

The Tonal Comparative Method: Tracing Sound Change in Lexical Tone

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SUMMARY: Linking tones to their segmental origins helps us to use tonal evidence in language classification and reconstruction in a methodologically sound way

The Comparative Method

- The **Comparative Method** has long been the main tool of linguists for figuring out what past stages of a language sounded like without direct evidence
- Systematic **comparison** of cognate words in related languages
- **Working backwards** from the present and inferring sound changes in daughter languages
- The main tool of linguists for determining **genetic relationships** between languages, and reconstructing **common ancestors** (i.e. proto-languages)

Lexical tone and the Comparative Method

- **Lexical tone**, the use of pitch to encode word meanings, has often been thought to be unusable with the Comparative Method (e.g. Meillet 1948, Campbell 2003)
- The origin of tone **compensates** for loss of segmental contrasts
- But after initial tonogenesis, tones **vary** and **change** in ways still poorly understood

Why do tones change?

- Sound change is constantly happening
- Both conditioned changes and random drift, just as with segments

“[past use of Tai tonal evidence] is *not consistent with the shared-innovation method used in subgrouping*, because many tonal changes may not in fact be shared innovations ... A subgrouping proposal for Southwestern Tai should primarily use as criteria **consonantal** and **vocalic** changes that can be shown empirically to have occurred relatively early.” (Pittayaporn 2013:306)

What is missing?

- In the traditional Comparative Method we have a large body of **accumulated knowledge**, the received wisdom of what kinds of sound changes are more or less likely than others
- Key to the scientific validity of the method is having generally reproducible principles for distinguishing retentions and innovations from chance resemblance (Weiss 2015)
- There is **no body of received wisdom** for sound change in lexical tone, no accumulated knowledge of which sound changes are more or less likely

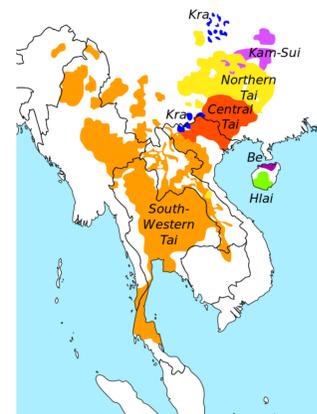
“...prosodic change seems **fully tractable** in terms of analytical methods ... time-tried for other aspects of phonological change ... on the other hand, there is **as yet so much to be learned** ... the present **lack of data** may enforce, at a minimum ... *one or two generations of waiting* until two or more richly described contiguous points in time are available for comparison” (Janda and Joseph 2003:117)

Tone in the Tai languages

- The Kra-Dai languages
- ~100 languages
 - ~100 million speakers (Edmondson & Solnit 2008)

Tai is the most populous branch

- ~80 million speakers
- Thailand 65+ million
- China 15+ million
- Laos 4+ million
- Myanmar 3+ million
- And more in India, Vietnam, Cambodia, Malaysia



The segmental origins of tone

Proto-Tai had three tones on open syllables/sonorant codas: **A B C**

- *hma^A ‘dog’
- *hma^B ‘to soak’
- *hma^C ‘to grow, rise’

The 3-tone system of Proto-Tai split into more tones based on the laryngeal configuration of onset consonants:

	A	B	C
Onset at time of split			
Voiceless w/ friction *p ^h , *t ^h , *s, *h ^m , etc.	A1	B1	C1
Voiceless unaspirated *p, *t, *k, etc.	A2	B2	C2
Glottalized *ʔ, *ʔb, *ʔj, etc.	A3	B3	C3
Voiced *b, *m, *l, *z, etc.	A4	B4	C4

Each daughter language carves up the ‘tone box’ (Gedney 1972) differently. For example, here is Standard Thai (each color represents a surface tone):

	A	B	C
Onset at time of split			
Voiceless w/ friction *p ^h , *t ^h , *s, *h ^m , etc.	k ^h a: ²⁴ ‘leg’	k ^h a: ²² ‘galangal’	k ^h a: ⁴¹ ‘servant’
Voiceless unaspirated *p, *t, *k, etc.	ka: ³³ ‘crow’	kaj: ²² ‘chicken’	kla: ⁴¹ ‘seedling’
Glottalized *ʔ, *ʔb, *ʔj, etc.	ba:n: ³³ ‘blossom’	ba: ²² ‘shoulder’	ba: ⁴¹ ‘crazy’
Voiced *b, *m, *l, *z, etc.	k ^h a: ³³ ‘stuck’	k ^h a: ⁴¹ ‘price’	k ^h a: ⁵⁵⁷ ‘trade’

Expanding the Comparative Method

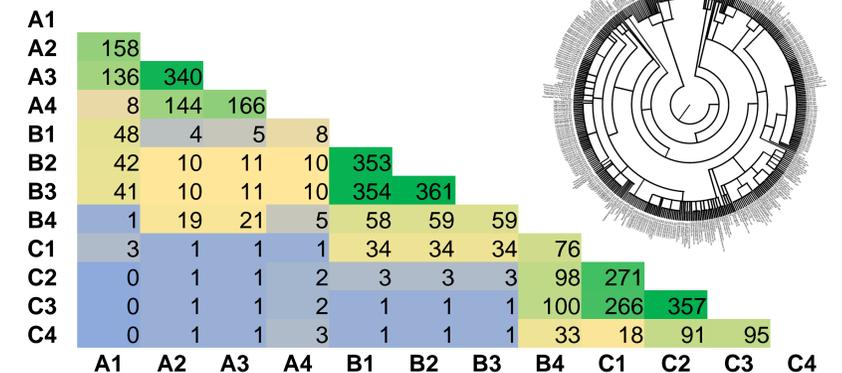
We can **deconstruct** the Comparative Method to first principles and **rebuild it** in a way that allows for tonal evidence

What do sound change rules like this pick out from the language?
*p > b / V_V

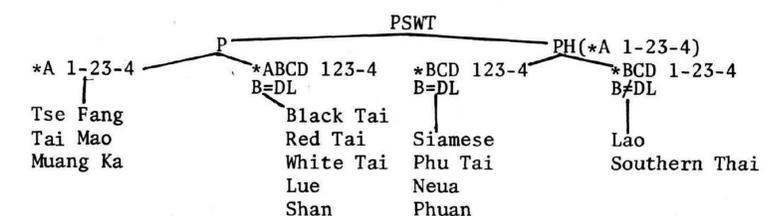
- The object of comparison in the CM is **lexical subsets** that pattern together in a particular **conditioning environment**
- When viewed in this way, lexical tones with their segmental origins are a natural fit

Building the missing evidence

- Dockum (2018) established that tone splits and mergers contain strong phylogenetic signal
- Testing for phylogenetic signal of different conditioning environments across a large number of attested Tai tone systems
- Data from 362 Tai doculects:



- **Combining insights** from computational phylogenetics with the logic of the traditional Comparative Method
- Allows us for the first time to critically evaluate specific sound changes for their likelihood of being good comparative evidence
- We can start building the **missing body of knowledge**
- Practical application to one oft-cited tree (Chamberlain 1975):



- Some tonal criteria used in past Tai subgroupings appear to be **shared innovations**, while others were **parallel innovations**
- This helps us to immediately improve specific subgroupings
- Working toward improving our **theory of tonal sound change**