

Tone chain shift in Thai and Lalo

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Chain shift

“A series of two or more changes that are related through a kind of chain reaction”
(Gordon 2011)

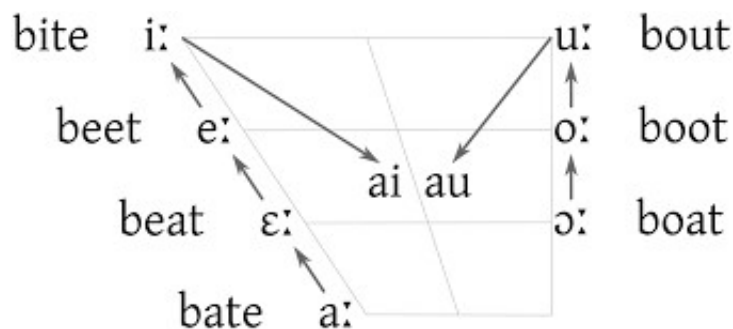


Fig. 1: Great Vowel Shift in English

(https://en.m.wikipedia.org/wiki/File:Great_Vowel_Shift2c.svg)

Functional explanations for tone chain shift

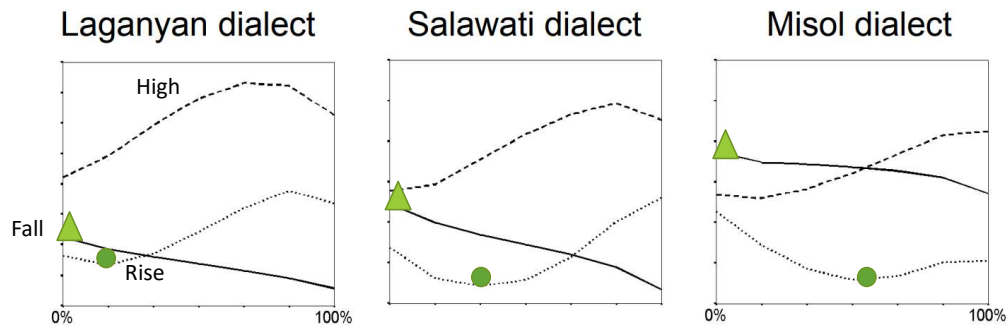


Figure: Averaged F0 traces (8 spks/dialect) of the 3 tonemes of Ma'ya in utterance-final context, in 3 dialects. (Remijsen 2001. Figure reproduced from Remijsen 2010)

Our study

- A survey of tone chain shifts from around the world
- Case studies: Bangkok Thai and W. Lalo
- Recurring patterns in tone chain shift
- Do changes in tone chain shifts show a unique directionality? NO
- Tone chain shifts are not solely motivated by contrast preservation

Identifying chain shifts

Gordon (2002, 2011):

- Interrelated: one phoneme takes on the phonetic value previously associated with the other
- Preserves contrast

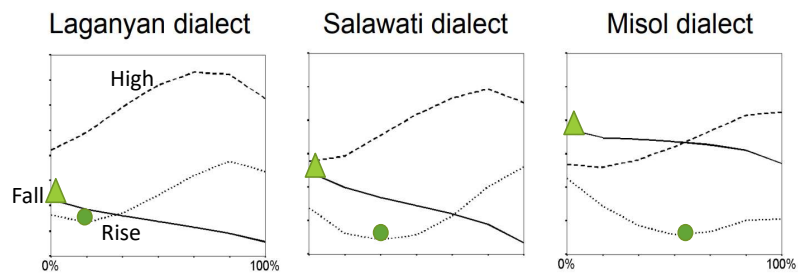


Figure: Averaged F0 traces (8 spks/dialect) of the 3 tonemes of Ma'ya in utterance-final context, in 3 dialects.

