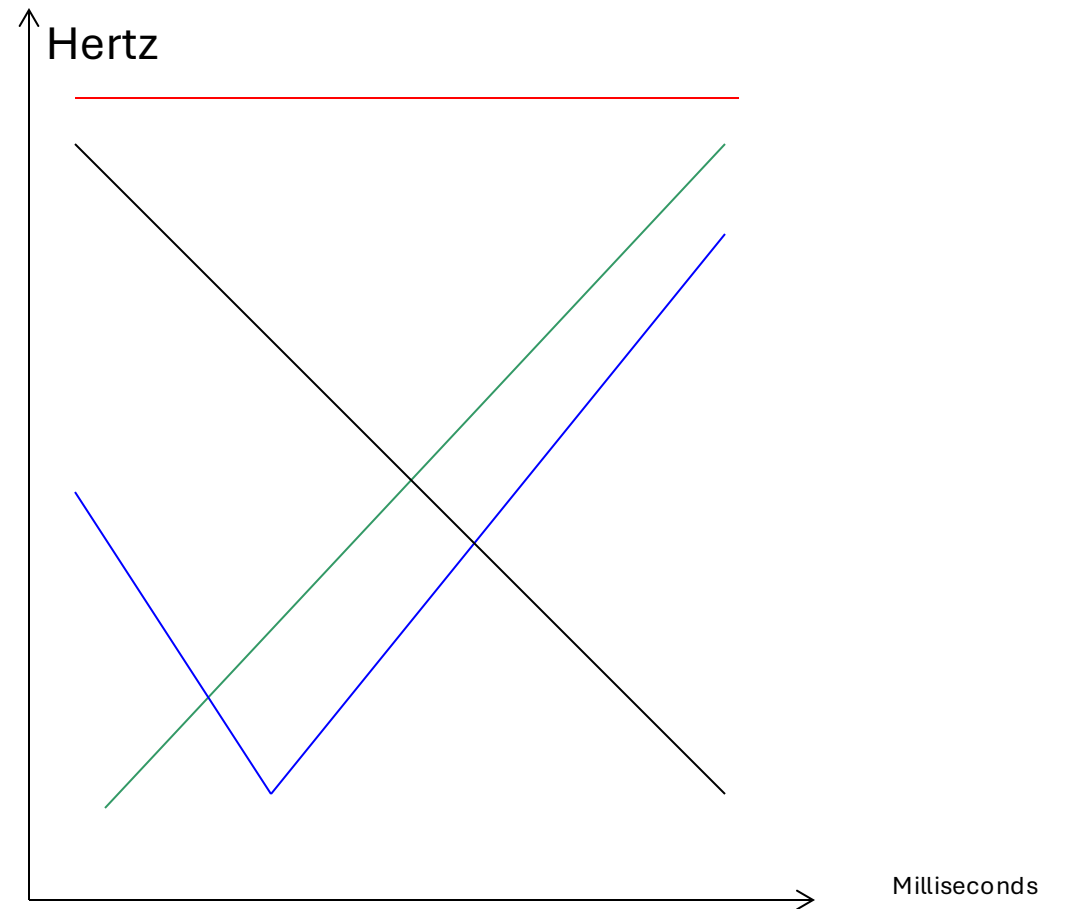
Notation for Tones

Letter labeling

Simple tones

- H = high flat tone
- L = low flat tone

Complex tones

- R = LH = rising tone
- F = HL = falling tone
- D = HLH = dipping tone

Notation for Tones

Numerical values (Chao 1930)

Scale of 1-5,

where 1 is lowest and 5 is highest:

- [55] = high flat tone
- [25] = rising tone
- [214] = dipping tone
- [51] = falling tone, etc

Notation for Tones

- Contour notation (based on Chao 1930)

[55] [25] [214] [51]

