Thai tones in the 17th century and the interpretation of *Chindamani*
Thai is a tonal language.

- Using pitch to distinguish lexical meaning

Modern Standard Thai has 5 tones (Naksakun 1977)

<table>
<thead>
<tr>
<th>Tone Type</th>
<th>Tone Marking</th>
<th>Example Word</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mid</td>
<td>/law˧/</td>
<td>Classifier of flute</td>
<td>/law˧/</td>
</tr>
<tr>
<td>Low</td>
<td>/law˨/</td>
<td>Group, kind</td>
<td>/law˨/</td>
</tr>
<tr>
<td>High falling</td>
<td>/law˦˨/</td>
<td>To tell</td>
<td>/law˦˨/</td>
</tr>
<tr>
<td>High</td>
<td>/law˦/</td>
<td>Enclosure</td>
<td>/law˦/</td>
</tr>
<tr>
<td>Low rising</td>
<td>/law˩˧/</td>
<td>To sharpen</td>
<td>/law˩˧/</td>
</tr>
</tbody>
</table>

Both pitch range and contour are distinctive
3 tones in live syllables (คำเบื่น = do not end with stop sounds -p, -t, -k, -ʔ)

- *A = no tone mark
- *B = with mai ek <ʼ>
- *C = with mai tho <ʰ>

Relationship between tones and tone marks is no longer transparent.
Tracing the past

- What historical path did Thai tones take from Old Thai to Modern Thai?
- Scarcity of data from before the 19th century
- Historical linguistics “makes the best use of bad data “(Labov 1994)
Chindamani

- The first Thai treatise of orthography and poetry
- The oldest version is believed to have been written in the 17th century by Phra Horathibodi.
Structure of Chindamani

- **Orthography**
  - Vocabulary (อักษรศัพท์)
  - Homophonous symbols
  - Consonant classification (การจำแนกอักษรเป็นสามหมู่)
  - Syllable enumeration (การแจกสุก)
  - Consonant modulation (การผันอักษร)

- **Poetry**
  - composition of poetry (instruction & examples)
Outline

- Basics of Thai orthography
- Previous analyses
- Tonal inventory of *Chindamani*
- Phonetic characteristics of the tones
- Tones on dead syllables
- Note on the pronunciation of consonants
Basics of Thai orthography

Relationship between consonants and tones
Thai orthography is generally conservative.

No one-to-one correspondence between tone and tone marks

<ข่า> /kʰaː²/ ‘galangal’

<ค่า> /kʰaː³/ ‘value’

<ข้า> /kʰaː³/ ‘serf’
Thai consonant letters are grouped into 3 classes: **high, mid, low.**

A single sound can be represented with two or more symbols from different classes.

/pʰ-/  <ผ> (high class)
<พ> <ภ> (low class)

/kʰ-/  <ก> <ก> (high class)
<ก> <ก> <ก> (low class)
Each class of consonant symbols follows its own pattern of tone marking.

<ผา> /pha:5/ <ผำ> /pha:2/ <ผำ> /pha:3/
## The 9 syllables

<table>
<thead>
<tr>
<th></th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High A</td>
<td>High B</td>
<td>High C</td>
</tr>
<tr>
<td></td>
<td>ขา</td>
<td>ขา</td>
<td>ขา</td>
</tr>
<tr>
<td>Mid</td>
<td>Mid A</td>
<td>Mid B</td>
<td>Mid C</td>
</tr>
<tr>
<td></td>
<td>กา</td>
<td>ก้า</td>
<td>ก้า</td>
</tr>
<tr>
<td>Low</td>
<td>Low A</td>
<td>Low B</td>
<td>Low C</td>
</tr>
<tr>
<td></td>
<td>ค้า</td>
<td>ค้า</td>
<td>ค้า</td>
</tr>
</tbody>
</table>
Patterning of the syllables

- Some of the syllables are pronounced with identical tones.
- Important patterns
  - Patterning of non-low syllables
  - Mid A-tone = Low A-tone
  - Low B-tone = Non-low C-tone
# Consonant classes and tones in Modern Thai

<table>
<thead>
<tr>
<th>Classes</th>
<th>Letters</th>
<th>Live</th>
</tr>
</thead>
<tbody>
<tr>
<td>*A</td>
<td>*)</td>
<td>*)</td>
</tr>
<tr>
<td>*B</td>
<td>&lt;&gt;</td>
<td>&lt;&gt;</td>
</tr>
<tr>
<td>*C</td>
<td>&lt;&gt;</td>
<td>&lt;&gt;</td>
</tr>
<tr>
<td>High</td>
<td>ขฃฉฐถผฦศษสห</td>
<td>Tone 5</td>
</tr>
<tr>
<td>Mid</td>
<td>งภมยรลวฮ</td>
<td>Tone 2 Tone 3</td>
</tr>
<tr>
<td>Low</td>
<td>คฅฆงชซฌญ</td>
<td>Tone 1 Tone 3 Tone 4</td>
</tr>
</tbody>
</table>
Identifying the patterning among the 9 syllables