Reported tone chain shifts

Language	Family	Tone Inventory	Tone Domain	Laryngeally complex?	Contour	Type of study	Sources
Bangkok Thai	Kra-Dai	5	syllable	n	y	real time	Pittayaporn 2007, 2018a, 2018b
W. Lalo	Tibeto-Burman	4	syllable	y -> n	y	microreconstruction	Yang 2022
Ma'ya	Austronesian	3	word	n	y	microreconstruction	Remijsen 2001
Guienagati Zapotec	Otomanguean	3	root	y	y	microreconstruction	Benn 2021
Taiwan Mandarin	Sinitic	4	syllable	n	y	apparent time	Sanders 2008; Kuo 2018
Miancheng Chaoshan Min	Sinitic	5	syllable	n	y	apparent time	Zhang 2017, 2020
Jinhua Wu sandhi	Sinitic	5	syllable	n	y	apparent time	Carroll 2010

Microreconstruction of tone chain shifts

Applying the comparative method to closely related lects

Reconstructions at shallow time depth

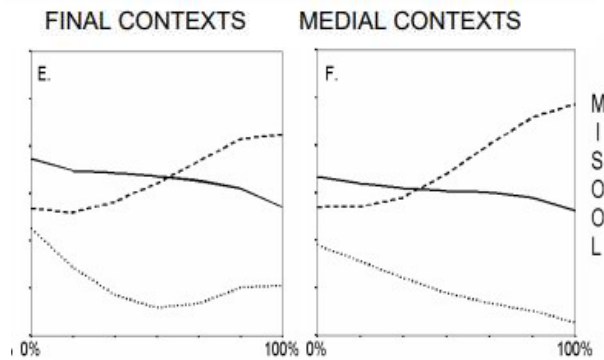
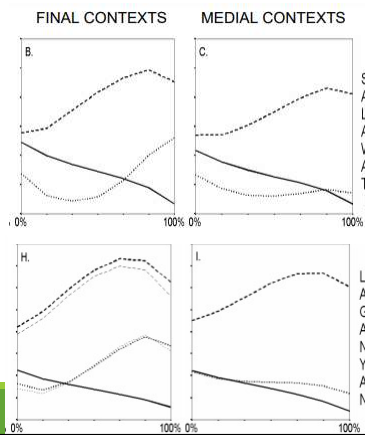


Figure 4: Final v. medial contexts in Ma'ya lects. Adapted from Remijsen 2001.

Parameters of tone change

f0 height at onset and offset ▲

timing of f0 turning points (peaks and valleys) ●

f0 contour excursion (Δf_0 between beginning and end of contour) ⇅

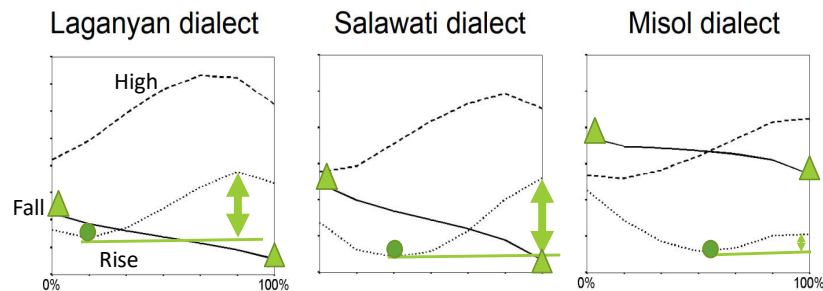
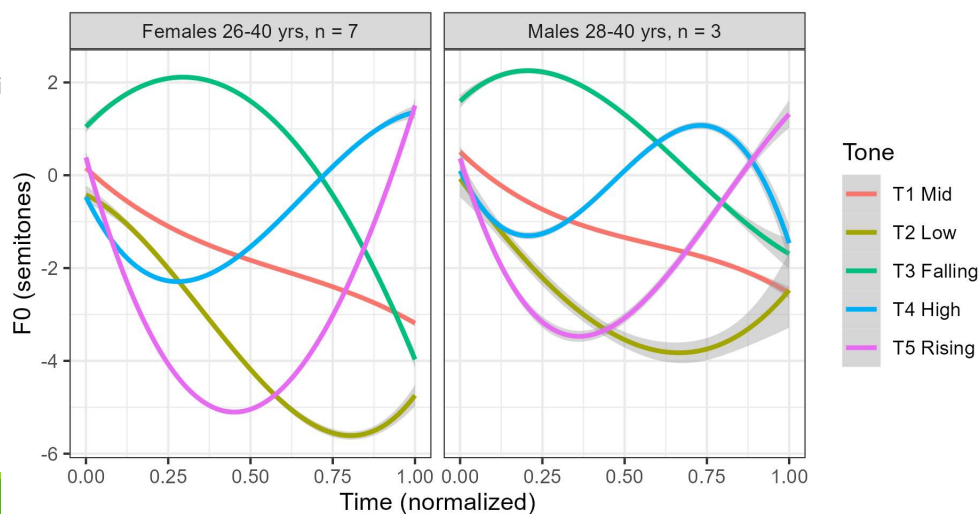