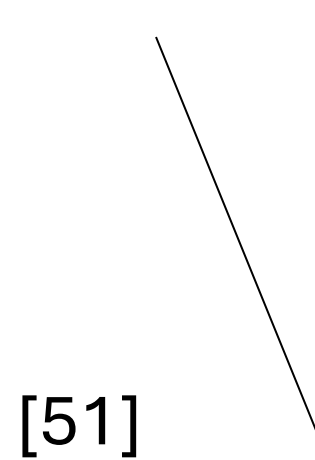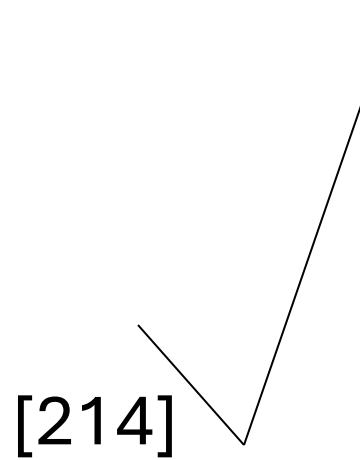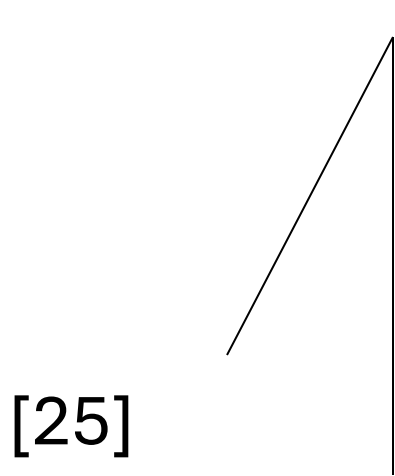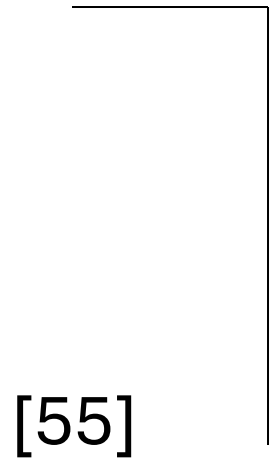# Chinese tone examples

Group	Language	Level	Falling	Rising	Dipping	Peaking
Mandarin	Jinan	55	42, 21		213	
	Xi'an	55	53, 21	24		
	Taiyuan	11	53	45		
	Wuhan	55	42	35	213	
	Chengdu	44	53, 31	13		
	Hefei	55	53	24	212	
	Yangzhou	55	42, 21	34		
Wu	Suzhou	44	31	24	412	
	Wenzhou	44, 22	42, 31	45, 34	323, 212	
Xiang	Changsha	55, 33	41, 21	24, 13		
	Shuangfeng	55, 33	21	35, 23		
Gan	Nanchang		42, 21	45, 24	213	
Hakka	Meixian	44, 11	52, 31			
Yue	Yangjiang	33	54, 43, 21	24		
Min	Chaozhou	55, 33, 11	53	35	213	
	Fuzhou	44	52, 31		213	242
	Jian'ou	44, 22	54, 42, 21	24		

Beijing 1989:
7-45

Tone name	Description	Chao (1930)	Example
ngang 'level'	mid level	33	ba 'three'
huyền 'hanging'	low falling, breathy	21	bà 'lady'
sắc 'sharp'	mid rising, tense	35	bá 'governor'
nặng 'heavy'	mid falling, glottalized, short	3ʔ2ʔ	bạ 'at random'
hỏi 'asking'	dipping, harsh	313	bả 'poison'
ngã 'tumbling'	mid rising, glottalized	3ʔ5	bã 'residue'

A complicated example: Vietnamese

Nguyen and Edmondson 1997:8 and Pham 2003:57

Tone inventory and syllables

a.   Hausa (Gordon 2006:295 and Zec 2011)

	Low	High	Falling
CV	**fà**sáá	**sá**fúú 'row, line'	-
CVV	**màà**máá 'breast'	**ráá**náá 'sun'	**láà**láá 'indolence'
CVN	**ràn**dáá 'large water pot'	**mán**dáá 'dark Bornu medicinal salt'	**mán**táá 'forgot'
CVO	**fàs**kíí 'being very broad'	**más**kóó 'large blacksmith's hammer'	**râs**sáá 'branches'

Tone inventory and syllables

b.   Navajo
(Zhang 2002:52, citing Wall & Morgan 1958 and Young & Morgan 1987, also Hoijer 1945))