The 9 syllables are pronounced with only 5 tones

Any evidence for patterning of the syllables in *Chindamani*?
Tonal inventory of Chindamani

Patterning of the 9 syllables
Kewkasem (2003) speculates that the Thai language of the 17\textsuperscript{th} century had 9 tones.

- 3 syllables per each consonant class

<table>
<thead>
<tr>
<th></th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High A</td>
<td>High B</td>
<td>High C</td>
</tr>
<tr>
<td>Mid</td>
<td>Mid A</td>
<td>Mid B</td>
<td>Mid C</td>
</tr>
<tr>
<td>Low</td>
<td>Low A</td>
<td>Low B</td>
<td>Low C</td>
</tr>
</tbody>
</table>
Panupong (1970) claims that there were 5-7 tones in Thai.

- Among 9 syllables, some were pronounced identically, e.g. mid A-tone and low A-tone.
Kamalanavin (2003) proposed that Thai language of the time had 5 tones, which did not correspond to Modern Thai tones.

Not possible to have evolved into Modern Thai.
# Consonant classes and tones in Modern Thai

<table>
<thead>
<tr>
<th>Classes</th>
<th>Letters</th>
<th>Live</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>*A</td>
<td>*B</td>
<td>*C</td>
</tr>
<tr>
<td>High</td>
<td>ข ฃ ฉ ฐ ถ ผ ฦ ศ ษ ส ห</td>
<td>&lt;--</td>
<td>&lt;○&gt;</td>
<td>&lt;⁞⁞&gt;</td>
</tr>
<tr>
<td>Mid</td>
<td>ก จ ฎ ฏ ด ต บ ป</td>
<td>Tone 5</td>
<td>Tone 2</td>
<td>Tone 3</td>
</tr>
<tr>
<td>Low</td>
<td>ค ฅ ฆ ง ช ซ ฌ ญ ฑ ฒ ณ ท ธ น พ ภ ม ย ร ล ว ฬ ฮ</td>
<td>Tone 1</td>
<td>Tone 3</td>
<td>Tone 4</td>
</tr>
</tbody>
</table>
The language of the 17th century consisted 5 tones, very similar to Modern Thai.

Crucial patterns
- Patterning of mid and high consonants
- Mid A-tone = Low A-tone
- Low B-tone = Non-low C-tone
In Old Thai, there was no distinction between high, mid, low syllables of a given tone.

<table>
<thead>
<tr>
<th>Classes</th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>&lt;-</td>
<td>&lt;◌</td>
<td>&lt;◌</td>
</tr>
<tr>
<td>Mid</td>
<td>*A</td>
<td>*B</td>
<td>*C</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Patterning of mid and high syllables in Modern Thai = retention

<table>
<thead>
<tr>
<th>Classes</th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- High: Tone 5
- Mid: Tone 1
- Low: Tone 1

Tone 2: *B
Tone 3: *C
Tone 4: *D
No evidence that high B-tone and mid-B tone syllables were pronounced differently.

No evidence that high C-tone and mid-C tone syllables were pronounced differently.

Patterning of non-low syllables was part of the 17th century Thai.
Merger of mid A-tone and low A-tone

- In **consonant classification** section, consonants of mid and low classes with A-tone were grouped together and prescribed to be read equally.
Consonant classification

- *Chindamani* classifies consonant symbols into two groups according to the tones in their names.
- The name of each letter = C + /ɔː/ A/
  - ⟨ฅ⟩ kɔː¹
  - ⟨ข⟩ kʰɔː⁵
  - ⟨ฅ⟩ kʰɔː¹
“For those 11 letters on the line, which are ฉ ช คร ค ง จ ฑ ฒ ณ ย ฆ ศ ษ ห, read them all as equally high. For those remaining 33 letters, read them all as equally mid, like ง จ ญ.”

- Consonants of the mid and low classes with no tone mark were pronounced with same tone.