Figure: Averaged F0 traces (8 spks/dialect) of the 3 tonemes of Ma'ya in utterance-final context in 3 dialects

Bangkok Thai tones

Figure 5. Bangkok Thai tones, utterance-final context, recorded in 2016. Data from ThaiMIT corpus (Chanchaochai 2018)



19th century

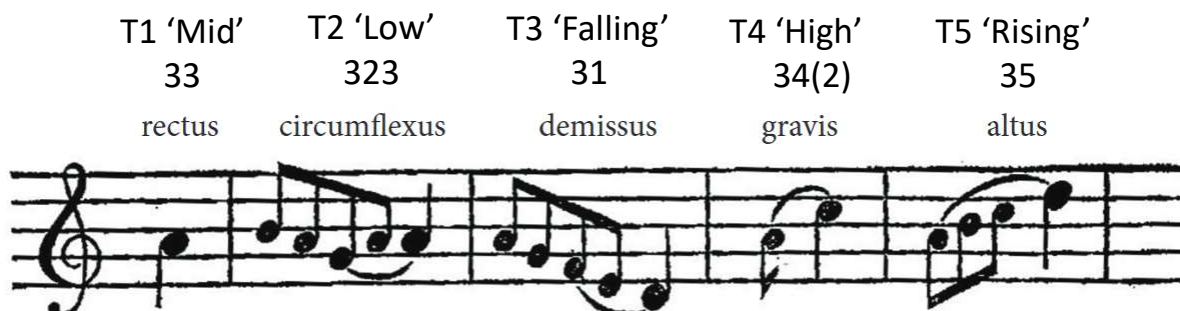


Fig. 6. Bangkok Thai tones as recorded by Pallegoix (1850), cited in Pittayaporn 2018b