	High	Low	Falling	Rising
CV	sání 'old one'	ǹtʃà 'you're crying'	-	-
CVN	háá**ʔál**t'è**ʔ** 'exhumation'	pìk**ʰìn** 'his house'	-	-
CVO	tì**níʃʔìì**ʔ 'I'm looking'	pì**tìɬ** 'his blood'	-	-
CVV	túú 'this'	**ɬì**k**àì** 'white'	**sáà**nìì 'old woman'	há**kòó**nèè**ʔ** 'let's go'
CVVN	à**stáán** 'woman'	pì**jììn** 'his song'	tàtí**nñìlʔììɬ** 'we'll look at him'	**tèíl**ʔá 'they extend'
CVVO	ɬóó**ʔ** 'fish'	pì**nìì**ʔ 'his face'	t**ʰáà**ʔtì 'three times'	**tèíʒ**nííɬton 'they shot at him'

Tone inventory and syllables (Thai)

tone / syllable	Mid	Low	High	Falling	Rising
CVV	naa 'rice field'	nàà 'custard apple'	náá 'aunt'	nâà 'face'	nàá 'thick'
CVN	laŋ 'crate'	làŋ 'to flow'	lám 'to go beyond'	lâm 'sturdy'	lǎŋ 'back'
CVVN	laaŋ 'omen'	ŋàaŋ 'chime'	láaŋ 'to wash'	lâaŋ 'below'	làaŋ 'grandchild'
CVO	-	làk 'stake'	lák 'to steal'	-	-
CVVO	-	làak 'various'	-	láak 'to tow'	-

(Morén & Zsiga 2006; see also Gandour 1974 and 1977)

Tones mobility: Chizigula

a. <u>toneless</u>

i. ku-damany-a   'to do'

ii. ku-damany-iz-a   'to do for'

iii. ku-damany-iz-an-a   'to do for each other'

b. <u>with high tone</u>

i. ku-lombéz-a   'to ask'

ii. ku-lombez-éz-a   'to ask for'

iii. ku-lombez-ez-án-a   'to ask for each other'

ku-lombez-a

H

Tone mobility: Chizigula

a. ku-   ku-gulus-a   ku-songoloz-a   ku-hugusahugus-a
           'to chase'   'to avoid'   'to shell repeatedly'

b. ni-a-   n-a-gulus-a   n-a-songoloz-a   n-a-hugusahugus-a
           'I am chasing'   'I am avoiding'   'I shell repeatedly'

c. á-   a-gulús-a   a-songolóz-a   a-hugusahugús-a
           'he is chasing'   'he is avoiding'   'he shells repeatedly'

a-songoloz-a   a-hugusahugus-a
         \   \
          H   H

Tone in Asian Englishes

a.   Singapore English words in isolation (from Wee 2008b: (22))
  i.   'cat' $[k^h\varepsilon t^{55}]$
  ii.   'intend' $[in^{11}.t^h\varepsilon n^{55}]$
  iii. 'manage' $[m\varepsilon^{33}.nei\widehat{dz}^{55}]$
  iv.   'managing' $[m\varepsilon^{33}.nei^{33}.\widehat{dz}i\eta^{55}]$
  v.   'origin' $[\mathfrak{o}^{11}.ri^{33}.\widehat{dz}in^{55}]$
  vi.   'original' $[\mathfrak{o}^{11}.ri^{33}.\widehat{dz}i^{33}.n\mathfrak{o}^{55}]$
  vii. 'dictionary' $[dik^{33}.\int\mathfrak{o}n^{33}.n\mathfrak{o}^{33}.ri^{55}]$
  viii. 'originally' $[\mathfrak{o}^{11}.ri^{33}.\widehat{dz}i^{33}.n\mathfrak{o}^{33}.li^{55}]$

b.   Singapore English words in sentences
  i.   Managing is very interesting.
  ii.   This is very interesting managing.
  iii. I like managing cats.
  iv.   Everybody has an origin.
  v.   Origin is the buzzword.

Tone sandhi (coalescence)

Ditonal sandhi in Tianjin

a.   L + L → RL   *fei.ji* 'fly machine (air plane)'

b.   R + R → HR   *hao.jiu* 'good wine'

c.   F + F → LF   *fu.gui* 'rich fortune'

d.   F + L → HL (=hl.l → h.l)   *qi.che* 'motor car'

e.   R + H → LH (=lh.h → l.h)   *zhu.ren* 'master/owner'

f.   R + F → LF (=lh.h → l.h)   *mai.cai* 'buy vegetables'

, where L(ow), H(igh), R(ising), F(alling) indicate tones associated with syllables and [h(igh)] and [l(ow)] are tone features.

Avoidance of adjacent identical tone contours/features?