**Mid A-tone = Low A-tone**
Mid A-tone = Low A-tone

<table>
<thead>
<tr>
<th></th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes</td>
<td>&lt;--&gt;</td>
<td>&lt;◌’&gt;</td>
<td>&lt;◌’’&gt;</td>
</tr>
<tr>
<td>High</td>
<td>Tone 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mid</td>
<td></td>
<td>Tone 2</td>
<td>Tone 3</td>
</tr>
<tr>
<td>Low</td>
<td>Tone 1</td>
<td></td>
<td>Tone 4</td>
</tr>
</tbody>
</table>
Merger of low B-tone and non-low C-tone

- The *Chindamani* does not provide direct evidence for the merger between low B-tone syllable and non-low C-tone

<table>
<thead>
<tr>
<th></th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classes</td>
<td>&lt;--&gt;</td>
<td>&lt;◌்&gt;</td>
<td>&lt;◌้&gt;</td>
</tr>
<tr>
<td>High</td>
<td>Tone 5</td>
<td>Tone 2</td>
<td>Tone 3</td>
</tr>
<tr>
<td>Mid</td>
<td>Tone 1</td>
<td>Tone 2</td>
<td>Tone 3</td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td>Tone 4</td>
</tr>
</tbody>
</table>
Merger of low B-tone and non-low C-tone

- **Vocabulary** section contains sets of homophones
- One set of homophones include low B-tone and high C-tone syllables
“...ฆ่า life to death. ข้า not to let them die fighting wars.”

- ฆ่า ‘to kill’ = low B-tone, ข้า ‘serf’ = high C-tone

**Low B-tone = Non-low C-tone**
Further evidence from poetry part

*Lilit* verses require specific tone marks in certain positions.

<ภ> ‘place’ (low B) spelled as <ถี้> (high C).

**Low B-tone = High C-tone**
### Tonal inventory of 17th century Thai

- **Patterning of high and mid syllables**
- **Mid A-tone = Low A-tone**
- **Low B-tone = Non-low C-tone**

<table>
<thead>
<tr>
<th>Classes</th>
<th>(\text{*A} \leftrightarrow \text{*B} \leftrightarrow \text{*C})</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Tone 5</td>
</tr>
<tr>
<td>Mid</td>
<td>Tone 1</td>
</tr>
<tr>
<td>Low</td>
<td>Tone 3</td>
</tr>
</tbody>
</table>

- **Tone 2**
- **Tone 3**
- **Tone 4**
Phonetic characteristics of tones

Evidence from consonant modulation
Consonant modulation

- **Consonant modulation** ภารผันอักษร = recitation of the tonal paradigm of a syllable as indicated by tone marks and consonant symbols

- *A > *B > *C

- Mid consonant ก - /k-/  
  - ก /kaː¹/ – กำ /kaː²/ – ก้า /kaː²/

- Low consonant ฅ - /kʰ-/  
  - ฅ /kʰaː¹/ – ฅำ /kʰaː³/ – ฅ้า /kʰaː⁴/
In *Chindamani*, the syllables in each consonant class were described as pronounced in the upper, medium, or lower pitch range.

Syllables with no tone mark (A-tone) were used as reference for the other two syllables.

Accompanied by graphic representation
The high class

“For the 11 high letters, read the beginning syllable as high, and then lower according to *mai ek* and *mai tho*.

```
ขา ฉา ผา ฝ่า สา หา ขา ฉ่า ผ่า ฝ่า สา หา ขา ฉ้า ผ้า ฝ้า สา หา ขา ฉ้า ผ้า ฝ้า สา หา ขา ฉ้า ผ้า ฝ้า สา หา ขา ฉ้า ผ้า ฝ้า สา หา
```

- High B-tone was lower than high A-tone.
- High C-tone was lower than high B-tone
The mid class

“For the 9 mid letters  ก จ ฏ ด ต บ ป อ, read the beginning syllable as mid, then read it higher following *mai ek* and then lower following *mai tho* like the shape of a gable.

ก่า จ่า ด่า ต่า บ่า
ก้า จ้า ด้า ต้า บ้า

- Mid B-tone was higher than mid A-tone.
- Mid C-tone was in the same range as mid A-tone.
The low class

“For the 24 mid-low sonorous consonants, read the beginning syllable as mid, then read curving down, and then read up to high, according to mai ek and mai tho.