20th century

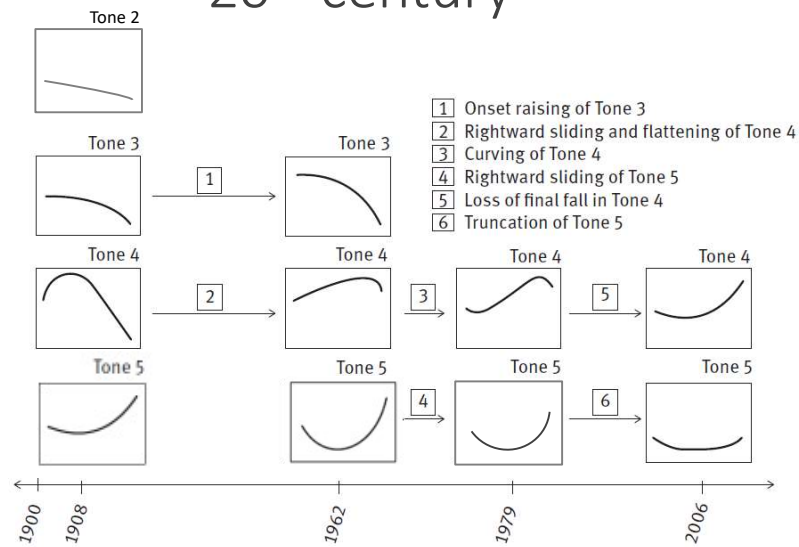


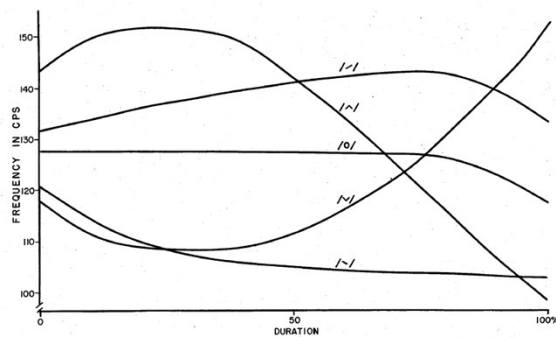
Figure 7. Timeline of tonal contour changes

Adapted from Pittayaporn 2018a: 259

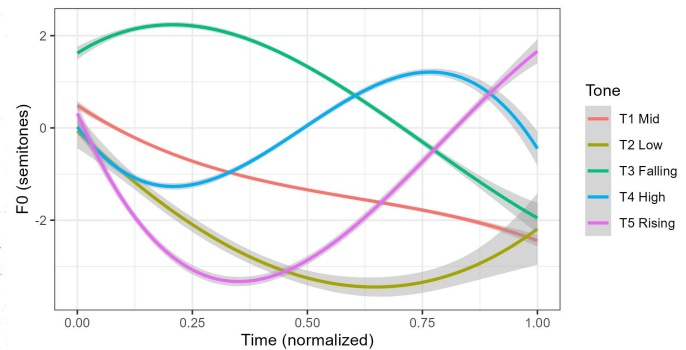
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21st century

32 year old male, citation form
 (Abramson 1962)

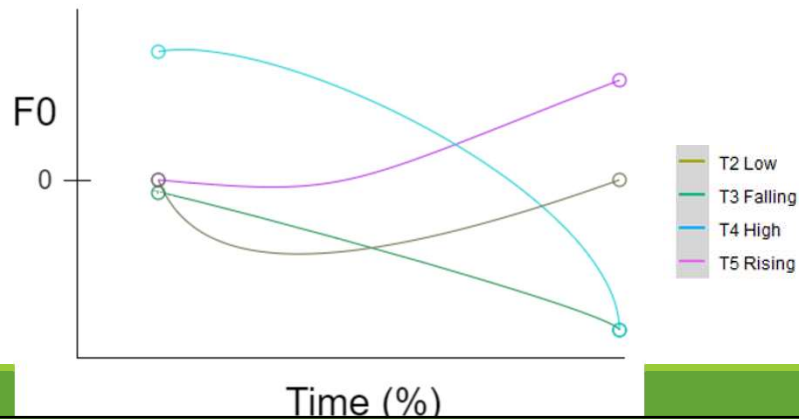


Males age 28-40 (n=3) in 2016, utterance-final
 (data from Chanchaochai 2018)



Summary: Thai tone chain shift (Pittayaporn 2016, 2018a, 2018b)

	MID 19 TH C	EARLY 20 TH C	MID 20 TH C
TONE 2	mid falling-rising	low level/falling	low falling
TONE 3	mid falling	mid falling	high falling
TONE 4	high rising-falling early peak	high rising-falling early peak	high rising-falling late peak
TONE 5	mid rising	mid rising	low falling-rising



Tone chain shift in W Lalo (Yang 2022)