Tone sandhi: Hakha Lai

Tone	Examples:		
F(alling)	ka hmáà 'my wound'	ka lûŋ 'my heart'	ka tláàŋ 'my mountain'
	ka zúù 'my beer'	ka lâw 'my field'	ka ráàl 'my enemy'
R(ising)	ka kèé 'my leg'	ka hrŏm 'my throat'	ka kòóy 'my friend'
	ka ʔòó 'my voice'	ka tsăl 'my foreheard'	ka tsàán 'my time'
L(low)	ka sàà 'my animal'	ka ràŋ 'my horse'	ka kòòm 'my corn'
	ka hnìì 'my skirt'	ka kàl 'my kidney'	ka bòòr 'my bunch'

1st σ \ 2nd σ	F	R	L
F	FL(=hl.l)	FR(=hl.lh)	FL(=hl.l)
R	RF(=lh.hl)	RF(=lh.hl)	LL(=l.l)
L	LL(=l.l)	LR(=l.lh)	L.L(=l.l)

Intersyllabic No Contour Principle:

Avoidance of contours?
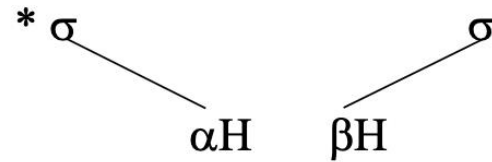
(Hyman & vanBik 2002, 2004)

Taiwanese Tone Sandhi Circle
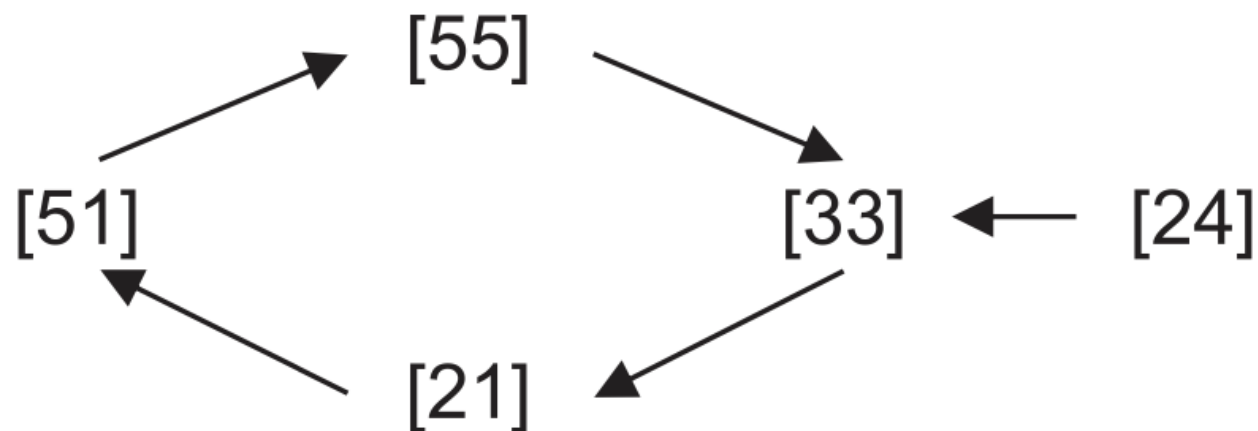
si$_{55}$ 'poetry'	**si$_{33}$** bun$_{24}$ 'poetry and prose'
si$_{33}$ 'temple'	**si$_{21}$** tsiŋ$_{55}$ 'temple monk'
si$_{21}$ 'four'	**si$_{51}$** tiam$_{51}$ 'four o'clock'
si$_{51}$ 'die'	**si$_{55}$** laŋ$_{24}$ 'dead people'
si$_{24}$ 'time'	**si$_{33}$** kan$_{55}$ 'time span; time'