ค้า ง้า ซ้า ท้า น้า ฟ้า ผ้า ม้า ค้า งา ซ่า ทา นา ฟา ผ่า มา ค้า ง่า ซ่า ท่า น่า ฟา ผ่า มา”

- Low B-tone was lower than low A-tone.
- Low C-tone was higher than high A-tone.
### Phonetic characteristics of the tones

<table>
<thead>
<tr>
<th>Tone</th>
<th>Syllables</th>
<th>Pitch ranges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tone 1</td>
<td>mid A-tone &lt;ก&gt;</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>low A-tone &lt;ข&gt;</td>
<td>medium</td>
</tr>
<tr>
<td>Tone 2</td>
<td>high B-tone &lt;ข้า&gt;</td>
<td>medium or high</td>
</tr>
<tr>
<td></td>
<td>mid B-tone &lt;ก้า&gt;</td>
<td>medium</td>
</tr>
<tr>
<td>Tone 3</td>
<td>low B-tone &lt;ค้า&gt;</td>
<td>medium or low (curving down)</td>
</tr>
<tr>
<td></td>
<td>high C-tone &lt;ข้า&gt;</td>
<td>medium or low</td>
</tr>
<tr>
<td></td>
<td>mid C-tone &lt;ก้า&gt;</td>
<td>medium or low</td>
</tr>
<tr>
<td>Tone 4</td>
<td>low C-tone &lt;ค้า&gt;</td>
<td>high</td>
</tr>
<tr>
<td>Tone 5</td>
<td>high A-tone &lt;ข้า&gt;</td>
<td>high</td>
</tr>
</tbody>
</table>
Tones in the medium pitch range

- Tone 1 = mid tone
- Tone 2 = mid-high tone
  - higher than Tone 1
- Tone 3 = mid falling tone
  - read as “curving down”
Tones in the high pitch range

- Tone 4 and Tone 5 are both high tones.
- Possible contour difference
- Tone 5 may have been a rising tone.
<table>
<thead>
<tr>
<th>Classes</th>
<th>*A</th>
<th>*B</th>
<th>*C</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Tone 5 rising</td>
<td>Tone 2 high-mid</td>
<td>Tone 3 mid falling</td>
</tr>
<tr>
<td>Mid</td>
<td>Tone 1 mid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low</td>
<td></td>
<td></td>
<td>Tone 4 high</td>
</tr>
</tbody>
</table>

**Summary**
“น้องของพ่อเป็นคนหล่มแท้ๆ”
Tones on dead syllables

The *B and *D connection
*D for “dead”

- Only 1 tone on dead syllables (คำตาย = end with stop -p, -t, -k, -ʔ) in Old Thai
- Identical to *B

<table>
<thead>
<tr>
<th>*A</th>
<th>*B</th>
<th>*C</th>
<th>*D</th>
</tr>
</thead>
<tbody>
<tr>
<td>กะ</td>
<td>กำ</td>
<td>กำ</td>
<td>กัง</td>
</tr>
</tbody>
</table>
## Vowel length

- Two types of D-tone syllables
  - DS = short vowel
  - DL = long vowel

<table>
<thead>
<tr>
<th></th>
<th>*DS</th>
<th>*DL</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>High DS</td>
<td>High DL</td>
</tr>
<tr>
<td></td>
<td>ขึ้ก</td>
<td>ขาก</td>
</tr>
<tr>
<td>Mid</td>
<td>Mid DS</td>
<td>Mid DL</td>
</tr>
<tr>
<td></td>
<td>กัก</td>
<td>กา</td>
</tr>
<tr>
<td>Low</td>
<td>Low DS</td>
<td>Low DL</td>
</tr>
<tr>
<td></td>
<td>คัก</td>
<td>คาก</td>
</tr>
</tbody>
</table>
Modern tones on dead syllables

- Only 3 tones in dead syllables in Modern Thai
  - Tone 2
  - Tone 3
  - Tone 4
Connection to *B

- In Modern Thai, dead syllables typically have tones found in B-tone syllables.
  - Non-low DL = Non-low B
  - Non-low DS = Non-low B
  - Low DL = Low B
  - Low DS = Low C
<table>
<thead>
<tr>
<th>Classes</th>
<th>Letters</th>
<th>Live</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>*A</td>
<td>*B</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&lt;-&gt;</td>
<td>&lt;◌ং&gt;</td>
</tr>
<tr>
<td>High</td>
<td>ขฃคฅงศษสหตษ</td>
<td>Tone 5</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tone 2</td>
</tr>
<tr>
<td>Mid</td>
<td>กจฎฏดตปปอ</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tone 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tone 3</td>
<td>Tone 4</td>
</tr>
</tbody>
</table>
Connection to *B

- Inherited feature from Old Thai
- *Chindamani* shows a more transparent connection.
Syllable enumeration

Syllable enumeration การแจกลูก = the tone reading of a given consonant letter in combination with different rhymes

Examples

กะ /kaʔ²/  – ก /kaː¹/ – กิ /kiʔ²/ - กี /kiː¹/

คะ /kʰaʔ⁴/  – ก /kʰaː¹/ – กิ /kʰiʔ⁴/ - กี /kʰiː¹/
Syllables with mid DS-tone were read as ‘high’.