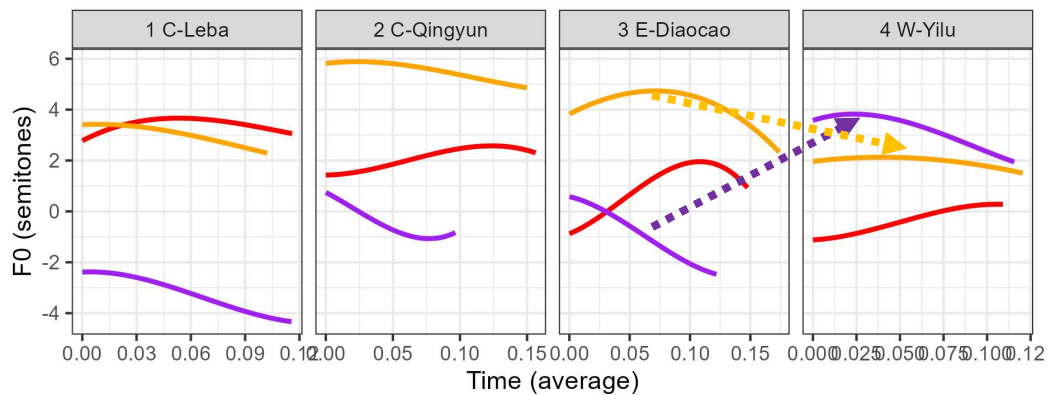


Figure 10. Reconstructed pathway of tone chain shift in W. Lalo

Tone — 1 *vd — 1 *vl+*?son+*asp — L

Reported changes in chain shifts

	Thai	W. Lalo	Ma'ya	G. Zapotec	TW Mandarin	Miancheng	Jinhua Wu
Low fall > mid fall				✓21		✓T1a	✓21
Mid fall > high fall	✓T3	✓TL	✓F				✓31, 41
High fall > high level				✓42		✓T3b(mid)	✓54
High rise-fall > mid rise	✓T4					✓T2a	
High level > mid high level		✓T1vl					
Mid rise > low fall-rise	✓T5				✓ T2		
Low/Mid rise > level				✓ 24			✓13, 24
Mid rise > low rise		✓T1vd					
Low fall-rise > low falling			✓R		✓ T3		

Recurring patterns

1. Mid onset of a falling tone moves up; mid onset of rising tone moves down
2. High peaks and low valleys slide rightward + excursion reduces
3. Non-mid onsets move toward mid*

*even entire F0 tracks: high level and low level both move toward mid

Comparison of chain shifts to other changes

Tone chain shifts	Bangkok Thai	W. Lalo	Misol Ma'ya	Guienagati Zapotec	Taiwan Mandarin	Miancheng Chaoshan	Jinhua Wu sandhi contours
1. Mid onsets move up/down	✓T3, T5	✓TL, ✓T1vd	✓F				✓31, 41
2. Non-mid peak/valley shifts rightwards + excursion reduces	✓T4, T5	✓T1vd	✓R	✓T42, T24	✓T2, T3	✓T2a, T3b*	✓54, 13, 24
3. Non-mid onsets move toward mid	✓T4, T5	✓T1vd, T1vl		✓T21	✓T2, T3	✓T2a, T1a	✓21
Multiple tone changes, not analyzed as chain shift	Tai Phuan	Mien-Yao	Yueyang	Dali Nisu	Chongqing Mandarin	Lahu Na	Hong Kong Cantonese
1. Mid onsets move up/down			✓T3ab				
2. Non-mid peak/valley shifts rightwards + excursion reduces	✓TA4	✓T3, T4		✓T13	✓T3		✓T2
3. Non-mid onsets move toward mid	✓TA123		✓T1a	✓T55	✓T1, T3	✓T21, T11	✓T6
Other			✓T2b				

Conclusion

Survey of tone chain shifts and other tone changes

Same directionality for both chain shifts and other changes

Crosslinguistic, unidirectional patterns of tone change in general suggest that contrast preservation is not the sole motivation for tone chain shift

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