Tone and syntax: Standard Chinese

zong li hao
T2 T2 T3
⋮ ⋮
↓ ↓
T2 T2 T3

hao zong li
T3 T2 T3
⋮
↓
T3 T2 T3
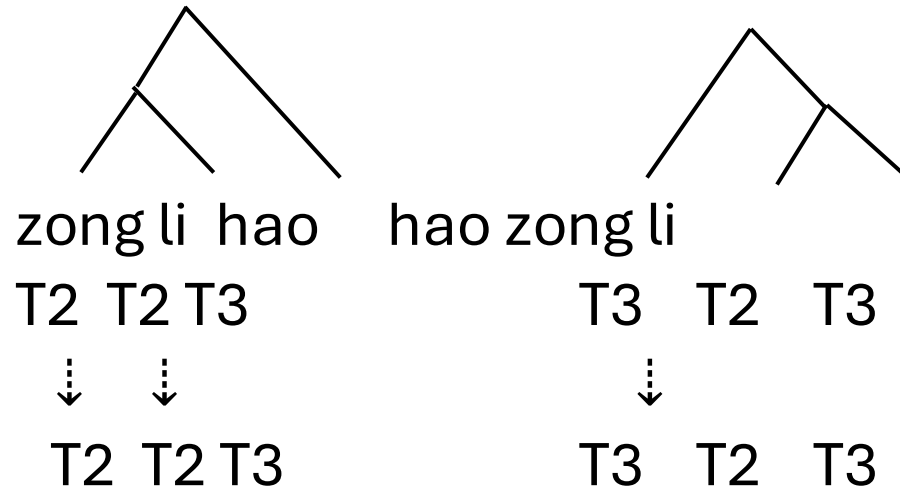
T2= [35]
T3= [214] or [21]
haoT3 "good"
zongT3 "general/overall"
li3 "manage"
zongli "prime minister"

Crazy example: 紙雨傘廠柳總管買好酒請李老五趕緊飲。

Tonogenesis: how did tones evolve?

- From loss of voicing contrast in onset consonants

- From loss of rhyme complexity

- From reinterpretation of stress

Onset voicing and pitch

Burmese (Maddieson 1984, cited in Peng 1992:255)

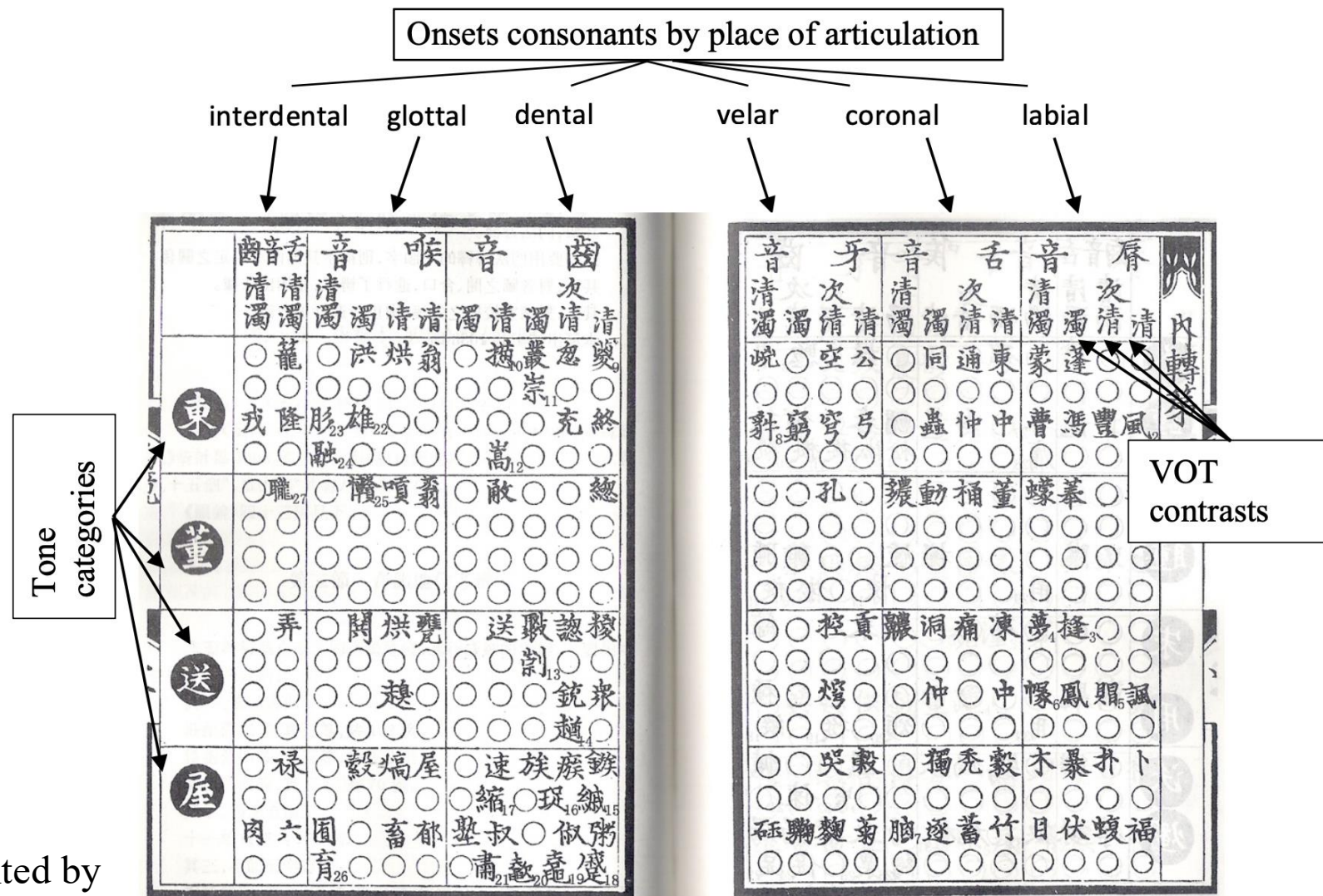|	Falling (Hz)	Rising (Hz)	Creaky (Hz)
[-voice] = [m̥, n̥, ɲ, ŋ, l̥]	226	203	227
[+voice] = [m, n, ɲ, ŋ, l]	182	178	193
variation	44	25	34