“The 9 mid letters กจฎฏดตบปอ are light and not sonorous. When enumerated, read them as light and up high at 4 syllables กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ กิ กึ กุ กะ”

• Higher than Tone 1 (=mid tone)
Syllables with high DS-tone were prescribed to be read ‘down’.

“The 11 high letters are not sonorous. When enumerated, read them as heavy and down at 4 syllables วิชิษฐ์
ข ขิ ขึ ขุ ขะ ขา ขี ขื ขู เข แข ไข ใข โข เขา ขํา ขิ ขึ ขุ ขะ”

• Lower than Tone 5 (=rising)
Non-low DS tone was pronounced between Tone 1 (=mid tone) and Tone 5 (=rising tone)

The most likely candidate was Tone 2 (= mid-high tone)

**Non-low DS = Non-low B**
Syllables with low DS-tone were read as ‘curving down’.

“The 24 mid letters, which are left after those 9 letters are sonorous and low. Read them as curving down at 4 syllables คิคึคุคะค คา คี คื คู เค แค ไค ใค โค เคา คําคิ คึ คุ คะ”

• Lower than low A-tone syllable (= mid tone)
• The only tone that was lower than Tone 1 (mid tone) was Tone 3 (= mid falling tone).

Low DS = Low B
No information about the DL-tones.

Modern Thai still keeps the B=DL pattern intact.

B = DL in the 17th century

Non-low DL = non-low B = Tone 2
Low DL = low B = Tone 3
Tones on dead syllables

- Clear connection to *B
- Only 2 tones were allowed on dead syllables
  - Tone 2
  - Tone 3
## Thai tones in the 17th century

<table>
<thead>
<tr>
<th>Classes</th>
<th>Live</th>
<th>Dead</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>*A</td>
<td>*B</td>
</tr>
<tr>
<td>Classes</td>
<td>&lt;--&gt;</td>
<td>&lt;--&gt;</td>
</tr>
<tr>
<td>High &lt;괜&gt;</td>
<td>Tone 5 rising</td>
<td>Tone 2 high-mid</td>
</tr>
<tr>
<td>Mid &lt;⌥&gt;</td>
<td>Tone 1 mid level</td>
<td>Tone 3 mid falling</td>
</tr>
<tr>
<td>Low &lt;⇤&gt;</td>
<td>Tone 3 mid falling</td>
<td>Tone 4 high</td>
</tr>
</tbody>
</table>
Note on pronunciation of the low consonants

The meaning of “low and sonorous”
The consonants in the low series originally represented voiced consonant sounds:

- `<ก>` ‘to be stuck’ *ga:A > kʰa:1
- `<พ>` ‘older sibling’ *bi:B > pʰi:3

The low consonants are described to be read as “low and sonorous” in Chindamani.
Thus, many scholars have speculated that the consonant were still voiced in the 17th century (Panupong 1970, Kullavanijaya 1983).

But the 5-tone system entails that the consonants must have already become voiceless, e.g. *g- > /kʰ-/.
La Loubère’s *Description du Royaume de Siam*

- <พร้า> /phasis4/ ‘machete’ – <prâ>
- <ชาม> /ch̥a:m1/ ‘bowl’ – <tcham>
- <ครัว> /kʰrua1/ ‘family residence’ – <creu>
Opposition to mid class

- Clue in the **consonant classification** section
- Names of the mid and low consonants are both called with Tone 1 (= mid tone).
- The labels “low” and “sonorous” keep the low class apart from the mid class.

“For those remaining 33 letters, read them all as equally mid, like ค ง จ ญ.”
In Pali Grammar, consonants were grouped into 5 classes

- **Aghosa Sithila** (voiceless unaspirated) - High
- **Aghosa Dhanita** (voiceless aspirated) - Mid
- **Ghosa Sithila** (voiced unaspirated)
- **Ghosa Dhanita** (voiced aspirated) - Low
- **Nasika** (nasal)
Pali influence

- The low consonants are written with symbols representing Pali “ghosa” consonants.
- The label “sonorous” = Thai translation of *ghosa*.
- The poetry part of *Chindamani* also mentions the *Vuttodaya* text.
- Pali influence on the consonant-series tradition
In the 17th century, Thai had a 5-tone system almost identical to Modern Thai.
Some tones were pronounced differently from the modern counterparts.
Fewer tones were found in dead syllables than nowadays.
Possible Pali influence on the Thai consonant-series tradition.
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References