Loss of onset voicing to high and low tone ranges (tone register)

- Register split in Chinese languages

- Happening now in Punjabi!

https://en.wikipedia.org/wiki/Punjabi_language

Yunjing (dating probably to 11th C, copy-edited by Zhang Linzhi circa 1160)

Splits of tone register in modern Chinese languages

MC tone	Ping		Shang		Qu		Ru		
	Yin	Yang	Yin	Yang	Yin	Yang	Yin		Yang
Cantonese	55	21	35	13	33	22	5	3	2
Changsha	33	13	41		55	21	24		
Nanchang	42	24	213		55	21	5		
Standard Chinese	55	25	214		51				
Suzhou	44	24	52		412	31	4		23
Taiwanese	55	24	51		21	33	21		53

Traditional Vietnamese tone names influenced by Middle Chinese categories

(Pham 2003:42)

tone / register	binh 'even'	thuong 'fall'	khu 'rise/fall'	nhap 'checked'
Phu 'high'	ngang	hỏi	sắc1	sắc2
Tram 'low'	huyền	ngã	nặng1	nặng2

Falling tones from nasalization of obstruent codas

Pre-Khaling	Limbu	Dumi	Khaling	
*lop-na		lop-nɨ	lóɔ̀-nɛ	'to catch'
*rep-na	yɛps-	rep-nɨ	rêm-nɛ	'to stand'
*set-na	sɛt-	set-nɨ	sên-nɛ	'to kill'

Falling tones from obstruent coda loss

Pre-Khaling	Limbu	Dumi	Khaling	
*bit	pit	bhiʔi	bʌ̂j	'cow'
*met	met	meeʔe	mêj	'wife'
*rak	yak		róɔ̀	'cliff'
*pak	phak	poʔo	póɔ̀	'pig'
*ʔik	ik		ʔúù	'field'

Contour tone from segmental weakening

Contour tone from syllable reduction

Falling tones from reduction of disyllabic forms

Pre-Khaling	Dumi	Khaling	
*tsili	tsili	tsîl	'anger'
*meri	miri	mêr	'tail'
*noru	nurɨ	nôr	'tiger'
*nolu	nulɨ	nôl	'daytime'
*nam-ni	naamnɨ	nêm	'in two days'

Tone in speech (Thai)

Lexical Tone	Declarative	Question	Unfinished Statement	'Telephone yes'
High	High, slightly peaking	Extra high, level	Extra high, level	Mid, level
Mid	Mid, slightly falling	High, level	High, level	Low, level
Low	Low, slightly falling	Mid, level	Mid, level	Extra-low level
Rising	Low before delayed rise	Mid before delayed rise	Low before slight end rise	Low rising
Falling	Fall or delayed fall	(Extra) high before delayed slight fall	High before slight end fall	Mid falling

(adapted from Luksaneeyanawin 1998: table 2)

References

References cited here are the same as those listed in the reference section of Wee (2019) *Phonological Tone*. Cambridge University Press.

Thank you!

Questions?